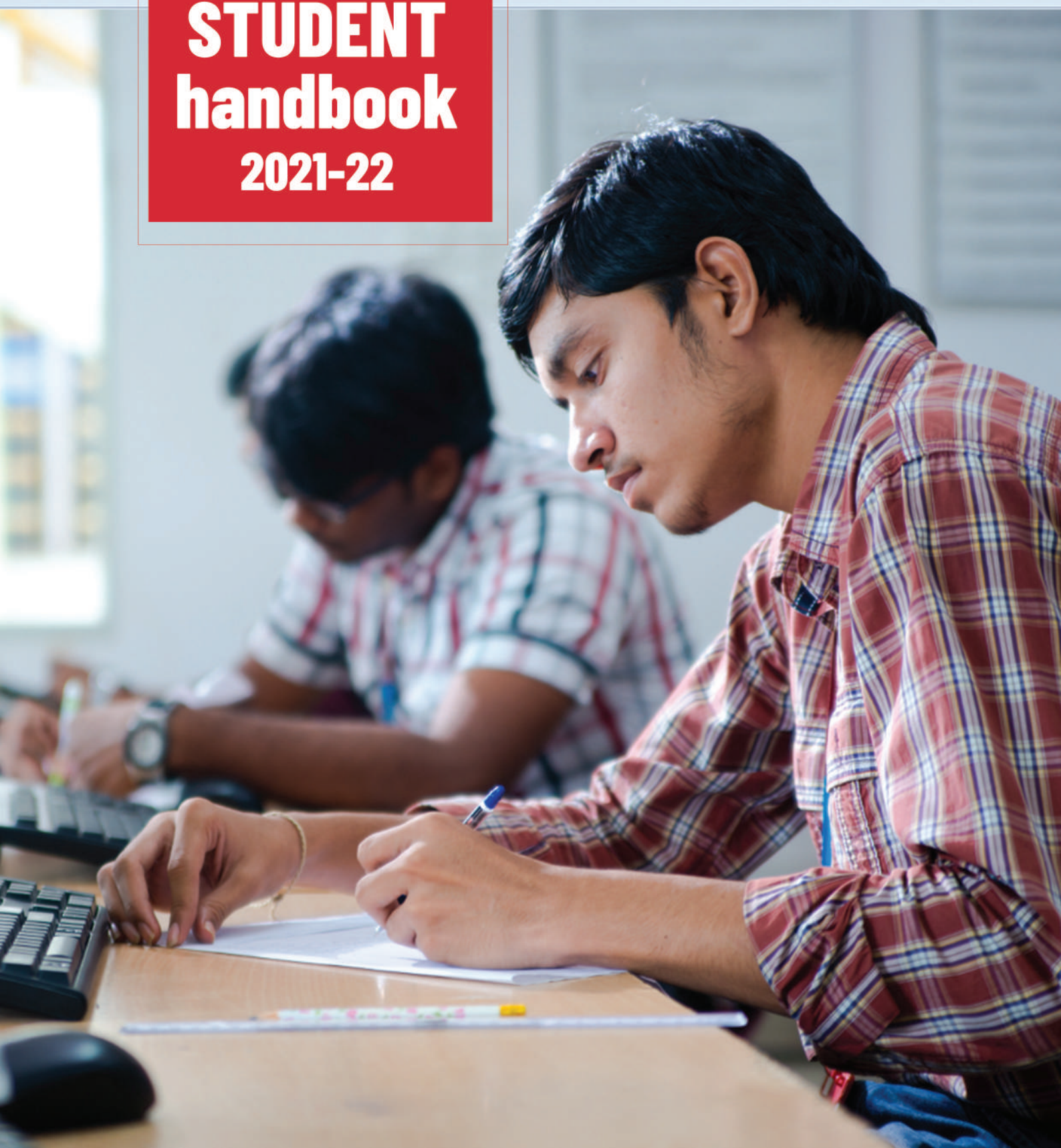


# **STUDENT handbook 2021-22**

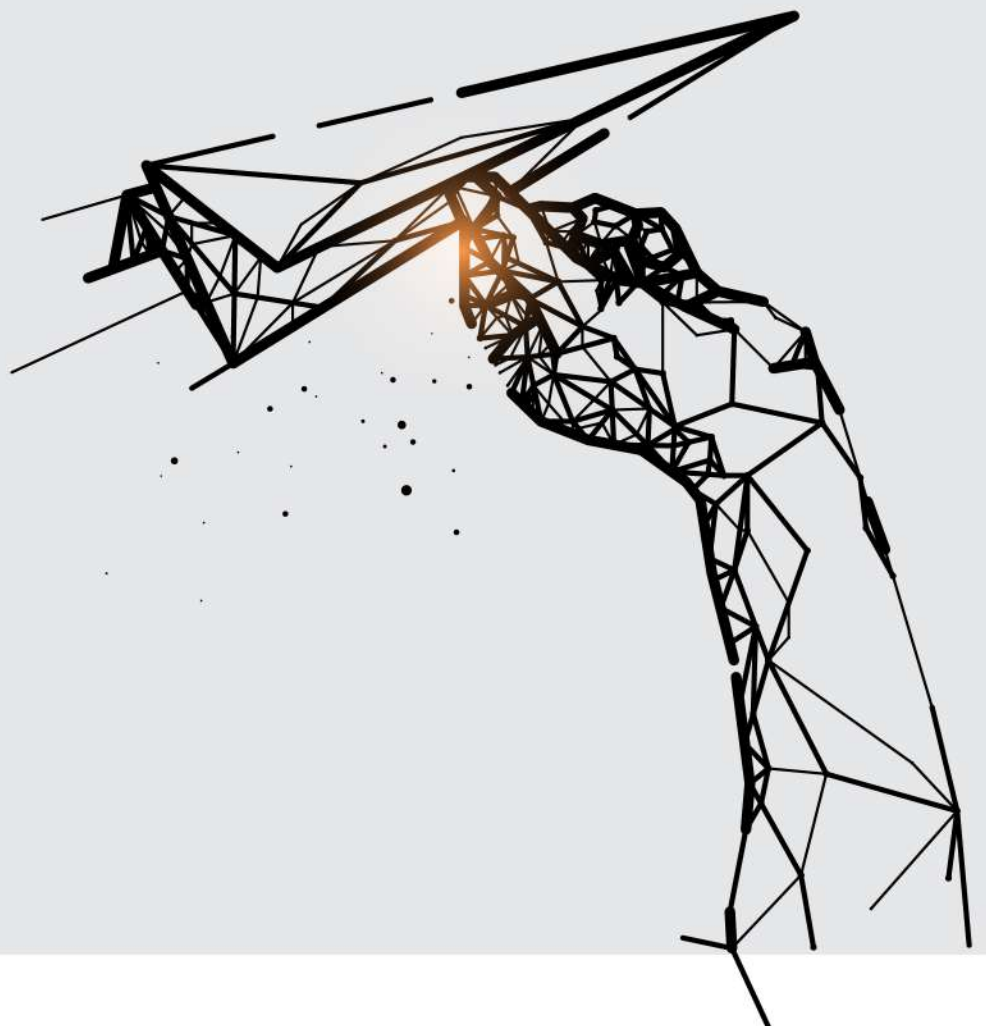


#### VISION

To be a globally renowned university.

#### MISSION

To impart quality higher education and to undertake research and extension with emphasis on application and innovation that cater to the emerging societal needs through all-round development of students of all sections enabling them to be globally competitive and socially responsible citizens with intrinsic values.







**CATEGORY 1  
UNIVERSITY**

BY MHRD, Govt. of India

**KL ACCREDITED BY  
NAAC WITH A++  
GRADE**

**nirf** NATIONAL  
INSTITUTIONAL  
RANKING  
FRAMEWORK  
2021

**RANKED 35**  
AMONG ALL  
UNIVERSITIES

**41 YEARS OF  
EDUCATIONAL  
LEADERSHIP**



**Koneru Satyanarayana,**  
*Chancellor*

---

Sri Koneru Satyanarayana, BE, FIE, FIETE, MIEEE graduated in Electronics and Communication Engineering in the year 1977. Along with Sri Koneru Lakshmaiah, he is the co-founder of the Institute which was established in the year 1980. He is an educationist of eminence and also an industrialist of great repute. He runs a number of industries in and around Vijayawada.

**Dr. S.S. Mantha**  
*Chancellor*

---

Dr.S.S.Mantha, an eminent academician and an able administrator, is the former Chairman of the All India Council for Technical Education (AICTE). He joined in this Organization in 2019 as Chancellor, he has been at the forefront of bringing in some radical changes for transparency and accountability in its administration. He holds a Bachelors degree in Mechanical Engineering from the M S University, Baroda, and a Masters in Mechanical Engineering from VJTI, Mumbai.



**Prof. G P S Varma**  
*Vice Chancellor*

---



Prof. G P S Varma is one of the most widely experienced leaders in Indian higher education, known for his commitment to expanding student opportunity, catalyzing academic innovation, and encouraging university's civic engagement and service to society. He adorned the position of Chairman, ISTE (Indian Society for Technical Education)- AP State, TSEM CET Test Committee Member-2021 nominated By Telangana State Govt, APEAMCET Admission Committee Member in 2016 by Andhra Pradesh State Council of Higher Education, Govt. of Andhra Pradesh. He has been a very farsighted Peer Team Visit Member for National Assessment and Accreditation Council (NAAC), Expert Committee Member for University Grants Commission (UGC) Autonomous Visits. He has been an Advisory Council Member for (CEGR) Centre for Education Growth, and Research India International Centre, New Delhi, and Board Member for Big-Data Analytics Forum.

## OBJECTIVES

| Focus                    | Objective  |
|--------------------------|--|
| Academics                | <ul style="list-style-type: none"> <li>• To offer academic flexibility by means of Choice based credit systems and the like.</li> <li>• To identify and introduce new specializations and offer programs in emerging areas therein</li> <li>• To incorporate into the curriculum the Application orientation and use high standards of competence for academic delivery</li> <li>• To design and implement educational system adhering to outcome based International models.</li> <li>• To introduce and implement innovation in teaching and learning process to strengthen academic delivery</li> <li>• To offer academic programs at UG, PG, doctoral, Post-Doctoral which are industry focused, and incorporates Trans-discipline, inter-discipline aspects of the education system</li> <li>• To deliver higher education that includes technologies and meeting the global requirements</li> </ul>                                |
| Research                 | <ul style="list-style-type: none"> <li>• To promote inter-disciplinary studies and create needful facilities that enhance inter-disciplinary research and innovation</li> <li>• To create an ambience that is conducive for undertaking sponsored research, internal funded research and offering consultancy services to wide spectrum of originations</li> <li>• To establish centers of excellence in frontier areas of research, and design innovation centers with industry collaboration</li> <li>• To create environment to innovate and incubate the products and services that addresses the societal requirements</li> <li>• To integrate research into all academic programs</li> <li>• To maintain high standards in achieving research outcomes</li> <li>• To promote International conferences / Seminars / Workshops / in collaboration with professional bodies for creation of avenues for research exchange</li> </ul> |
| Extramural and extension | <ul style="list-style-type: none"> <li>• To generate means and avenues for carrying out extramural research for Industry and Academia</li> <li>• To organize extension activities covering literacy promotion, health awareness and improve the living standards of community</li> <li>• To make the research outcomes useful and applicable for the societal needs</li> </ul>   |

|                              |   |
|------------------------------|---|
| Infrastructure               | <ul style="list-style-type: none"> <li>To promote and maintain state of the art facilities for academic delivery, research and co &amp; extra-curricular facilities and develop congenial and eco-friendly fully residential campus</li> <li>To create and strengthen focused and modern infrastructure that address the national needs through generation of dedicated funds from Industry, Government and research organizations,</li> </ul>  |
| Equity / Access              | <ul style="list-style-type: none"> <li>To provide and promote the opportunities to higher education to socially deprived communities and remove disparities by promoting women, differently abled and socially deprived</li> <li>To provide equal access to meritorious both in terms of admissions and financial support</li> </ul>  |
| ICT                          | <ul style="list-style-type: none"> <li>To lay emphasis on effective usage of ICT, WEB –resources and train the faculty on the latest advancements thereof and develop effective e-content</li> <li>To develop and maintain world class ICT infrastructure and lay emphasis on its effective usage, extend regular training to both faculty and students on its latest advancements there by ensure interactive academic delivery</li> </ul>   |
| Examinations and evaluations | <ul style="list-style-type: none"> <li>To introduce reforms in the examination and evaluation system that brings out knowledge application skills and competencies of the students and ensure transparency</li> </ul>   |
| Ecology and Environment      | <ul style="list-style-type: none"> <li>To Build into curriculum, issues related to social awareness about ecology and environment towards achieving greener society</li> </ul>  |
| Linkages                     | <ul style="list-style-type: none"> <li>To promote collaborations with international and national organizations for advancements of academics, research, Technology transfer and Intellectual property rights.</li> <li>To Indigenize the global technological solutions and develop the products, and services that transforms the standard of living of rural India</li> <li>Design new products and services that address commercially attractive needs and opportunities while leveraging the available resources in the form of un-employed and under-employed Individuals</li> </ul> |
| Employability                | <ul style="list-style-type: none"> <li>To provide skills through curriculum and training that are essential in fostering entrepreneurial thoughts, employability prospects and at the same time provides necessary support for incubating the innovations and assisting them for prospective commercialization.</li> <li>To provide necessary business infrastructure that allows attracting and sustaining the industry to commence their business establishments within the University Campus and aid in life long sustenance of employment.</li> </ul>                                 |

|                   |   |
|-------------------|---|
|                   | <ul style="list-style-type: none"> <li>• To develop industrial cluster that helps the students to start their industry after incubating the products at the incubating centers which will create Jobs</li> <li>• To develop National depositories for meeting the goals of National skill development council</li> <li>• Train people to profile neighborhood and communities for the needs and commercial opportunities that will support financially sustainable new businesses</li> </ul>  |
| Governance        | <ul style="list-style-type: none"> <li>• To institute measures for transparent administration that aid in improving efficiency, accountability and reliance</li> <li>• To comply with regulations of all the statutory bodies.</li> <li>• To install professional managers who are global visionaries, thought leaders, and thinkers into the management of the University so as to contribute to the ideals of the University system</li> </ul>  |
| Quality           | <ul style="list-style-type: none"> <li>• To continuously upgrade the faculty in curriculum design, teaching pedagogy, usage of ICT and various processes pertaining to academics, research and University administration</li> <li>• To develop mechanism that attracts talented, qualified and experienced faculty from across the globe for pursuing their academic and research careers at the University.</li> <li>• To consider and implement norms, metrics, standards, procedures and benchmarks for assessing and improving the quality in every aspect of University system and achieve quality certifications by National and International bodies.</li> <li>• To establish Internal quality Assurance cell (IQAC) and install a quality systems that is integral part of all the University processes</li> <li>• To continuously upkeep overall quality of the University based on aspects of regular feedback from the stake holders</li> <li>• To improve the quality of faculty through faculty incentives, awards and recognitions</li> </ul> |
| Value orientation | <ul style="list-style-type: none"> <li>• To mold the students to possess professional ethics, moral values and intrapersonal skills that shape them into effective leaders and who are having the thoughts of equality and unanimity towards all walks and sects of life.</li> <li>• To inculcate the self-consistency, self-reliance and self-learning qualities for shaping the students to lead their life on their own.</li> <li>• To sharpen the critical thinking and reasoning skills by making students tackle problems and ideas that are yet to be tackled through application of their intellectual discovery.</li> <li>• Developing the students towards human intellectual achievement and make them rich in cultural experience</li> </ul>  |

|                      |  |
|----------------------|--|
|                      | <ul style="list-style-type: none"> <li>• Students to be encouraged and provided with necessary support enabling them to choose and pursue careers of their choice &amp; interest that make them professionally satisfied.</li> </ul>   |
| National development | <ul style="list-style-type: none"> <li>• To expand the University in all its modes of delivery so as to contribute to the Nation's increase in Gross Enrolment Ratio</li> <li>• To align the academic programs and courses to match the requirements of the National goals</li> <li>• To develop technology that helps sustainable socio economic development</li> </ul> |



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|  |  |
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## ACRONYMS

| SI No | Acronyms | Full Form   |
|-------|----------|---|
| 1     | KLEF     | KoneruLakshmaiah Education Foundation                         |
| 2     | CET      | Common Entrance Test  |
| 3     | KLEEE    | KLEF Engineering Entrance Examination                         |
| 4     | JEE      | Joint Entrance Examination                                    |
| 5     | BT       | Bio Technology  |
| 6     | CE       | Civil Engineering   |
| 7     | CS       | Computer Science &Engineering                                 |
| 8     | EC       | Electronics & Communication Engineering                       |
| 9     | EE       | Electrical & Electronics Engineering                          |
| 10    | CM       | Computer Engineering  |
| 11    | ME       | Mechanical Engineering  |
| 12    | AD       | Artificial Intelligence & Data Science                        |
| 13    | CI       | Computer Science & Information Technology                     |
| 14    | CGPA     | Cumulative Grade Point Average                                |
| 15    | SGPA     | Semester Grade Point Average                                  |
| 16    | LTPS     | Lecture, Tutorial (Studio for Architecture), Practical, Skill |
| 17    | SEE      | Semester-End Examinations                                     |
| 18    | SIE      | Semester-In Examinations                                      |
| 19    | OJET     | On-the-job Engineering Training                               |
| 20    | IRP      | Industrial Relations and Placements                           |
| 21    | PS       | Practice-School   |
| 22    | OPAC     | Online Public Access Catalog                                  |
| 23    | QCM      | Quality Circle Meeting  |
| 24    | MOOC     | Massive Open Online Course                                    |
| 25    | MOU      | Memorandum of Understanding                                   |
| 26    | OD       | On Duty   |
| 27    | (A,B]    | Between A and B excluding value A and including value B       |
| 28    | COE      | Controller of Examinations                                    |
| 29    | VLSI     | Very-Large-Scale Integration                                  |
| 30    | M.Tech   | Master of Technology  |
| 31    | COA      | Council of Architecture                                       |
| 32    | JEE      | Joint Entrance Examination                                    |

|    |       |   |
|----|-------|---|
| 33 | NATA  | National Aptitude in Architecture                   |
| 34 | PC    | Professional Core                                   |
| 35 | BSAE  | Building Science and Applied Engineering            |
| 36 | PE    | Professional Elective                               |
| 37 | PAECC | Professional Ability Enhancement Compulsory Courses |
| 38 | SEC   | Skill Enhancement Course                            |
| 39 | OE    | Open Elective                                       |
| 40 | CTIS  | Cloud Technology and Information Security           |
| 41 | DS    | Data Science  |
| 42 | IoT   | Internet of Things                                  |
| 43 | IPA   | Intelligent Process Automation                      |
| 44 | PCI   | Pharmacy Council of India                           |
| 45 | PY    | Pharmacy  |
| 46 | B.Com | Bachelor of Commerce                                |
| 47 | ACCA  | Association of Chartered Certified Accountants      |
| 48 | HM    | Hotel Management                                    |
| 49 | BTK   | Basic Training Kitchen                              |
| 50 | QTK   | Quantitative Training Kitchen                       |
| 51 | ATK   | Advanced Training Kitchen                           |
| 52 | MBA   | Master of Business Administration                   |
| 53 | BBA   | Bachelor of Business Administration                 |
| 54 | MCA   | Master of Computer Applications                     |
| 55 | BA    | Bachelor of Arts                                    |
| 56 | M.Sc  | Master of Science                                   |

## CHAPTER 1

### Introduction

The President of Koneru Lakshmaiah Education foundation, Er. Koneru Satyanarayana, along with Late Sri.KoneruLakshmaiah, founded the K L College of Engineering in the Academic year 1980-81. With the mighty vision and restless efforts of Er. Koneru Satyanarayana K L College of Engineering carved a niche for itself through excellence in engineering education, discipline and record numbers of placements and was the leading college in the state of AP. K L College of Engineering achieved NBA Accreditation for all its B.Tech. Programs in 2004 and later re-accredited in 2007. K L College of Engineering was transformed into an autonomous engineering college in the year 2006. In 2008 this college received a record grade of 3.76 on a 4 points scale with “A” Grade from NAAC; and in February 2009, the college, and Accredited by National Assessment and Accreditation Council (NAAC) of UGC as ‘A++’ with highest Grade of 3.57 CGPA on 4-point scale in 2018, through its founding society “Koneru Lakshmaiah Education Foundation” was recognized as Deemed to be University by the MHRD-Govt. of India, Under Section 3 of UGC Act 1956. This Deemed to be University is named as “KLEF”.

### Location

Vijayawada is located on the banks of river Krishna in the state of Andhra Pradesh and has been historically a cultural, political and educational center. It is also a part of Andhra Pradesh Capital Region. The city is well connected by National Highway and Railways with Chennai (440 km), Hyderabad (275 km), and Vizag (385 km) and is a central junction for trains running from North to South India. Daily flights operate from Hyderabad and BangalorKLEFis situated in a spacious 100-acre campus on the banks of Buckingham Canal of river Krishna, eight kilometers from Vijayawada city. Built within a rural setting of lush green fields, the institute is a virtual paradise of pristine nature and idyllic beauty. The campus has been aptly named "Green Fields" and the splendid avenue of trees and gardens bear testimony to the importance of ecology and environment. The campus ambience is most befitting for scholastic pursuits. The University has been situated in a built-up area of around 15, 00,000 S.Ft.

### Hall Marks:

- **NAAC A++ Grade** with 3.57 CGPA on 4-pointscale
- **CATEGORY-1** University by UGC under the categorization of universities for grant of Graded Autonomy
- UGC Recognized under section **12B** of UGC Act1956
- Approved by MHRD & UGC (Under Section 3 of UGC act1956)
- ISO 9001 - 2015 CertifiedInstitution

**Facilities:****Central Library: E-Resources**

The Central Library is the largest and holds materials to serve the whole University community. It has materials relevant to the Engineering, Science & Humanities courses offered by the University.

The library system contains more than one lakh and fifty thousand books and periodicals on all subjects related to the teaching and research interests of the University staff and students. The library has over 36,000 electronic journal titles, academic databases and 32.98 lakhs e-Books. Access is available on campus on student computers and remotely.

A new library building will be opened shortly on par with international standards with modern IT facilities. Every department of the college maintains their library to cater to the needs of students and faculty. All foreign and Indian journals are made available in the department library for the convenience of faculty and students.

The libraries render the following library services.

- Circulation of librarydocumentary.
- Inter-library loanservices.
- Photo copyingservices.
- Reference service.
- CD-ROM searchservices.
- Internetservices.
- OPAC
- WEBOPAC
- Audiovisual
- Onlinelectures

**The Data Center:**

A State-of-the-Art Data center with advanced servers provides a highly interactive learning environment with full-fledged hardware and software training facilities.

**Hardware:** The configuration of high-end stream of servers that provides various services.

**Supercomputer**

HPC Infrastructure (Supercomputer): 5.3 TERA Flops (CPU +GPU)HPSL2304

\*SL230sGen8, (2\*2.6GHz, 32GBRAM, 2x500GBHD, 10GIBHCA) providing 1.3TFHPSL2502

\*SL250sGen8, (2\*2.6GHz,32GBRAM,2x500GBHD,10GIBHCA + 2 NVIDIA K20 GPU providing -4TF.

Master Node:HP DL 380P 1\* DL380p Gen8 (2 \* 2.6Ghz, 64GB RAM, 2x2TB HD, 10G IB HCA).Compute Switch (48 Port Low latency switch) Q Logic IB QDR 36 PortSwitch.Intel® Composer XE forLinux. Servers, Dell and HP Blade Servers, Apple ServerX server.



**Special Laboratories:**

The institute is equipped with various Industry Collaborated Labs

| S. No | Discipline                              | Name of the Lab   | Research Group Associated                       |
|-------|---|---|---|
| 1.    | Computer Science & Engineering          | CISCO   | Computer Networks and security                  |
| 2.    | Computer Science & Engineering          | IBM   | Software Engineering                            |
|       |   |   | Knowledge Engineering                           |
| 3.    | Computer Science & Engineering          | Microsoft   | Embedded Systems                                |
|       |   |   | Software Engineering                            |
|       |   |   | Knowledge Engineering                           |
| 4.    | Computer Science & Engineering          | Adobe   | Web technologies                                |
|       |   |   | Image processing                                |
| 5.    | Computer Science & Engineering          | Oracle  | Knowledge Engineering                           |
| 6.    | Electronics & Communication Engineering | NI LabView  | Communications Systems                          |
| 7     | Mechanical Engineering                  | APSSDC Dassault Systems lab, with Dassault 3 D experience suite | Design & Manufacturing, Robotics & Mechatronics |
| 8     | Mechanical Engineering                  | Center for system Dynamics & Condition Monitoring               | Design & Manufacturing                          |
| 9     | Mechanical Engineering                  | MSC: NASTRAN/ PATRAN/ ADAMS simulation suite                    | Design & Manufacturing                          |

**Physical Education- Sports Facilities:**

KLEF encourages students to explore their latent talents by providing good games and sports facilities. The institute is equipped with the following.

| <b>Sport/Game</b>               | <b>No. of Courts</b> | <b>Sport/Game</b>      | <b>No. of Courts</b> |
|---------------------------------|----------------------|------------------------|----------------------|
| Athletic track                  | 1                    | Handball Court         | 1                    |
| Hockey Field                    | 1                    | Netball Courts         | 2                    |
| Badminton Courts                | 4                    | Throw ball courts      | 2                    |
| Tennikoit Courts                | 2                    | Beach Volleyball Court | 1                    |
| Cricket Field with Net practice | 3                    | Football Field         | 1                    |
| Volleyball Courts               | 2                    | Basketball Courts      | 2                    |
| Tennis Courts                   | 2                    | Kabaddi Courts         | 2                    |
| Kho Kho Court                   | 1                    | Table Tennis           | 6                    |
| Soft Ball                       | 1                    | Chess                  | 20                   |
| Archery                         | 1                    | Caroms                 | 12                   |

The University had a State-of- the - Art Indoor stadium of 30000 sq.ft with:

- 4 wooden Shuttle Courts/ BasketballCourt
- Yoga and MeditationCenter
- Dramatics
- 8 Table TennisTables
- HobbyCenter
- Gymnasium forGirls
- Gymnasium forBoys
- Multipurpose room with Chess, Caromsetc.
- Power lifting/Weightlifting

**Accommodation- Hostels**

- KLEF has separate hostels for boys and girls with well furnished rooms and modern amenities.
- The overall atmosphere is very conducive for the students to concentrate ontheir studies.
- A state- of – the- art kitchen and spacious dining area has been provided for both the hostels.

- Generators have been provided as power backup. Emphasis has been laid on hygiene and cleanliness for healthy living. A customized menu caters to the student needs, it keeps changing according to their tastes.
- Teaching staff will have to address the academic and personal problems of the students. Round-the-clock security, communication, dispensary facilities are also available.

### **The Girls Hostel**

The girl's hostel is within the campus with a capacity of 1192 in 500 rooms. Different rooms accommodating 2 per room, 3 per room with attached toilets as well as A.C. rooms are available. Suite rooms with modern furniture and a separate study room are also available.

### **The Boys Hostel**

It is a short walk from the university with a capacity of 2040 in 780 rooms. Different rooms accommodating 2 per room, 3 per room with attached toilets as well as A.C. rooms are available.

### **Facilities in the Hostels**

- Protected drinking water
- State of the art kitchen, dining hall
- Newspapers, telephones, toilets and bathrooms are well maintained.
- Every student in the hostel is provided with a cot, study table, chair and a rack.
- Fan and light are also provided in each room.
- Gas & Steam based hygienic food preparation
- Palatable regional, national and international cuisines
- Cleanliness and Safety STD/ISD Facilities
- Medical Kits and First Aid Boxes Soft drinks, snacks, Fruit etc.
- Laundry Stationary shop

### **Hostel Rules & Regulations**

- Students are hereby informed that while staying in the hostel, it is essential to be responsible for maintaining dignity by upholding discipline.
- They must be obedient to the hostel warden/floor in –charges. Valuable items like jewelry etc. should not be kept with students while staying in the hostel.
- It is student's own responsibility to safeguard her/his Laptops, Money by locking suitcases and bags.
- If any loss is found, management will not take any responsibility. Students must intimate to the hostel authorities before giving police complaints against losses.

- Students are not allowed to indulge in smoking; consumption of Alcohol, Narcotic drugs etc., and defaulters will be strictly viewed upon.
- Students are directed that after locking their rooms they must hand over the keys to security and can collect them on returning to the hostel
- Students must switch off Fans, Lights, Geysers, A/C's etc., before leaving their rooms.
- Visitors are not allowed inside the hostel at any time; however, they are allowed into the visitor's hall with the prior permission of the warden.
- Only family members listed by the parents are allowed to contact the student. Visiting hours are up to 7.30 pm only and after 7.30 pm visitors are required to leave the premises.
- Hostel students are not allowed to come into the hostel after 3.00 pm in case morning shift students and 6.00pm for day shift students.
- Those students who are utilizing computer lab, library etc., after the times specified must submit the permission slip to the security while entering the hostel.
- During public holiday outings, those who seek permission to leave the hostel will have to obtain written permission from the warden. Permission will be given only to those students who get permission from parents to leave the hostel during holidays/outings.
- Moving out of campus without permission is strictly prohibited. Strict study hours from 7.30 am to 10.30 pm shall be maintained in the hostel.
- The hostellers must be in their allotted rooms during study hours. The general complaints of any kind should be noted in the complaint register, which is available at the hostel office.
- Registered complaints will only be entertained. Any health problem should be brought to the notice of Warden/Floor In – charge for necessary treatment.

#### **Transportation:**

The institution runs 80 buses covering all the important points in Vijayawada City, Mangalagiri, Guntur & Tenali towns with a total seating capacity of 4000 students in two shifts. Transport is available 24 hrs. In case of any emergency in the institute /hostels. Transportation is available for conducting industrial tours and visits etc. Regular transport facility available up to 10PM.

#### **Health Centre:**

A full-fledged health center with all the facilities is established to cater to the needs of the students, staff, Faculty and to the general public in the adopted villages. It consists of three doctors (Homoeopathy, Ayurvedic & Allopathy).

#### **Cafeteria:**

KLEF has a spacious canteen with the latest equipment and a hygienic environment which provides quality food and prompt service and caters to the needs of all the students and staff. A central



cafeteria of 1500 Sq.m. is available on the campus. Mini cafes and fast-food centers are available in various blocks. The canteen is open from 6:30 a.m. to 8:30 p.m. There is a wide variety of North-Indian and South-Indian cuisine and the students enjoy the pleasure of eating during the breaks. Cool aqua water for drinking is available.

#### **Placements:**

KLEF has meticulously planned to make all its outgoing students employed. The University had installed the infrastructure, employed well experienced faculty, designed and delivered programs that help to enhance the communication and soft skills which are required for making the students employable. An excellent system is in place that considers all the issues that make a student employable. The University has been successful for the last 7 years in employing all the students who have registered and eligible for placement through its offices located across the country. About 50 trained personnel work extensively to make the students ready for recruitment by the industry.

#### **Counseling & Career Guidance:**

A special Counseling Cell consisting of professional student counselors, psychologists, and Professors counsels/helps the students in preparing themselves to cope with studies, perform well in the tests & various competitions. This Cell provides its services to the students in getting the solutions for their personal problems and provides career guidance with the help of Industrial Relations and Placements (IRP) department. A group of 20 students are allotted to each faculty member who counsels them regularly and acts as their mentor.

#### **Social Service Wing:**

KLEF has a social service wing which is used to channelize the social service activities of the faculty, staff and students. It has adopted 5 nearby villages and conducts activities like medical camps, literacy camps and educates the villagers regarding hygiene and health care on a regular basis.

#### **NSS/NCC Wing of Institute:**

NCC/NSS is a credit course designed with an intent to transform NCC/NSS activities into curricular activities from an extra curricular thereby providing credits to students involved in NCC/NSS along with other attended advantages to the students in the university

#### **Hobby Clubs:**

Wholly and solely managed by the students, the clubs have in the past contributed much to the cultural life of the campus and to the cultural evolution of the students, few student bodies and clubs operate in the campus like music society, dance club, drama society, literary and debating club, English press club, drawing club, painting club, mime club, computer club etc. Students manage entire activities and budget of the organization for the entire semester in advance. Around 4000

students are active members of the HobbyClubs.

**Life Skills and Inner Engineering:**

KLEF feels that it is its responsibility to mold the students as good human beings, contributing to the country and to society by producing responsible citizens. Along with the regular programs every student admitted into KLEF undergoes a one-week special life skills /orientation program. Through this program, KLEF is producing the students with the clarity of thoughts and charity at heart. Strict regularity, implicit obedience, courtesy in speech and conduct, cleanliness in dress and person is expected of each KLEF student. Life skills and inner engineering teach a student his/her obligation towards GOD, himself /herself his/her country and fellow human beings. Every student is encouraged to practice his/her own religious faith and be tolerant and respectful towards other religions.

**Technical Festival:**

KLEF organizes various programs for the all-round development of the students. The technical festival and project exhibition is being organized in the odd semester (October) every year to elicit the innovative ideas and technical skills of the students.

**Cultural Festival:**

The cultural festival in the even semester (February) of every year is the best platform for the students to exhibit their talents and creativity. Through these festivals KLEF is imparting organizational skills, leadership skills, competitive spirit, and team behavior skills to our students. Along with the knowledge, KLEF festivals provide recreation to the student community.

**Center for Innovation, Incubation and Entrepreneurship (CIIE):**

KLEF being a pioneering institute supporting Academics and Research in Engineering, Science and Technology is endowed with the entire infrastructure and highly experienced faculty, has a Centre for Innovation, Incubation and Entrepreneurship (CIIE) that comprises of: Innovation Centre which aims to inculcate a spirit of innovation. Incubation Centre which aims to incubate innovations through prototype product development. Entrepreneurship Development Centre (EDC) which aims at fostering entrepreneurial skills among the students.

## Chapter 2

### PROGRAM EDUCATIONAL OBJECTIVES (PEOs) and PROGRAM OUTCOMES (POs)

#### Engineering Undergraduate Programs

To be a globally renowned university, as per our vision, we need to produce quality products (graduates) into the market who have potential strengths to meet all the professional and personal challenges prevailing at global levels and who can serve in all the possible positions of their respective job domains and contribute towards holistic growth of their respective employment providers as well as the nation, world. The graduates must also possess cutting edge R&D skills in their domain areas.

This is exactly what has been framed into the University's Mission and thereby the Mission has converted into the following **Program Educational Objectives (PEOs)** which are best suited to Undergraduate Engineering programs, and are those that complement the university vision, mission.

#### Program Educational Objectives of B.Tech Program:

| PEO No | Description  |
|--------|--|
| PEO1   | Practice engineering in a broad range of industrial, societal and real-world applications.   |
| PEO2   | Pursue advanced education, research and development, and other creative and innovative efforts in science, engineering, and technology, as well as other professional careers. |
| PEO3   | Conduct themselves in a responsible, professional, and ethical manner.   |
| PEO4   | Participate as leaders in their fields of expertise and in activities that support service and economic development throughout the world.                                      |

#### Program Outcomes (POs):

| PO No | Description   |
|-------|---|
| PO1   | <b>Engineering Knowledge:</b> An ability to apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization for the solution of complex engineering problems in engineering   |
| PO2   | <b>Problem Analysis:</b> An ability to identify, formulate, research literature, analyze complex engineering problems in mechanical engineering using the first principles of mathematics, natural sciences and engineering sciences                                  |
| PO3   | <b>Design/ development of solutions:</b> An ability to design solutions for complex engineering problems and system component or processes that meet the specified needs considering public health & safety and cultural, societal & environment                      |
| PO4   | <b>Conduct investigations of complex problems:</b> An ability to use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to obtain solutions to engineering problems. |

|      |  |
|------|--|
| PO5  | <b>Modern tool usage: Ability</b> to create, select and apply appropriate techniques, resources and modern engineering activities, with an understanding of the limitations.   |
| PO6  | <b>The engineer and society: Ability</b> to apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.        |
| PO7  | <b>Environment and sustainability</b> Ability to demonstrate the knowledge of engineering solutions, contemporary issues understanding their impacts on societal and environmental contexts, leading towards sustainable development.                        |
| PO8  | <b>Ethics:</b> An ability to apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.  |
| PO9  | <b>Individual and team work:</b> An ability to function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.   |
| PO10 | <b>Communication: Ability</b> to communicate effectively oral, written reports and graphical forms on complex engineering activities.  |
| PO11 | <b>Project management and finance: Ability</b> to demonstrate knowledge and understanding of engineering and management principles and apply those one's own work, as a member and leader in team, to manage projects and in multi-disciplinary environments |
| PO12 | <b>Lifelong learning</b> An ability to recognize the need for and having the preparation and ability to engage independent and life-long learning in broadest context of technological change  |

#### Program Specific Outcomes (PSOs):

| Biotechnology                           |   |
|---|---|
| PSO1                                    | Graduates will be able to design, perform experiments, analyze and interpret data for investigating complex problems in biotechnology Engineering and related fields. |
| PSO2                                    | Graduates will be able to justify societal, health, safety and legal issues and understand their responsibilities in biotechnological engineering practices.          |
| Civil Engineering                       |   |
| PSO1                                    | Function as design consultants in construction industry for the design of civil engineering structures.   |
| PSO2                                    | Provide sustainable solutions to the Civil Engineering Problems.  |
| Computer Science & Engineering          |   |
| PSO1                                    | An ability to design and develop software projects as well as Analyze and test user requirements.   |
| PSO2                                    | An Ability to gain working Knowledge on emerging software tools and technologies.   |
| Electronics & Communication Engineering |   |
| PSO1                                    | An ability to Understand the theoretical and mathematical concepts to analyze real time problems.   |
| PSO2                                    | An Ability to Design and Analyze systems based on theoretical and Practical Knowledge   |

|  |   |
|--|---|
| <b>Electrical &amp; Electronics Engineering</b>      |   |
| PSO1   | Knowledge and hands on competence in simulating, developing, Testing, operation and maintenance of Electrical & Electronics systems.  |
| PSO2   | Able to work in multi-disciplinary environments with knowledge of Electrical and Electronics domain and in Project Management techniques, environmental issues and green technologies.  |
| <b>Mechanical Engineering</b>                        |   |
| PSO1   | An ability to demonstrate knowledge, skill to analyze the cause and effects on machine elements, processes and systems.   |
| PSO2   | An ability to apply the acquired Mechanical Engineering knowledge for the advancement of society and self.  |
| <b>Artificial Intelligence and Data Science</b>      |   |
| PSO1   | An ability to design and develop Artificial Intelligence technology into innovative products for solving real world problems.   |
| PSO2   | An ability to design and develop Data Science methods for analyzing massive datasets to extract insights by applying AI as a tool   |
| PSO3   | An ability to apply basic principles and practices of computing supported by mathematics and science to successfully develop software related engineering projects to meet customer business objectives and/or productively engage in research. |
| <b>Computer Science &amp; Information Technology</b> |   |
| PSO1   | An ability to Identify, Design, and Analyze complex computer systems, Implement and Interpret the results from those systems.   |
| PSO2   | An ability to select and apply current techniques, skills, and tools necessary for computing practice and integrate IT-based solutions into the user environment effectively.   |
| <b>Electronics and Computer Science</b>              |   |
| PSO1   | Ability to design systems and desired needs for sustainable development and engineering solutions to the problems using knowledge and skills developed in thrust areas.   |
| PSO2   | Ability to solve Electronics Engineering problems using the latest hardware and software tools, to achieve cost effective and optimal solutions in the domain of Internet of Things and hardware security                                       |
| <b>Internet of Things</b>                            |   |
| PSO1   | An ability to Understand the theoretical and mathematical concepts to analyze real time problems and develop the systems to resolve.  |
| PSO2   | An Ability to Design and Analyse systems based on theoretical foundation, Professional Knowledge and Practical Skills.  |

**ENGINEERING POSTGRADUATE PROGRAMS**  
**MASTER OF TECHNOLOGY**  
**PROGRAM EDUCATIONAL OBJECTIVES**

| PEO NO | DESCRIPTION  |
|--------|--|
| PEO1   | To mould the students to become effective global science students in the competitive environment of modern society.                          |
| PEO2   | To provide students with strong foundation in contemporary practices of Science, different functional areas and scientific environment       |
| PEO3   | To emphasize on application oriented learning.   |
| PEO4   | To develop communication, analytical, decision-making, motivational, leadership, problem solving and human relations skills of the students. |
| PEO5   | To inculcate professional and ethical attitude in students.  |
| PEO6   | To pursue lifelong learning as a means of enhancing knowledge and skills necessary to contribute to the betterment of profession             |

**PROGRAM OUTCOMES**

**M.TECH - BIOTECHNOLOGY**

| PO NO | DESCRIPTION  |
|-------|--|
| PO1   | Ability to practically apply various Biotechnological concepts.                                |
| PO2   | Demonstrate knowledge of innovative and modern bio engineering practices.                      |
| PO3   | Synergize biological sciences with engineering and solve various societal and health problems. |

**M.TECH-STRUCTURAL ENGINEERING**

| PO NO | DESCRIPTION  |
|-------|--|
| PO1   | An ability to independently carry out research/investigation and development work to Solve practical problems.   |
| PO2   | An ability to write and present a substantial technical port/document  |
| PO3   | Students should be able to demonstrate degree of mastery for designing and solving structural engineering problems.  |
| PO4   | An ability to use appropriate modern tools in structural engineering. In doing so he should demonstrate sufficient knowledge of competing tools and their relative merits and demerits |
| PO5   | An ability to demonstrate the traits of learning and unlearning throughout his Professional career, and be willing to learn new techniques, methods and processes                      |
| PO6   | Tune his knowledge to be a responsible engineer adhering to all established practices of his profession  |



**M.TECH-CONSTRUCTION TECHNOLOGY & MANAGEMENT**

| PO NO | DESCRIPTION   |
|-------|---|
| PO1   | An ability to independently carry out research/investigation and development work to solve practical problems.  |
| PO2   | An ability to write and present a substantial technical report/document.  |
| PO3   | Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program  |
| PO4   | Students should be able to understand how to implement construction process using effective and efficient project planning tools, they will be able to identify the activities and coordinate resources and create goals and objectives to complete individual task |
| PO5   | Students should be able to understand how to use mathematics logic and technology to help effectively and efficiently analyze the project and solve problems required for technical tasks   |
| PO6   | Students should be able to understand concepts related to running sustainable projects and business   |

**M.TECH-GEOTECHNICAL ENGINEERING**

| PO NO | DESCRIPTION  |
|-------|--|
| PO1   | Independently carry out research/investigation and development work to solve practical problems.                         |
| PO2   | Write and present a substantial technical report/document.   |
| PO3   | Demonstrate a degree of mastery over geotechnical engineering.   |
| PO4   | Identify Engineering solutions to problematic soils and provide suitable foundation.                                     |
| PO5   | Apply modern tools for designing geotechnical structures.  |
| PO6   | Work in inter-disciplinary engineering teams with social responsibility and ethical values and pursue lifelong learning. |

**M.TECH-COMPUTER SCIENCE ENGINEERING**

| PO NO | DESCRIPTION   |
|-------|---|
| PO1   | Apply the knowledge of computer engineering principles and paradigms in the design of system components and processes that meet the specific needs of the industry. |
| PO2   | Identify, analyze and formulate solutions to complex engineering problems using innovative and emerging technologies.   |
| PO3   | Effectively communicate technical information in speech, presentation and documentation.  |
| PO4   | Extract information relevant to novel problems and apply appropriate research methodology to develop scientific knowledge.  |

|     |  |
|-----|--|
| PO5 | Self-learn and pursue higher studies to upgrade qualifications and attain constructive growth in profession.   |
| PO6 | Make valuable contributions to design, developer by practicing related engineering applications and algorithmic methods.                               |
| PO7 | Provide exposure to latest tools and technologies based on the industry needs and contribute to valuable research findings in the specialized domains. |

#### **M.TECH-ARTIFICIAL INTELLIGENCE AND DATA SCIENCE**

| <b>PO NO</b> | <b>DESCRIPTION</b>  |
|--------------|---|
| PO1          | Apply the knowledge of computer engineering principles and paradigms in the design of system components and processes that meet the specific needs of the industry. |
| PO2          | Identify, analyze and formulate solutions to complex engineering problems using innovative and emerging technologies.   |
| PO3          | Effectively communicate technical information in speech, presentation and documentation.  |
| PO4          | Extract information relevant to novel problems and apply appropriate research methodology to develop scientific knowledge.  |
| PO5          | Self-learn and pursue higher studies to upgrade qualifications and attain constructive growth in profession.  |
| PO6          | Make valuable contributions to design, developer by practicing related engineering applications and algorithmic methods.  |
| PO7          | Provide exposure to latest tools and technologies based on the industry needs and contribute to valuable research findings in the specialized domains.              |

#### **M.TECH-DIGITAL FORENCICS AND CYBER SECURITY**

| <b>PO NO</b> | <b>DESCRIPTION</b>  |
|--------------|---|
| PO1          | Apply the knowledge of computer engineering principles and paradigms in the design of system components and processes that meet the specific needs of the industry. |
| PO2          | Identify, analyze and formulate solutions to complex engineering problems using innovative and emerging technologies.   |
| PO3          | Effectively communicate technical information in speech, presentation and documentation.  |
| PO4          | Extract information relevant to novel problems and apply appropriate research methodology to develop scientific knowledge.  |
| PO5          | Self-learn and pursue higher studies to upgrade qualifications and attain constructive growth in profession.  |
| PO6          | Make valuable contributions to design, developer by practicing related engineering  |

|     |  |
|-----|--|
|     | applications and algorithmic methods.  |
| PO7 | Provide exposure to latest tools and technologies based on the industry needs and contribute to valuable research findings in the specialized domains. |

#### **M.TECH-RADAR & COMMUNICATION**

| <b>PO NO</b> | <b>DESCRIPTION</b>  |
|--------------|---|
| PO1          | An ability to identify, formulate, research literature, analyze complex Engineering problems in the area of communications and RADAR to cater national and industrial needs.  |
| PO2          | An ability to develop solutions for complex problems in communication system design and RADAR system component or processes that meet the specified needs considering.  |
| PO3          | Ability to create and apply appropriate techniques using modern industrial and Research tools for modeling and testing of antennas, communications system modules and RADAR systems.  |
| PO4          | An ability to design the experiments, analysis and interpretation of data and synthesis of the information using various modern and industrial tools to obtain solutions for complex problems in industries, military and social needs.   |
| PO5          | Ability to apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues, ethical principles of Engineering practices and the consequent responsibilities relevant to the RADAR engineering.   |
| PO6          | Exposure to prerequisite math's and a mathematically rigorous approach to Communication theory will provide him with all the necessary background to pursue a career in any field of communications going forward in his career.  |
| PO7          | An ability to function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings for project management by demonstrating the knowledge and understanding of principles of communication systems and radar, and apply those one's own work, as a member and leader in team, to manage projects and in multi-disciplinary environments. |

#### **M.TECH - VLSI**

| <b>PO NO</b> | <b>DESCRIPTION</b>   |
|--------------|--|
| PO1          | Apply the knowledge of science, mathematics, and engineering principles for developing problem solving attitude and get sound knowledge in the theory, Principles and applications of VLSI Circuits and Systems. |
| PO2          | Configure recent EDA tools, apply test conditions, deploy and manage them.   |
| PO3          | Design and conduct experiments, analyze and interpret data, imbibe Programming skills for development of simulation experiments.   |
| PO4          | Ability to demonstrate the knowledge of engineering solutions, and function as A member of a multi disciplinary team with sense of ethics, integrity and social responsibility.                                  |
| PO5          | To develop, design and implement projects with given specifications, in order to Cater industrial needs.   |
| PO6          | Ability to investigate develops and carries out research to solve industrial Problems related to designing and testing of VLSI systems.  |

|     |   |
|-----|---|
| PO7 | Design a system, component or process as per social needs and specifications and also will be aware of contemporary issues. |
|-----|---|

#### **M.TECH - POWER ELECTRONICS AND DRIVES**

| <b>PO NO</b> | <b>Description</b>  |
|--------------|---|
| PO1          | Advanced knowledge of a broad range of modelling methodologies, and underlying principles of mechanics, commonly used in the development and analysis of mechanical machines and systems.                                     |
| PO2          | Knowledge of fundamental design issues relevant to machine or mechanical component, and an understanding of how to formulate and analyze design solutions in various engineering contexts.                                    |
| PO3          | Working knowledge of a range of modern mathematical methods and tools used in the development and analysis of machines and mechanical systems.  |
| PO4          | In-depth knowledge of one or more of the following (depending of selection of option modules and project area): specific engineering systems, design methods, modelling techniques, mathematical and/or numerical techniques. |
| PO5          | Knowledge of basic research and development principles and practices relevant to mainstream engineering industry.   |
| PO6          | Knowledge of key professional, safety and ethical issues arising in modern engineering industry.  |
| PO7          | Knowledge of time-management and work planning issues related to the organisation, implementation and successful completion, including reporting, of an individual, Masters level, engineering based project.                 |

#### **M.TECH - POWER SYSTEMS**

| <b>PO NO</b> | <b>Description</b>   |
|--------------|--|
| PO1          | Acquire in- depth knowledge in the domain of power systems and understanding of engineering principles for project management.   |
| PO2          | Ability to critically analyze various power system components, models and their operation.   |
| PO3          | Apply advanced concepts of electrical power engineering to analyze, design and develop electrical components, apparatus and systems to put forward scientific findings at national and international levels. |
| PO4          | Ability to use advanced techniques, skills and modern scientific and engineering tools for professional practice   |
| PO5          | Preparedness to lead a multidisciplinary scientific research team, communicate and lifelong learning effectively.  |
| PO6          | Recognize the need to engage in lifelong learning through continuing education and research.   |

**M.TECH – THERMAL ENGINEERING**

| PO NO | Description  |
|-------|--|
| PO1   | Advanced knowledge of a broad range of modeling methodologies, and underlying mechanical science, commonly used in the development and analysis of Thermal engineering systems.  |
| PO2   | Knowledge of fundamental design issues relevant to Thermal engineering, and an understanding of how to formulate and Analyse design solutions in various engineering contexts.   |
| PO3   | Working knowledge of a range of modern mathematical methods and tools used in the development and analysis of Thermal engineering systems.   |
| PO4   | In-depth knowledge of one or more of the following (depending of selection of option modules and project area): specific engineering systems, design methods, modeling techniques, mathematical and/or numerical techniques. |
| PO5   | Knowledge of basic research and development principles and practices relevant to mainstream engineering industry.  |
| PO6   | Knowledge of key professional, safety and ethical issues arising in modern engineering industry.   |
| PO7   | Knowledge of time- management and work planning issues related to the Organization, implementation and successful completion, including reporting, of an individual, Masters level, engineering based project.               |

**M.TECH – ROBOTICS AND AUTOMATION**

| PO NO | Description   |
|-------|---|
| PO1   | Acquire in-depth understanding of the Robotic control engineering and navigational, robotic sensors concepts of contemporary issues, apply them to identify, formulate and analyze complex engineering problems.  |
| PO2   | Critical Thinking - Analyze complex robotics and automation engineering problems critically, apply independent judgement for synthesizing Robotics intellectual and creative advances for conducting research in a wider theoretical, practical and policy context.   |
| PO3   | Understanding the Human Activity Assistive Technology (HAAT) model. Understanding of the Assistive Robotic Manipulators (ARM) Justify the use of robots in rehabilitation. Discuss the current international safety standards for robotic assistive technologies  |
| PO4   | Ability to investigate develop and carries out designing and implementation of Human Machine Interface, Brain Machine Interface, and Robotics.  |
| PO5   | Robotics Programming skill set to modern simulation tools - Create, select, learn, and apply appropriate techniques, resources, including prediction and modelling.   |
| PO6   | Problem Solving - Think laterally and originally, conceptualize, and solve robotics and engineering problems, evaluate a wide range of potential solutions for those problems and arrive at feasible, optimal solutions after considering public health and safety, cultural, societal, and environmental factors in the core areas of expertise. |
| PO7   | Capacity to design and develop an industry-based robotics systems, ability to enrich Robotics System Engineering and Artificial Intelligence based optimization algorithms  |

|  |                           |
|--|---------------------------|
|  | and operational research. |
|--|---------------------------|

#### **M. Tech – MACHINE DESIGN**

| <b>PO NO</b> | <b>Description</b>  |
|--------------|---|
| PO1          | Advanced knowledge of a broad range of modeling methodologies, and underlying principles of mechanics, commonly used in the development and an analysis of mechanical machines and systems.                                   |
| PO2          | Knowledge off under mental design issues relevant to machine or mechanical component, and an understanding of how to formulate and analyse design solutions in various engineering contexts.                                  |
| PO3          | Working knowledge of a range of modern mathematical methods and tools used in the development and analysis of machines and mechanical systems.  |
| PO4          | In-depth knowledge of one or more of the following (depending of selection of option modules and project area): specific engineering systems, design methods, modeling techniques, mathematical and/ or numerical techniques. |
| PO5          | Knowledge of basic research and development principles and practices relevant to main stream engineering industry.  |
| PO6          | Knowledge of key professional, safety and ethical issues arising in modern engineering industry.  |
| PO7          | Knowledge of time- management and work planning issues related to the organisation, implementation and successful completion, including reporting, of an individual, Masters level, engineering based project.                |

#### **M.TECH – INTERNET OF THINGS**

| <b>PO NO</b> | <b>Description</b>  |
|--------------|---|
| PO1          | Apply the knowledge of science, mathematics, and engineering principles with a strong theoretical foundation, systematic professional knowledge, and powerful practical skills.   |
| PO2          | Strong Understanding of ARM- based Systems on Chip design and Embedded systems, sensors and instrumentation, edge and cloud computing with AI and ML.                             |
| PO3          | Design and conduct experiments, analyze, and interpret data, imbibe programming skills in modern simulation, and AI& DS programming tools.  |
| PO4          | Ability to demonstrate the knowledge of engineering solutions, and function as a member of a multidisciplinary team with a sense of ethics, integrity, and social responsibility. |
| PO5          | Ability to design, develop, and implement an IoT system with a multi disciplinary approach to cater to industrial needs.  |
| PO6          | Ability to investigate develops and carries out research to solve industrial problems related to designing and implementing IoT systems.  |
| PO7          | Design and develop a system with IoT technology to develop solutions to real-world problems as per social needs and be aware of contemporary issues.                              |



## Management, Humanities and Sciences

### UG Programs

#### Bachelor of Architecture (B.Arch)

##### Program Educational Objectives (PEOs)

|      |  |
|------|--|
| PEO1 | Should be able to stimulate artistic sensitivity and creative powers.  |
| PEO2 | Strengthen intellectual growth and the capacity to develop creative and responsible solutions to unique and changing problems. |
| PEO3 | Acquire leadership capabilities necessary for the competent practice of architecture and lifelong learning.                    |
| PEO4 | Pursue advanced education, research and development, and other creative and innovative efforts in the field of Architecture.   |

##### Program Outcomes (POs):

|      |  |
|------|--|
| PO1  | Ability to gain knowledge of Humanities, Sciences and Architecture and the application of knowledge in practice.   |
| PO2  | Use the elements of Architecture and apply basic principles in Architectural Design.   |
| PO3  | Identify and solve the social, economical and cultural issues in Architectural Design.   |
| PO4  | Ability to apply theoretical knowledge to achieve Architectural Design solutions.  |
| PO5  | Recognize the ethical and professional responsibilities and the norms of Architectural practice.   |
| PO6  | Ability to research, review, comprehend and report technological developments happening in the field of Architecture   |
| PO7  | Communicate effectively and work in interdisciplinary groups according to the project scale.   |
| PO8  | To guide the Building construction workforce in the right direction  |
| PO9  | Ability to understand the real-life situation in converting the On-paper design to On-site design of Architectural Practice                                      |
| PO10 | To make the student design aesthetically pleasing, structurally viable buildings and encourage technological advancements in the building construction industry. |

##### Program Specific Outcomes (PSOs)

|      |  |
|------|--|
| PSO1 | PSO1: Ability to enhance creative design skills in attaining design solutions in architecture.   |
| PSO2 | To understand the design complexity of the designed structure and use appropriate building construction techniques and technology for the particular structure |

#### Bachelor of Arts (B.A)

##### Program Educational Objectives (PEOs)

|      |  |
|------|--|
| PEO1 | Graduate will be able to exhibit their skills in Literature and diverse literary works.  |
| PEO2 | A graduate student able to analyze the aspects of History, Geography, Public Administration and Economy                                      |
| PEO3 | Graduate will be able to apply knowledge, information and research skills to complex problems in the field of Social Science and Humanities. |

##### Program Outcomes (POs)

|     |   |
|-----|---|
| PO1 | Provide knowledge and understanding of various fields of study in core disciplines in the Humanities and Social Sciences                  |
| PO2 | Develop critical and analytical skills to identify and resolve problems with in complex changing social, linguistic and literary context. |

|      |  |
|------|--|
| PO3  | Understanding the general concepts and principles of selected areas of study outside core disciplines of the Humanities, Social Science and Languages                                    |
| PO4  | Follow independence in learning appropriate theories and methodologies with intellectual honesty and an understanding of ethical and human values  |
| PO5  | Encourage students to analyze the problems and apply this knowledge for remedies thereof   |
| PO6  | Enhance student's skills of effective communication and language learning i.e. reading, writing, listening and speaking another language with fluency and understand its cultural value. |
| PO7  | Become well informed and updated member of the community and responsible citizen   |
| PO8  | Work with self esteem, self reliance, self reflection and creativity to face adversities in the work and personal life   |
| PO9  | Inculcate leadership and administrative abilities for their future career  |
| PO10 | Increase inclination for higher studies and research in social sciences and Gain comprehensive knowledge to succeed in competitive examinations  |

### **Bachelor of Computer Applications (BCA)**

#### **Program Educational Objectives (PEOs)**

|      |  |
|------|--|
| PEO1 | Practice Computer Applications in a broad range of industrial, societal and real world applications.   |
| PEO2 | Pursue advanced education, research and development, and other creative and innovative efforts in science, engineering, and technology, as well as other professional careers. |
| PEO3 | Conduct them in a responsible, professional, and ethical manner.   |

#### **Program Outcomes (POs)**

| <b>PONO</b> | <b>Description</b>   |
|-------------|--|
| PO1         | <b>Problem Analysis:</b> Ability to identify, formulate, research literature, and analyze complex computer application oriented problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and computer applications.  |
| PO2         | <b>Design / development of solutions:</b> Ability to design solutions for complex computer application problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety, and cultural, societal, and environmental considerations. |
| PO3         | <b>Conduct investigations of complex problems:</b> Ability to use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.   |
| PO4         | <b>Modern tool usage:</b> Ability to create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.  |
| PO5         | <b>Communication:</b> Ability to communicate and engage effectively with diverse stakeholders.   |
| PO6         | Ability to apply ethical principles and commit to professional ethics and responsibilities.  |
| PO7         | <b>Life-long learning:</b> Ability to recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.   |
| PO8         | <b>Individual and teamwork:</b> Ability to function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.   |

**Programme Specific Outcomes (PSOs)**

| <b>Cloud Technology and Information Security</b> |  |
|--|--|
| PSO1   | An ability to use and develop cloud software, administrative features. Infrastructure services and architectural patterns; ethical hacking and forensic security technologies. |
| PSO2   | An ability to gain knowledge on design and control strategy; techniques to secure information and adapt to the fast changing world of information technology needs.            |
| <b>Data Science</b>                              |  |
| PSO1   | Ability to apply the knowledge of computing tools and techniques in the field of Data science for solving real world problems encountered in the Software Industries.          |
| PSO2   | Ability to identify the challenges in Data analytics with respect to IT Industry and pursue quality research in this field with social relevance.                              |

| <b>Internet of Things</b>             |  |
|---------------------------------------|--|
| PSO1                                  | An ability to apply pattern recognition and artificial intelligent techniques including statistical data analysis and quantitative modelling techniques to solve real world problems from various domains such as healthcare, social computing, economics, etc.                    |
| PSO2                                  | PSO1: An ability to apply pattern recognition and artificial intelligent techniques including statistical data analysis and quantitative modelling techniques to solve real world problems from various domains such as healthcare, social computing, economics, etc.              |
| <b>Intelligent Process Automation</b> |  |
| PSO1                                  | An ability to apply pattern recognition, machine learning, and artificial intelligent techniques including statistical data analysis and quantitative modelling techniques to solve real world problems from various domains such as healthcare, social computing, economics, etc. |
| PSO2                                  | An ability to recognize and analyze problems related to AI and ML applications along with their ethical implications   |

**Bachelor of Business Administration****Program Educational Objectives (PEOs)**

|      |  |
|------|--|
| PEO1 | To educate the business graduates to respond effectively in meeting the competitive business needs of the society.   |
| PEO2 | To nurture the spirit of Entrepreneurship among the students that propagates the business world.   |
| PEO3 | To train the students in emerging as efficient managers equipped with innovation, rationality and application oriented decision-making in the context of the ever-changing business environment. |

**Program Outcomes (POs)**

| <b>PONO</b> | <b>Description</b>  |
|-------------|---|
| PO1         | Core Business Knowledge Demonstrate competency in the underlying concepts, theory and tools taught in the core undergraduate curriculum.  |
| PO2         | Critical Thinking skills Able to define analyze and devise solutions for multifunctional business problems and issues in the areas like Marketing, Finance, Human Resources and Production.   |
| PO3         | Global Perspective Identify and analyze relevant global factors that influences decision making in International Business Perspective   |
| PO4         | Investigation of complex problems An ability to use research-based knowledge and research methods including design of innovative processes, analysis and interpretation of data and synthesis of the information to obtain solutions to organizational problems |

|      |   |
|------|---|
| PO5  | Application of Statistical and Analytical tools Ability to create, select and apply appropriate analytical tools, techniques and methods in the modern management activities.   |
| PO6  | The Manager and society Ability to apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional management practices.  |
| PO7  | Legal Environment and sustainability Ability to demonstrate the knowledge of contemporary issues in legal aspects, understanding and reporting their impact on societal and environmental contexts, leading towards sustainable organizational development through entrepreneurial orientation. |
| PO8  | Ethics & Corporate Social Responsibility An ability to apply ethical principles and commit to professional ethics and responsibilities and norms of management practice. Identify and analyze ethical conflicts and social responsibility issues involving different stakeholders.              |
| PO9  | Individual and Team Work An ability to perform different roles effectively as an individual and a member or leader in diverse teams and in multi-disciplinary streams with entrepreneurial edge.  |
| PO10 | Communication Ability to communicate effectively oral, written reports and graphical forms on complex managerial and administrative activities.   |
| PO11 | Project Management and Finance Ability to demonstrate knowledge and understanding of the business and operational activities and having sound knowledge in the financial aspects and applying those concepts to manage projects in multi-disciplinary environments.                             |
| PO12 | Lifelong Learning An ability to recognize the need for and having the preparation and ability to engage independent and life-long learning in global context of technological and organizational change.  |

### **Bachelor of Commerce (B.Com)**

#### **Program Educational Objectives (PEOs)**

|      |   |
|------|---|
| PEO1 | To produce best commerce graduates in the country as well as in Global.                                 |
| PEO2 | To equip students with updated inputs in the field of accounting and finance                            |
| PEO3 | To provide practical exposure as per corporate needs through summer internship and industrial training. |

#### **Program Outcomes (POs)**

|     |  |
|-----|--|
| PO1 | Ability to understand the world of trade and Commerce  |
| PO2 | Ability to apply the knowledge of Accounting, Finance and Taxation in the Global context   |
| PO3 | Ability to develop each graduate to be adept in identifying and understanding major trends in commerce in national and international level |
| PO4 | Ability to develop each graduate to be a critical thinker and strong decision maker.   |
| PO5 | Ability to develop each graduate to be an effective and professional communicator.   |
| PO6 | An understanding of professional and ethical responsibility in business related issues   |
| PO7 | Knowledge of contemporary issues in finance and accountancy  |
| PO8 | A recognition of the need for and an ability to engage in life-long learning in commercial activities                                      |
| PO9 | Enhance the skills of students competent to deal with Accounting and Finance practices at global level.                                    |

|      |   |
|------|---|
| PO10 | Develop commerce students as professional auditors and tax practitioners at national and international level. |
|------|---|

### **Bachelor of Pharmacy (B.Pharm)**

#### **Program Educational Objectives (PEOs)**

|      |  |
|------|--|
| PEO1 | To produce pharmacist workforce competent for the society.   |
| PEO2 | To produce pharmacy graduates with employable skills and high technical Competence in pharmaceutical industry and health care sectors                          |
| PEO3 | To inculcate research activity and develop passion for discovery and innovations.  |
| PEO4 | To develop entrepreneurship qualities that support growth of pharmaceutical intellectual property and contribute for economic development throughout the world |

#### **Program Outcomes (POs)**

|      |   |
|------|---|
| PO1  | Pharmacy Knowledge: Provide basic knowledge for understanding the principles and their applications in the area of Pharmaceutical Sciences and Technology.  |
| PO2  | Technical Skills: Develop an ability to use various instrument and equipment with an in-depth knowledge on standard operating procedures for the same.  |
| PO3  | Modern tool usage: Develop/apply appropriate techniques, resources, and IT tools including prediction and modeling to complex health issues and medicine effect with an understanding of the limitations.   |
| PO4  | Research and Development: To demonstrate knowledge of identifying a problem, critical thinking, analysis and provide rational solutions in different disciplines of Pharmaceutical Sciences and Technology  |
| PO5  | Lifelong Learning: Develop an aptitude for continuous learning and professional development with ability to engage in pharmacy practice and health education programs   |
| PO6  | Communication: Communicate effectively on health care activities with the medical community and with society at large, to comprehend drug regulations, write health reports and provide drug information.   |
| PO7  | The Pharmacist and Society: Apply reasoning informed by the contextual knowledge to comprehend medical prescription, perform patient counselling and issue or receive clear instructions on drug safety and the consequent responsibilities relevant to the professional pharmacy practice. |
| PO8  | Ethics: Follow the code of ethics and commit to professional values and responsibilities and norms of the pharmacy practice.  |
| PO9  | Environment and Sustainability: Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of and need for sustainable development.   |
| PO10 | Pharmaceutical product development: To apply the knowledge of manufacturing, formulation and quality control of various pharmaceutical and cosmetic products  |
| PO11 | Competitive skills: Develop problem-solving skills and aptitude to participate and succeed in competitive examinations.   |
| PO12 | Invention and Entrepreneurship: Application of technical skills to integrate health care systems, design an effective product with commercial advantage and societal benefit, perform risk analysis and become entrepreneur.  |

### **Bachelor of Business Administration – Bachelor of Law (BBA- LLB)**

#### **Program Education Outcomes (PEOs)**

|      |   |
|------|---|
| PEO1 | Should be able to stimulate compassion and creativity in the field of legal profession. |
|------|---|

|      |   |
|------|---|
| PEO2 | Strengthen intellectual growth and the capacity to develop ingenious and conscientious legal solutions to unique and varying tribulations of society and business environment |
| PEO3 | Acquire leadership capabilities necessary for the competent practice of law and lifelong learning in practice   |
| PEO4 | Pursue advanced education, research and development, and other innovative and pioneering efforts in the field of law  |

#### **Program Outcomes (POs)**

| <b>PO NO</b> | <b>Description</b>   |
|--------------|--|
| PO1          | Ability to gain knowledge of law and the application of such knowledge in practice         |
| PO2          | Be proficient to use the fundamentals and vital principles in law                          |
| PO3          | Identify and solve the social, economic and cultural issues in law                         |
| PO4          | Ability to synthesis academic knowledge to legal problems and find solutions               |
| PO5          | Recognize the ethical and professional responsibilities and the norms of advocacy          |
| PO6          | Ability to research, review, comprehend and utilize such knowledge for Law reform          |
| PO7          | Converse effectively and work in inter-disciplinary groups and legal institutions          |
| PO8          | To guide the trainee legal practitioners in the right direction                            |
| PO9          | Ability to understand the real-life situation in legal profession and practice             |
| PO10         | To make the student to learn aesthetically pleasing practice and make it socially relevant |

#### **Bachelor of Law (LLB)**

##### **Program Education Outcomes (PEOs)**

|      |   |
|------|---|
| PEO1 | Should be able to stimulate compassion and creativity in the field of legal profession.   |
| PEO2 | Strengthen intellectual growth and the capacity to develop ingenious and conscientious legal solutions to unique and varying tribulations of society and business environment |
| PEO3 | Acquire leadership capabilities necessary for the competent practice of law and lifelong learning in practice   |
| PEO4 | Pursue advanced education, research and development, and other innovative and pioneering efforts in the field of law  |

#### **Program Outcomes (POs)**

| <b>PO NO</b> | <b>Description</b>   |
|--------------|--|
| PO1          | Ability to gain knowledge of law and the application of such knowledge in practice |
| PO2          | Be proficient to use the fundamentals and vital principles in law                  |
| PO3          | Identify and solve the social, economic and cultural issues in law                 |

|      |  |
|------|--|
| PO4  | Ability to synthesis academic knowledge to legal problems and find solutions               |
| PO5  | Recognize the ethical and professional responsibilities and the norms of advocacy          |
| PO6  | Ability to research, review, comprehend and utilize such knowledge for Law reform          |
| PO7  | Converse effectively and work in inter-disciplinary groups and legal institutions          |
| PO8  | To guide the trainee legal practitioners in the right direction                            |
| PO9  | Ability to understand the real-life situation in legal profession and practice             |
| PO10 | To make the student to learn aesthetically pleasing practice and make it socially relevant |

### B.Sc (Hons) Agriculture

#### Program Education Outcomes (PEOs)

|      |  |
|------|--|
| PEO1 | To produce quality graduates in the field of Agriculture   |
| PEO2 | To keep student with updated knowledge in Agriculture      |
| PEO3 | To provide practical knowledge in the field of Agriculture |

#### Program Outcomes (POs)

|     |  |
|-----|--|
| PO1 | <b>Agricultural Knowledge:</b> To impart the knowledge of agricultural science with respect to agronomical and horticultural crops and to develop skills to solve complex problems   |
| PO2 | <b>Analysing ability:</b> To be well versed with different methodologies of crop growth monitoring, soil analysis methods, plant protection analysis, production and processing of seed (both straight varieties and hybrids) of various crops, biochemical analytic methods and by collecting the data through various field and lab equipment,   |
| PO3 | <b>Identify the solutions and problemsolving ability:</b> To identify various pests and disease of crops both field and Horticultural and suggest management strategies, which are location specific, environmentally safe, and economically sound.  |
| PO4 | <b>Research Insight:</b> To be able to aid in Agricultural Research Systems in the areas of Crop Management, Crop Production, Irrigation Management, Weed Management and crop improvement programs involving both conventional and biotechnological approaches   |
| PO5 | <b>Modern tools (equipment /software's) usage:</b> To be able to effectively use software tools, statistical applications, mathematical packages/models expertise in techniques of Extension and modern tools of ICTs to analyse, interpret and by effectively handling the data and to draw valid conclusions thereon and to transfer Agriculture technologiesfor modernize Agriculture use |
| PO6 | <b>Ethics:</b> ability to apply ethical principles and commit to professional ethics and responsibilities and norms in agricultural practice committing for organic farming methods with less environmental footprint  |
| PO7 | <b>Environment, Sustainability and Society at thought and deed:</b> Ability to demonstrate the agricultural solutions to contemporary issues by understanding their impact on societal and environmental contexts, towards sustainable development   |
| PO8 | <b>Individual and team work:</b> To develop individual competence, critical and complex problem solving skills to solve the practical problems in the field of Agriculture and to demonstrate the abilities to work in a team.   |
| PO9 | <b>Communication:</b> To develop oral and written communication skills to articulate the   |

|      |   |
|------|---|
|      | agriculture technologies acting as liaison between Agricultural technologies and farmer community through effective modern communication approaches.  |
| PO10 | <b>Project formulation and sourcing of finance:</b> To come out as a good Agro-entrepreneur, Farm Manager/Agribusiness Person with sound knowledge in rural credit flow, banking systems, farm/enterprise budgeting, project management, marketing, supply chain management, Agricultural Policies for Governments  |
| PO11 | <b>Life long learning and upgradation:</b> To be able to devise and manage profitable location-specific farming systems through integration of different enterprises such as crops (Field, Horticultural, Fodder, Flower, medicinal, etc.), live-stock, Agro-forestry, fisheries, sericulture, Apiculture, etc. duly managing Agri-Resources by iteratively and continuously learning and implementing the solutions for effective implementation for sustainable Agriculture with less environmental footprints. |

### MHS PG Programs

#### Master of Sciences (M.Sc Chemistry)

##### Program Educational Objectives (PEOs)

|      |   |
|------|---|
| PEO1 | To prepare students for successful practice in diverse fields of Chemical Sciences such as pharmaceutical, chemical, polymer / advanced material, energy, biotechnology and environmental engineering and in the fields of Societal expectations on time. |
| PEO2 | To prepare students for advanced studies in Chemical sciences and its allied fields.  |
| PEO3 | To ensure our students to achieve excellence and get selected for high-ranking industrial, academic, Government and other professional positions, as well as to inculcate leadership qualities.   |
| PEO4 | To develop graduate's skills and awareness to become socially, ethically and morally responsible individual in all the challenges they take over, in our communities and in the field of chemical Sciences.   |

##### Program Outcomes (POs)

| PO NO | Description   |
|-------|---|
| PO1   | Ability to understand the scope and principle of Chemistry.   |
| PO2   | Ability to understand and implement complex chemical equations and chemical compositions.   |
| PO3   | Ability to analyze the outcomes of experiments on chemicals and their product   |
| PO4   | Ability to understand the chemicals deeply and their effects on environment and health.   |
| PO5   | Ability to connect the latest developments in Chemistry with the knowledge attained during academics and come up with better ideas. |
| PO6   | Awareness of the impact of Chemistry in all domain of the society including environment, manufacturing, and production, etc.        |
| PO7   | Use modern techniques, decent equipments and Chemistry software's   |

##### Programme Specific Outcomes (PSOs)

|      |   |
|------|---|
| PSO1 | Global level research opportunities to pursue Ph.D programme targeted approach of CSIR – NET examination.             |
| PSO2 | Enormous job opportunities at all level of chemical, pharmaceutical, food products, life oriented material industries |
| PSO3 | Specific placements in R & D and synthetic division of polymer industries & Allied Division                           |



|      |  |
|------|--|
| PSO4 | Discipline specific competitive exams conducted by service commission. |
|------|--|

### **Master of Sciences (M.Sc Applied Mathematics)**

#### **Program Educational Objectives (PEOs)**

|      |  |
|------|--|
| PEO1 | To assimilate and understand a large body of complex concepts and their interrelationships.  |
| PEO2 | Apply Advanced Mathematical Techniques to formulate, solve and analyze mathematical models of real-life problems   |
| PEO3 | To identify and apply suitable computational mathematical tools and techniques to solve various complex Engineering problems and meaningful physical interpretation. |
| PEO4 | To Demonstrate, communicate, and work, with people having diversified backgrounds in individual and group settings, in an ethical and professional manner.           |

#### **Program Outcomes (POs)**

| <b>PONO</b> | <b>Description</b>  |
|-------------|---|
| PO1         | To identify, formulate, abstract, and solve mathematical problems that use tools from a variety of mathematical areas, including algebra, analysis, probability, numerical analysis and differential equations  |
| PO2         | The program prepares students for a variety of mathematical careers. The current program has three identified tracks viz: Cryptography, Data analysis, Applied Mechanics, and Ph.D preparation. Students should be prepared for employment requiring mathematical skill and sophistication at the Master's level. |
| PO3         | Apply mathematics and technology tools (MATLAB, R, and MINITAB) to solve problems.  |
| PO4         | Ability to do research in a particular topic agreed with a Supervisor, on which the student publish a research paper in a peer reviewed indexed journal.  |
| PO5         | To maintain a core of mathematical and technical knowledge that is adaptable to changing technologies and provides a solid foundation for lifelong learning.  |
| PO6         | Promote interdisciplinary research among allied subjects related to applied mathematics   |
| PO7         | Use symbolic and numerical software as part of practical computation.   |

### **Master of Sciences (M.Sc Physics)**

#### **Program Educational Objectives (PEOs)**

|      |   |
|------|---|
| PEO1 | To develop strong student competencies in Physics and its applications in a technology-rich, interactive environment.   |
| PEO2 | To develop strong student skills in research, analysis and interpretation of complex information  |
| PEO3 | To prepare the students to successfully compete for employment in Electronics, Manufacturing and Teaching and to offer a wide range of experience in research methods, data analysis to meet the industrial needs |

#### **Program Outcomes (POs)**

| <b>PONO</b> | <b>Description</b>  |
|-------------|---|
| PO1         | Ability to understand the scope and principle of Physics.                                 |
| PO2         | Ability to solve the physical problems by applying physics principles                     |
| PO3         | Ability to analyze the outcomes of Physics and electronics experiments and their product. |

|     |  |
|-----|--|
| PO4 | Ability to demonstrate the knowledge in physics for managing the physics projects effectively.                                   |
| PO5 | Ability to connect the latest developments in Physics with the knowledge attained during academics and come up with better ideas |
| PO6 | Ability to do research in the fields related to Materials and Electronics.   |
| PO7 | Ability to understand and solve the complexity of Solid state physics.   |

### **Master of Business Administration (MBA)**

#### **Program Educational Objectives (PEOs)**

|      |  |
|------|--|
| PEO1 | Make students to apply techniques of business analysis, data management and problem-solving skills in order to support business management decision-making in the field of relevance.  |
| PEO2 | Inculcate leadership skills needed for implementing and coordinating organizational activities and managing change to explore business problems in depth for developing their functional knowledge to think strategically and to lead, motivate and manage teams across borders. |
| PEO3 | Nurture with abilities to integrate business knowledge and management techniques to aid planning and control in a changing environment and to enhance better career paths.   |

#### **Program Outcomes (POs)**

| PO NO | Description   |
|-------|---|
| PO1   | Core Business Knowledge: Able to synthesize the knowledge, management skills, and tools acquired in the program, which will be helpful to shape the organizations effectively.  |
| PO2   | Career Planning and Decision Making: Able to excel in their chosen career paths, by learning on how to live, adapt and manage business environmental change through decision making.  |
| PO3   | Critical Thinking and Leadership: Able to reflect upon and explore business and research problems in depth, to demonstrate leadership skills and to demonstrate ability to pursue new knowledge necessary to succeed in dynamic domestic and international business environments. |
| PO4   | Manager & Society: Able to emerge as efficient managers equipped with innovation, rationality and application-oriented decision-making in the context of the ever-changing business environment.  |
| PO5   | Team Building & Business Communication: Able to communicate effectively and to perform different roles efficiently as an individual or in a team in multi-disciplinary streams with entrepreneurial edge.   |
| PO6   | Business perspective and Sustainability: Able to gain an understanding of professional, legal, financial, marketing, production & operational activities, logistics, ethical, social issues and responsibilities  |
| PO7   | Application of Statistical and Analytical tools: Able to gain knowledge of contemporary issues and develops an art of using current techniques, skills, and necessary analytical tools for managerial practice.   |

### **Master of Computer Applications**

#### **Program Educational Objectives (PEOs)**

|      |   |
|------|---|
| PEO1 | The Graduate will exhibit a great sense of leadership with competent knowledge, innovation and creativity in their field of specialization                                      |
| PEO2 | The Graduate will exhibit professionalism, ethical attitude communication skills and team work in their profession and adapt to current trends by engaging in lifelong learning |

**Program Outcomes (POs)**

| PO NO | Description  |
|-------|--|
| PO1   | <b>Computational Knowledge:</b> Acquire knowledge of advanced programming practices, computing skills, and domain knowledge for developing application software to solve real world problems   |
| PO2   | <b>Problem Analysis:</b> Ability to identify computing problem and analyze the component of problem using principles of mathematics, specialized computing and application strategies.         |
| PO3   | <b>Design and Development:</b> Design and develop efficient solutions for complex problems across different domains.   |
| PO4   | <b>Research:</b> Apply research-based knowledge and methodologies to analyze, design, validate result and interpret it into optimized conclusions  |
| PO5   | <b>Modern Tool Usage:</b> Create, select, adapt and apply appropriate techniques, resources and modern IT tools to solve complex computing problems  |
| PO6   | <b>Project Management:</b> Demonstrate knowledge on project management principles, interpersonal skill and communicate in the team effectively to deliver solutions and operational procedures |
| PO7   | <b>Communication:</b> Communicate effectively in the team and the user to deliver solution and operational procedures with professional standards and ethics                                   |

**Master of Pharmacy (M.PHARM) – PHARMACEUTICS****Programme Educational Objectives (PEOs)**

|      |   |
|------|---|
| PEO1 | <b>Knowledge &amp; Understanding:</b> The pharmacy students should possess upon graduation, knowledge of pharmaceuticals, medication use and their safety and effectiveness.  |
| PEO2 | <b>Skill:</b> The graduate should be able to demonstrate his skills in providing quality pharmaceuticals, drug information and therapy including legal and ethical aspects.   |
| PEO3 | <b>Attitude:</b> The graduate should be able to inculcate the current knowledge, changes in technology, continuous upgrading of professional information and participation in implementation of National health programmes. |

**Programme Outcomes (POs)**

| PO NO | Description  |
|-------|--|
| PO1   | <b>Pharmaceutical Sciences Knowledge:</b> Apply the knowledge of mathematics, science, pharmaceutical physical properties of the different pharmaceutical ingredients and the factor influencing them is very valuable for pharmaceutical dosage form design. Enables the students to learn about different packaging materials used in pharmaceutical industry and the factors governing their use. |
| PO2   | <b>Unit Operations:</b> Pharmaceutical engineering renders knowledge about the basic unit operations that are taking place in pharmaceutical industry and the different factors associated with it. This information is useful for both pharmaceuticals and pharmaceutical engineering.  |
| PO3   | <b>Entrepreneurship:</b> The knowledge on different pharmaceutical dosage forms are imparted on students. This knowledge comes while handling a pharmacy or a manufacturing unit or in the further courses.  |
| PO4   | <b>Design/Development of solutions:</b> The information on solid dosage forms like tablets and capsules, their formulation and quality control serves as an important prerequisite for dosage form design.   |
| PO5   | <b>Application oriented Knowledge:</b> The knowledge of bio-pharmaceutics enables the students to visualize the effect of pharmacokinetic (ADMET) parameters on the biological effect of the drug. The correlation of pharmacokinetics and   |

|      |   |
|------|---|
|      | pharmacodynamics is thus introduced and is experimentally explained to them.  |
| PO6  | <b>Conduct investigations of complex problems:</b> To understand biopharmaceutical principles and pharmacokinetic principles through different compartment models, multiple dosage regimens, non-linear pharmacokinetics, and assessment of bioavailability and bioequivalence. |
| PO7  | <b>Effective Citizenship:</b> Demonstrate empathetic social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.   |
| PO8  | <b>Ethics:</b> Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.   |
| PO9  | <b>Environment and Sustainability:</b> Understand the issues of environmental contexts and sustainable development.   |
| PO10 | <b>Self-directed and Life-long Learning:</b> Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes.   |

#### Program Specific Outcomes (PSOs)

|      |   |
|------|---|
| PSO1 | <b>Knowledge and skills:</b> To impart knowledge and skills on criteria for formulation design, product development, evaluation, and optimization for better therapeutic efficacy.  |
| PSO2 | <b>Research &amp; Career:</b> To create a talent pool by involving students in research projects and to make students to undertake research projects for scientific contribution to society. To foster ambitious desire among students to undertake higher studies, career growth and life-long learning. |
| PSO3 | <b>Entrepreneurship:</b> Set-up pharmaceutical production unit to design and formulate pharmaceutical dosage forms. Validate the knowledge and skills gained through education to gain recognition in Pharmaceutical society and related field.   |

#### Doctor of Pharmacy (PHARM.D)

##### Programme Educational Objectives (PEOs)

|      |   |
|------|---|
| PEO1 | To provide a comprehensive pharmaceutical education leading to Doctor of Pharmacy (Pharm. D.) degree.   |
| PEO2 | To provide hands on training through state of art infrastructure to meet challenges of drug discovery and pharmaceutical care.  |
| PEO3 | To integrate knowledge and skills with clinical research to promote health care.  |
| PEO4 | Understand and appreciate the role of health care education in the development of society and on mankind's welfare. To inculcate leadership capabilities as member of health care team. |

##### Programme Outcomes (POs)

| PO NO | Description  |
|-------|--|
| PO1   | <b>Life Sciences Knowledge:</b> Impart fundamental knowledge of physiology, anatomy, formulation science, and applied biochemistry, Chemistry of organic and inorganic compounds as per the monographs.  |
| PO2   | <b>Pathology and Pharmacology Knowledge:</b> Impart a thorough knowledge of relevant aspects of pathophysiological mechanisms, application of microbiology in pharmacy field, medical uses of natural drugs, and Pharmacological aspects of drugs. |
| PO3   | <b>Community Pharmacy Knowledge:</b> To improve skills such as dispensing of drugs, ensure safe medication usage, patient counseling and improve patient care in community pharmacy set up.  |

|      |   |
|------|---|
| PO4  | <b>Clinical Pharmacist Knowledge:</b> To enhance practical clinical discussions, attending ward rounds, follow-up progress of patients, case presentation at discharge are imbibed through hospital postings. Participation in hospital camps, disease awareness programs will inculcate the social responsibility of the clinical pharmacists. |
| PO5  | <b>Environment and Sustainability:</b> To understand the instrumental techniques applied in Good Laboratory Practice and following ICH-GCP guidelines, total quality management, quality review and documentation and study of regulatory bodies such as Drugs and Cosmetics Act, CDSCO guidelines, pertaining to regulatory environment.       |
| PO6  | <b>Design/Development of solutions:</b> To study the modern concept of rational drug design such as Quantitative Structure Activity Relationship, Computer Aided Drug Design and concept of antisense molecules.  |
| PO7  | <b>Investigations of Complex Problems:</b> To understand biopharmaceutical principles and pharmacokinetic principles through different compartment models, multiple dosage regimens, non-linear pharmacokinetics, and assessment of bioavailability and bioequivalence.   |
| PO8  | <b>Toxicology Knowledge:</b> To understand the toxicological aspects of individual class of xenobiotics such as pesticides, opiates, NSAIDs, Caustics, radiation, heavy metals, plant, food poisonings, snake bites, and envenomations.   |
| PO9  | <b>Ethics:</b> To understand the clinical aspects of drug development, such as phases, ethical issues, and roles and responsibilities of clinical trial personnel, design of clinical study documents, data management and safety monitoring in clinical trials.  |
| PO10 | <b>Problem Analysis and Learning:</b> In house scientific and social poster competition, Case study presentations, prescription auditing, and contribution to drug information centre.  |

#### Program Specific Outcomes (PSOs)

|      |   |
|------|---|
| PSO1 | Preparation of individualized therapeutic plans based on diagnosis, monitoring therapy, through identification of alternatives, time-course of clinical and laboratory indices of therapeutic response and adverse effects.   |
| PSO2 | To detect, assess, and monitor adverse drug reactions, interpret selected laboratory results of specific disease states, retrieve, analyze, interpret and formulate drug or medicine information. To apply the pharmacoepidemiological methods like drug utilization review, cohort studies, meta-analysis, prescription event monitoring and study on vaccine safety, risk management and drug induced birth defects, pharmacoeconomic evaluation for cost minimization, cost-benefit, cost-effectiveness, and cost-utility evaluations. |
| PSO3 | To improve patient care in performing medication history, interpretations of laboratory data of biological samples, identifying potential-drug related influences of Pharmacotherapy. To contribute for research and progress in higher studies, career, or entrepreneurship.   |

**CHAPTER 3**  
**PROGRAMS & ELIGIBILITY CRITERIA**

**LIST OF PROGRAMS**

| S No | Program Code | Name of the Program                                |
|------|--------------|--|
| 1    | 001          | B.Tech-Bio Technology                              |
| 2    | 002          | B.Tech-Civil Engineering                           |
| 3    | 003          | B.Tech-Computer Science and Engineering            |
| 4    | 004          | B.Tech-Electronics and Communication Engineering   |
| 5    | 006          | B.Tech -Electrical and Electronics Engineering     |
| 6    | 007          | B.Tech-Mechanical Engineering                      |
| 7    | 010          | B.Tech-Artificial Intelligence and Data Science    |
| 8    | 011          | B.Tech-Computer Science and Information Technology |
| 9    | 013          | B Tech-Electronics and Computer Science            |
| 10   | 014          | B Tech-Internet of Things                          |
| 11   | 2010         | M.Tech-Bio Technology                              |
| 12   | 2021         | M.Tech-Structural Engineering                      |
| 13   | 2022         | M.Tech-Construction Technology & Management        |
| 14   | 2024         | M.Tech- Geo Technical Engineering                  |
| 15   | 2031         | M.Tech-Computer Science and Engineering            |
| 16   | 2034         | M.Tech-Digital Forencics and Cyber Security        |
| 17   | 2037         | M.Tech- Artificial Intelligence and Data Science   |
| 18   | 2042         | M.Tech-VLSI  |
| 19   | 2045         | M.Tech-Radar & Communication                       |
| 20   | 2046         | M.Tech- Internet of Things                         |
| 21   | 2071         | M.Tech-Thermal Engineering                         |
| 22   | 2075         | M.Tech-Machine Design                              |
| 23   | 2076         | M.Tech-Robotics and Automation                     |
| 24   | 2061         | M.Tech- Power Systems                              |
| 25   | 2062         | M.Tech-Power Electronics and Drives                |
| 26   | 016          | Bachelor of Architecture                           |

|    |      |                                     |
|----|------|-------------------------------------|
| 27 | 017  | Bachelor of Computer Applications   |
| 28 | 018  | Bachelor of Pharmacy                |
| 29 | 052  | B.Com                               |
| 30 | 054  | Bachelor of Business Administration |
| 31 | 057  | Bachelor of Arts                    |
| 32 | 061  | B.Sc (Hons) Agriculture             |
| 33 | 059  | LLB                                 |
| 34 | 055  | BBA-LLB                             |
| 35 | 2018 | Pharm D                             |
| 36 | 2019 | M.Pharmacy                          |
| 37 | 2210 | M.Sc. (Applied Mathematics)         |
| 38 | 2220 | M.Sc. (Physics)                     |
| 39 | 2230 | M.Sc. (Chemistry)                   |
| 40 | 2510 | Master of Business Administration   |
| 41 | 2511 | Master of Computer Applications     |

### Eligibility Criteria

#### B. Tech - Bachelor of Technology

| S.no | Program   | Duration (Years) | Eligibility  |
|------|---|------------------|--|
| 1    | B.Tech in BioTechnology (BT)                                  | 4                | 10 +2 or equivalent at least 60% in aggregate and 60% and above (or) equivalent CGPA in Group subjects / Physics, Chemistry and Mathematics, (For BT program physics, chemistry and biology are also eligible) |
| 2    | B.Tech in Civil Engineering (CE)                              | 4                |  |
| 3    | B.Tech in Computer Science & Engineering (CSE)                | 4                |  |
| 4    | B.Tech in Electronics and Communication Engineering (ECE)     | 4                |  |
| 5    | B.Tech in Electrical and Electronics Engineering (EEE)        | 4                |  |
| 6    | B.Tech in Mechanical Engineering (ME)                         | 4                |  |
| 7    | B.Tech in Artificial Intelligence & Data Science (AI&DS)      | 4                |  |
| 8    | B.Tech in Computer Science and Information technology (CS&IT) | 4                |  |
| 9    | B.Tech in Electronics and Computer Science (ECS)              | 4                |  |
| 10   | B.Tech in Internet of Things (IOT)                            | 4                |  |

**School of Architecture**

| S.no | Program                  | Duration (Years) | Eligibility  |
|------|--------------------------|------------------|--|
| 1    | Bachelor of Architecture | 5                | 10+2 or equivalent with JEE- Paper 2 score or NATA score |

**College of Arts & Science and Humanities**

| S.no | Program                                       | Duration (Years) | Eligibility   |
|------|---|------------------|---|
| 1    | Bachelor of Arts (BA)                         | 3                | 10+2 or equivalent with at least 50% and must have qualified in KL entrance exam  |
| 2    | Bachelor of Computer Applications (BCA)       | 3                | 10+2 or equivalent with at least 50% and must have qualified in KL entrance exam  |
| 3    | Master of Science (M.Sc. Chemistry)           | 2                | Bachelor's degree in science with 55% or Equivalent CGPA with honors / in Chemistry as one of the Course.   |
| 4    | Master of Science (M.Sc. Applied Mathematics) | 2                | Any Bachelor's degree with 55% or Equivalent CGPA with honors / in Mathematics as one of the Course.  |
| 5    | Master of Science (M.Sc. Physics)             | 2                | Bachelor's degree in Science with minimum of 55% marks or equivalent CGPA in Physics as one of the Course.  |
| 6    | Master of Computer Application (MCA)          | 2                | Bachelor's Degree (Minimum of 3 Years Degree Program), with at least 55% marks or equivalent CGPA (50% in case of SC/ST) from a recognized University |

**Business School**

| S.no | Program                                     | Duration (Years) | Eligibility  |
|------|---|------------------|--|
| 1    | Bachelor of Business Administration (BBA)   | 3                | 10+2 or equivalent with at least 50% and must have qualified KL entrance exam.   |
| 2    | Bachelor of Commerce with Honor's B. Com(H) | 3                | 10+2 or equivalent with at least 50% and must have qualified KL entrance exam  |
| 3    | Master of Business Administration (MBA)     | 2                | Bachelor's degree with 55% marks or equivalent CGPA and qualified anyone (KLEFBSAT)/ ICET / MAT / CAT / XAT & Personal interview |



**College of Agriculture**

| S.no | Program                 | Duration (Years) | Eligibility   |
|------|-------------------------|------------------|---|
| 1    | B.Sc (Hons) Agriculture | 4                | 10+2 or intermediate with PCMB, PCB, PCM or Agriculture (P - Physics, C - Chemistry, M - Mathematics, B – Biology) from a recognised Board/university |

**College of Pharmacy**

| S.no | Program                        | Duration (Years) | Eligibility  |
|------|--------------------------------|------------------|--|
| 1    | Bachelor of Pharmacy (B.Pharm) | 4                | 10+2 or equivalent with at least 60% in aggregate and 50% in PCM / PCB and Qualified in any one EAMCET / NEET / Any State Level Pharmacy Entrance Exams across India |
| 2    | PHARM. D                       | 2                | 10+2 examination with Physics and Chemistry as compulsory subjects along with Mathematics or Biology   |
| 3    | M. Pharmacy in Pharmaceutics   | 2                | B.Pharmacy with 55% aggregate  |

**College of Law**

| S.no | Program   | Duration (Years) | Eligibility  |
|------|---|------------------|--|
| 1    | Bachelor of Business Administration and Bachelor of Law (BBA-LLB) | 5                | 10+2 or equivalent with at least 45% in aggregate Any StateLevel Entrance Exams across India |
| 2    | Bachelor of Law (LLB)   | 3                | 10+2 or equivalent with at least 45% in aggregate Any StateLevel Entrance Exams across India |

## CHAPTER 4

### ACADEMIC REGULATIONS

This document supplements the KLEF rules and regulations to assist all students. It is required that every individual must abide by these regulations.

- **Note:** The regulations stated in this document are subject to change or can be relaxed / modified without prior notice at the discretion of the Hon'ble Vice Chancellor.

#### Terminology

- **Academic Council:** The Academic Council is the highest academic body of the University and is responsible for the maintenance of standards of instruction, education and examination within the University. The Academic Council is an authority as per UGC regulations and it has the right to take decisions on all academic matters including academic research.
- **Academic Year:** It is the period necessary to complete an actual course of study within a year. It comprises of two consecutive semesters i.e., Even and Odd semester.
- **Audited Course:** It is a course of study which has zero credits and has a "Satisfactory" or an "Unsatisfactory" grade.
- **Backlog Course:** A course is considered to be a backlog if the student has obtained a failure grade(F).
- **Basic Sciences:** The courses of foundational nature in the areas of Mathematics, Physics, Chemistry, Biology etc., are offered in this category.
- **Betterment:** Betterment is a way that contributes towards improving the students' grade in any course(s). It can be done by either (a) re-appearing or (b) re-registering for the course.
- **Board of Studies:** Board of Studies (BOS) is an authority as defined in UGC regulations, constituted by Vice Chancellor for each of the department separately. They are responsible for curriculum design and update in respect of all the programs offered by a department.
- **Branch of Study:** It is a branch of knowledge, an area of study or a specific program (like Civil Engineering, Mechanical Engineering, Electrical and Electronics Engineering etc.)
- **Certificate course:** It is a course that makes a student gain hands-on expertise and skills required for holistic development. It is a mandatory, non-credited course for the award of degree.
- **Change of Branch:** Change of branch means transfer from one's branch of study to another.
- **Compulsory course:** Course required to be undertaken for the award of the degree as per the program.
- **Course:** A course is a subject offered by the University for learning in a particular semester.
- **Course Handout:** Course Handout is a document which gives a complete plan of the course.

It contains the details of the course viz. Course title, Course code, Pre-requisite, Credit structure, team of instructors, Course objectives, Course rationale, Course Outcomes and the relevant syllabus, textbook(s) and reference books, Course delivery plan and session plan, evaluation method, chamber consultation hour, course notices and other course related aspects. In essence, course handout is an agreement between students (learners) and the instructor.

- **Course Outcomes:** The essential skills that need to be acquired by every student through a course.
- **Credit:** A credit is a unit that gives weight to the value, level or time requirements of an academic course. The number of 'Contact Hours' in a week of a particular course determines its credit value. One credit is equivalent to one lecture hour per week or two hours per week of tutorials/ self-learning/ practical/ field work during a semester.
- **Credit point:** It is the product of grade point and number of credits for a course.
- **Credit Transfer:** The procedure of granting credit(s) to a student for course(s) undertaken at another institution.
- **Cumulative Grade Point Average (CGPA):** It is a measure of cumulative performance of a student over all the completed semesters. The CGPA is the ratio of total credit points secured by a student in various courses in all semesters and the sum of the total credits of all courses in all the semesters. It is expressed up to two decimal places.
- **Curriculum:** Curriculum is a standards-based sequence of planned experiences where students practice and achieve proficiency in content and applied learning skills. Curriculum is the central guide for all educators as to what is essential for teaching and learning, so that every student has access to rigorous academic experiences.
- **Degree:** A student who fulfils all the Program requirements is eligible to receive a degree.
- **Degree with Specialization:** A student who fulfils all the Program requirements of her/his discipline and successfully completes a specified set of Professional elective courses in a specialized area is eligible to receive a degree with specialization.
- **Department:** An academic entity that conducts relevant curricular and co-curricular activities, involving both teaching and non-teaching staff and other resources.
- **Detention in a course:** Student who does not obtain minimum prescribed marks in continuous in-semester evaluation and /or minimum prescribed attendance in a course shall be detained in that course.
- **Dropping from the Semester:** A student who doesn't want to register for the semester should do so in writing in a prescribed format before commencement of the semester.

- **Elective Course:** A course that can be chosen from a set of courses. An elective can be Professional Elective, Open Elective, Management Elective and Humanities Elective.
- **Engineering Sciences:** The courses belonging to basic evolutionary aspects of engineering from Mechanical Sciences, Electrical Sciences and Computing like Engineering Mechanics, Data structures, Network Theory, Signal Analysis etc...
- **Evaluation:** Evaluation is the process of judging the academic work done by the student in her/his courses. It is done through a combination of continuous in-semester assessment and semester end examinations.
- **Grade:** It is an index of the performance of the students in a said course. Grades are denoted by alphabets.
- **Grade Point:** It is a numerical weight allotted to each letter grade on a 10 - point scale.
- **Honors Degree:** A student who fulfills all the Program requirements of her/his discipline and successfully completes a specified set of additional courses within the same program is eligible to receive an Honors degree.
- **Humanities Elective:** A course offered in the area of Liberal Arts.
- **Industrial Training:** Training program undergone by the student as per the academic requirement in any company/firm. It is a credited course.
- **Industrial Visit:** Visit to a company/firm as per the academic requirement.
- **In-Semester Evaluation:** Summative assessments used to evaluate student learning, acquired skills, and academic attainment during a course.
- **Make-up Test:** An additional test scheduled on a date other than the originally scheduled date.
- **Management elective:** A course that develops managerial skills and inculcates entrepreneurial skills.
- **Minor Degree:** A student who fulfills all the Program requirements of her/his discipline and successfully completes a specified set of courses from another discipline is eligible to receive a minor degree in that discipline.
- **Multi- Section Course:** Course taught for more than one section.
- **Open Elective:** This is a course of interdisciplinary nature. It is offered across the University for All Programs.
- **Over loading:** Registering for more number of credits than normally prescribed by the Program in a semester.
- **Practice School:** It is a part of the total program and takes one full semester in a professional location, where the students and the faculty get involved in finding solutions to real-world

problems. A student can choose Project/Practice School during his/her 7<sup>th</sup> or 8<sup>th</sup> semester of his/her Academic Year to meet the final requirements for the award of B.Tech degree.

- **Pre-requisite:** A course, the knowledge of which is required for registration into higher level course.
- **Professional Core:** The courses that are essential constituents of each engineering discipline are categorized as Professional Core courses for that discipline.
- **Professional Elective:** A course that is discipline centric. An appropriate choice of minimum number of such electives as specified in the program will lead to a degree with specialization.
- **Program:** A set of courses offered by the Department. A student can opt and complete the stipulated minimum credits to qualify for the award of a degree in that Program.
- **Program Educational Objectives:** The broad career, professional, personal goals that every student will achieve through a strategic and sequential action plan.
- **Project:** Course that a student has to undergo during his/her final year which involves the student to undertake a research or design, which is carefully planned to achieve a particular aim. It is a credit based course.
- **Supplementary:** A student can reappear only in the semester end examination for the Theory component of a course, subject to the regulations contained herein.
- **Registration:** Process of enrolling into a set of courses in a semester/ term of the Program.
- **Re-Registration:** Student who are detained in courses due to attendance or marks criteria as per their regulation are given a chance to re-register for the same and complete it during the summer term.
- **Semester:** It is a period of study consisting of 15 to 18 weeks of academic work equivalent to normally 90 working days including examination and preparation holidays. The odd Semester starts normally in July and even semester in December.
- **Semester End Examinations:** It is an examination conducted at the end of a course of study.
- **Single Section Course:** Course taught for a single section.
- **Social Service:** An activity designed to promote social awareness and generate well-being; to improve the life and living conditions of the society.
- **Student Outcomes:** The essential skill sets that need to be acquired by every student during her/his program of study. These skill sets are in the areas of employability, entrepreneurial, social and behavioral.
- **Substitution of Elective course:** Replacing an elective course with another elective course as opted by the student.

- **Summer term:** The term during which courses are offered from May to July. Summer term is not a student's right and will be offered at the discretion of the University.
- **Term Paper:** A 'term paper' is a research report written by students that evolves their course-based knowledge, accounting for a grade. Term paper is a written original research work discussing a topic in detail. It is a credit-based course.
- **Under-loading:** Registering for lesser number of credits than normally prescribed for a semester in that Program.
- **Course Withdrawal:** Withdrawing from a Course means that a student can drop from a course within the first two weeks of the odd or even Semester (deadlines are different for summer sessions). However, s/he can choose a substitute course in place of it by exercising the option within 5 working days from the date of withdrawal.

## **CHAPTER 5**

### **ACADEMIC ISTRUCTIONS**

#### **General Behavior**

- Student should communicate in English with faculty and other students while he/ she is in campus.
- Students are expected to wish/greet all officials of the KLEF with due respect.
- Students should be courteous and polite while communicating with all Faculty & staff.
- Students should maintain silence and/or speak in a polite way in and around the classrooms, library, laboratories, and offices of the Deans, Program Chairs, Senior Officials, faculty rooms and corridors of academic buildings.
- It must be noted that shouting, talking in loud voice or in chorus, using indecent, abusive and discourteous language anywhere within the institution premises are considered serious acts of indiscipline and are punishable.
- Students should not loiter during the free time in the university campus.
- Students should not issue any public or press statement, send letters to editors, government, public servants or notaries without prior permission and approval of the Registrar of KLEF in writing.
- Students should keep the status, dignity, prestige and reputation of KLEF high and not engage in anything that might directly or indirectly undermine the standing of the institution.
- Students must always adhere to a prescribed/decent dress code befitting the dignity of a technical/professional student within the campus.
- Ragging of any student is a serious act of indiscipline and has been totally banned by the Hon'ble Supreme Court of India.
- A student found involved in any form of ragging, verbal or physical, inside or outside the institutional campus, hostels, or buses shall be treated as per the anti-ragging rules of the KLEF.
- Students must not be involved in quarreling or fighting or any indecent verbal or physical activity among themselves, or with staff and faculty or visitors.
- Direct or indirect involvement in any such activity will be considered as serious breach of discipline and strict disciplinary action will be taken against the students that engage in such activities.
- Students are not allowed to sit on the steps, boundary walls on the higher floors of any building, or engage in gossiping, making noise or any other such activity.

**KLEF Working Hours**

- KLEF operates between 7:20 AM to 5.00 PM (in shifts) on all weekdays.

**Class Environment**

The institute is a community of learners. Students have a responsibility of creating and maintaining an environment that supports effective learning to receive effective instructions in classrooms and laboratories. KLEF expects students to conduct themselves in an orderly and cooperative manner by adhering to University Rules & Regulations.

**Laboratory Environment**

- A conducive learning environment in the laboratory is essential and the students are advised to follow the guidelines mentioned below:
- Always listen carefully to the faculty especially for the safety precautions to take in the laboratories. Accidents resulting in injuries may occur if precautions are not taken.
- Eating in laboratories is strictly prohibited.
- Proper dress code is to be followed as prescribed by faculty in each lab.
- Students should familiarize themselves with the location of all the safety equipment which may be available.
- Follow evacuation procedures quickly and quietly, if needed.
- Students should always conduct themselves in a responsible and cautious manner. Risky behaviors such as pushing, running, jumping etc., are unwarranted.
- Only materials required to complete and record the experiment instructions, (e.g. pencils or graph paper, etc.) should be brought into the laboratory.
- Equipment must be carefully handled to prevent breakage or damage, otherwise appropriate penalties/disciplinary action may be believed/imposed.
- Lab station must be cleaned prior to leaving a lab.
- Any accident, no matter how small or big, must be reported to the concerned faculty immediately.

**Registration Process**

- For every course, the student must undertake the registration process prior to commencement of the coursework, based on the following conditions.
- Registration into a course will be permitted only for such courses, which are offered by KLEF in that semester.
- A student must clear the pre-requisite(s) if any, to register into a course.
- KLEF reserves the right to register.
- Registration for add/drop/change of a course will be permitted only within one week from

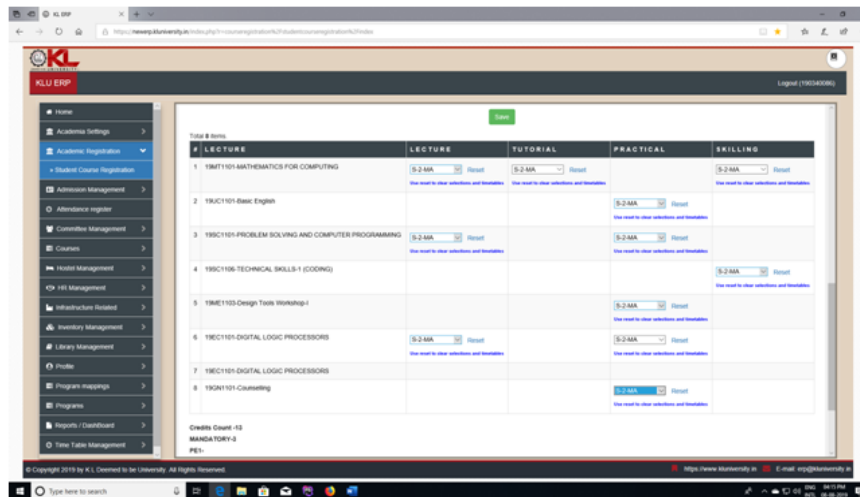


the scheduled date of commencement of classes.

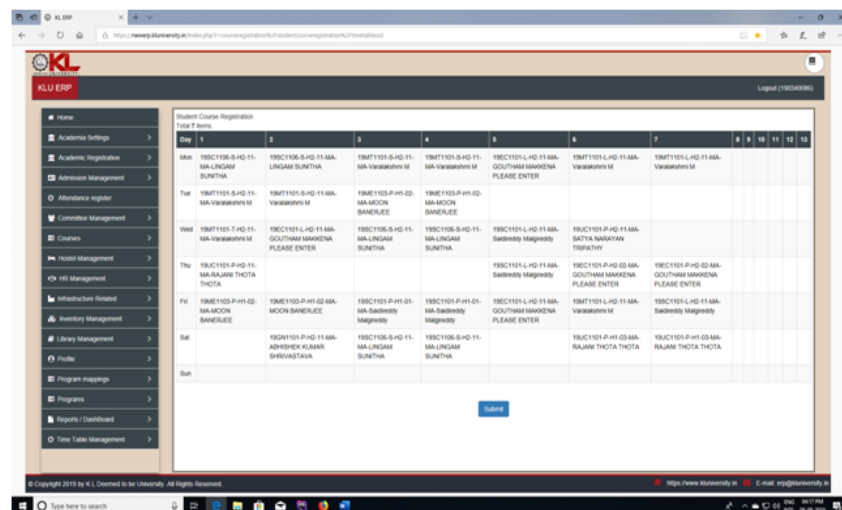
- Students can register up to a maximum of 32 credits of their choice in a semester to meet their program requirements.
- Students, who wish to register for additional credits through Overloading or less credits through Under loading, must seek prior permission from Dean- Academics.
- Students who have opted for minor degree, Honors degree, can register for a greater number of credits in a semester through Overloading (subjected to guidelines appropriate to compliance on eligibility) .
- KLEF reserves the right to withdraw within one week of the commencement of the semester any elective course offered, if adequate number of students have not registered or for any other administrative reasons. In such cases, the students are permitted to register for any other elective course of their choice provided they have fulfilled the eligibility conditions.
- KLEF reserves the right to cancel the registration of a student from a course or a semester or debar from the degree on disciplinary / plagiarism grounds.
- A student is solely responsible to ensure that all conditions for proper registration are satisfied. If, there is any clash in the timetable, it should be immediately brought to the notice of the Department Year coordinator for necessary corrective action. The registration may be cancelled for a course or the entire semester either by KLEF if any irregularity is found at a later stage.

**Student Course Registration Process:**

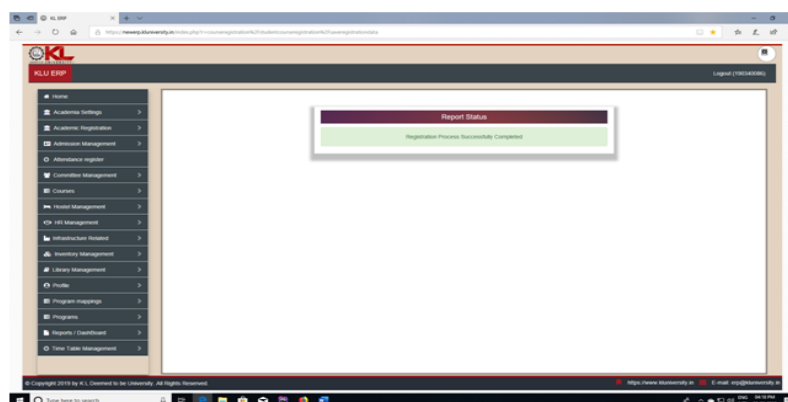
- To complete the student registration, student login to new ERP portal with their valid login credentials.
- After login student should click on Academic Registrations Student Course Registration. Now Student can view the courses and sections in dropdown menus.
- Student can select the sections against the courses on their own choice as mentioned in the following screen shot.
- Student can view the timetable on top of the selection of each course and section.



After completing the selection student need to click on Save to save the timetable, it will be directed to the following screen shot



After duly verifying the timetable student needs to click on Submit to complete the Registration process



After Clicking the Submit the above screen will be displayed and contains the message “Student Registration Successfully Completed”.

## CHAPTER 6

### REQUIREMENTS FOR THE AWARD OF DEGREE

#### For B. Tech Programs:

##### The student is awarded a B.Tech. degree provided she/he

- Must successfully earn a minimum of 160-170 credits, as stipulated in the program structure.
- Must successfully undertake specific training in focused areas that enable students to be successful in their chosen career tracks. The focused areas are: (a) Employment in MNCs, (b) Civil Services (c) Higher Studies (d) Research and (e) Entrepreneurship.
- Must successfully complete Minimum three (3) certificate courses (four (4) in case of CSE, CSIT and AI&DS students) in discipline domain areas, in addition to one from yoga / sports & games / fine arts.
- Must successfully complete Social Internship and Technical Internship.
- Must have successfully obtained a minimum CGPA of 5.25 at the end of the program.
- Must have finished all the above-mentioned requirements in less than twice the period mentioned in the Academic structure for each program, which includes deceleration period chosen by the student, deceleration imposed by KLEF or debarred from the KLEF.

#### Academic Flexibilities:

- **Honors degree** can be awarded if students complete additional courses from their core program and earn 20 extra credits or Students may acquire 20 credits extra by doing advanced courses.
- **Specialization:** Specialization degree can be awarded if Student completes five professional electives and one skill development course in the same track and/or earns minimum of 17 credits from the Professional elective courses.
- **Minor:** Minor degree can be awarded if student fulfills all the program requirements of their discipline and are successful in completing a specified set of courses from another discipline through which they earn an additional 20 credits are eligible to get minor degree in that discipline.

**Degree Requirements for UG and PG programs**

| Name of the program         | Professional Elective courses credits | Skill Development Courses credits | Open Electives credits | Management Elective credits | Foreign Language Elective credits | No. of Certificate courses in domain | No. of Certificate course on yoga /sports/finearts | Internships / Practice School / Projects / Term Paper credits | Studio / Clinical credits | Honors credits | Specialization credits | Humanities & Social Sciences Courses credit | Basic Sciences Courses credits | Engineering Sciences Courses credits | Professional Core Courses credits | Flexi – Core Courses credits | Total Credits / Total Courses * | Minimum CGPA / Percentage |
|-----------------------------|---------------------------------------|-----------------------------------|------------------------|-----------------------------|-----------------------------------|--------------------------------------|--|---|---------------------------|----------------|------------------------|---|--------------------------------|--------------------------------------|-----------------------------------|------------------------------|---------------------------------|---------------------------|
| Bachelor of Architecture    | 26                                    | 11                                | 5                      |                             |                                   |                                      |  | 26  |                           |                |                        |   |                                | 63                                   | 147                               |                              | 278                             | 5.5                       |
| Bachelor of Arts            | 40                                    | 4                                 |                        |                             |                                   |                                      |  | 12  |                           | 20             |                        | 14  | 2                              |                                      | 50                                |                              | 122                             | 5.25                      |
| BCA                         | 16                                    | 2                                 | 6                      |                             |                                   |                                      |  | 16  |                           | 20             |                        | 8   | 6                              |                                      | 66                                |                              | 120                             | 5.25                      |
| BBA                         | 18                                    |                                   |                        |                             | 3                                 |                                      |  |   |                           |                |                        | 13  | 8                              |                                      | 101                               |                              | 143                             | 5.25                      |
| B.Com                       | 20                                    |                                   |                        |                             | 2                                 |                                      |  |   |                           |                |                        | 12  | 5                              |                                      | 112                               |                              | 151                             | 5.25                      |
| B.Tech.                     | 15 - 17                               | 4 - 9                             | 3 - 9                  | 3                           | 2                                 | 3-4                                  | 1  | 15 - 19   |                           | 20             | 5                      | 12  | 20 - 26                        | 23 - 32                              | 47 - 59                           | 3 - 9                        | 160 – 166                       | 5.25                      |
| B.Pharm                     | 8                                     | 2                                 |                        |                             |                                   |                                      |  | 6   |                           |                |                        | 9   | 5                              |                                      | 186                               |                              | 216                             | 5.0                       |
| B.Sc.(Hons.) Agriculture    | 3                                     |                                   |                        |                             |                                   |                                      |  |   |                           |                |                        | 11  |                                |                                      | 168                               |                              | 206                             | 5.0                       |
| LLB.                        |                                       | 23                                |                        |                             |                                   |                                      |  | 2   |                           |                |                        |   |                                |                                      | 119                               |                              | 144                             | 5.0                       |
| BBA-LLB                     | 32                                    | 17                                |                        |                             |                                   |                                      |  | 4   | 18                        |                |                        | 10  |                                |                                      | 164                               |                              | 231                             | 5.0                       |
| M.Sc. (Chemistry)           | 27                                    |                                   |                        |                             |                                   |                                      |  | 12  |                           |                |                        | 2   |                                |                                      | 58                                |                              | 99                              | 5.25                      |
| M.Sc. (Applied Mathematics) | 12                                    | 1                                 |                        |                             |                                   |                                      |  | 12  |                           |                |                        | 4   |                                |                                      | 65                                |                              | 94                              | 5.25                      |
| M.Sc. (Physics)             | 9                                     |                                   |                        |                             |                                   |                                      |  | 10  |                           |                |                        | 2   |                                |                                      | 75                                |                              | 96                              | 5.25                      |
| MBA                         | 30                                    |                                   |                        |                             |                                   |                                      |  | 14  |                           |                |                        | 7   | 7                              |                                      | 43                                |                              | 102                             | 5.25                      |
| M.Tech                      | 12                                    |                                   |                        |                             |                                   |                                      |  | 42  |                           |                |                        | 32  |                                |                                      |                                   |                              | 84                              | 5.25                      |
| M.Pharm                     |                                       | 19                                |                        |                             |                                   |                                      |  | 30  |                           |                |                        |   |                                |                                      | 48                                |                              | 97                              | 5.0                       |
| Pharm.D                     |                                       |                                   |                        |                             |                                   | 3                                    |  |   |                           |                |                        |   |                                |                                      |                                   |                              | 48*                             | 50%                       |
| MCA                         | 17                                    |                                   |                        |                             |                                   |                                      |  | 12  |                           |                |                        | 2   |                                |                                      | 49                                |                              | 80                              | 5.25                      |

## CHAPTER 7

### PROGRAM CURRICULUM

For an academic program the curriculum is the basic framework that will stipulate the credits, category, course code, course title, course delivery (Lectures / Tutorials / Practice / Skill / Project / Self Study / Capstone Design etc.), in the Choice Based Credit System. However, all such are essentially designed, implemented and assessed in Outcome Based Education Framework.

#### 7.1 Program Structure

An Academic Year is made of two semesters each is of, approximately 16±1 week duration and each semester is classified as:

Odd Semester (July–December)

Even Semester (December –May).

KLEF may offer summer term between May and June.

All courses are offered under three categories vis-à-vis. even, odd and dual semester courses.

Students have the flexibility to choose courses of their own choice prescribed by the KLEF.

From 3<sup>rd</sup> Semester onwards a student can register for a maximum of 30 credits, other than audited and certificate courses per semester. This is not applicable when student exercises the overloading option (while doing project work / practice school / Minor degree / Honors degree program / specialization).

Every course has a Lecture -Tutorial/Studio-Practice-Skill (L-T/ST-P-S) component attached to it.

Based upon the L-T-P-S structure the credits are allotted to a course using the following criteria.

- Every Lecture / Tutorial hour is equivalent to one credit.
- Every Practical hour is equivalent to half credit.
- Every skill-based practice hour is equivalent to quarter credit.
- If the calculated value of credit is a fraction, it is rounded to the next integer.
- Every (ST) Studio hour is equivalent to one and a half credit.

**Audit Courses**

Any course offered in the University that has no assessment of student performance and no grading.

**Induction Courses:**

Student who gets admitted into B.Tech. program must complete a set of Induction courses for a minimum period of 3 weeks and obtain a “Satisfactory” result prior to registering into 1<sup>st</sup> Semester of the Program.

**Value-Added courses:**

Courses leading to global certification and those which are conducted exclusively for employability are referred to as value added courses. Though “Satisfactory” completion of value added courses doesn’t acquire any credit but they are part of the graduation requirements. Refer Section 3.1 for list of Value-added courses.

**Bridge Courses:**

Courses which are required to bridge the continuity among the Basic sciences/Engineering Sciences/professional courses (both core and electives) and are identified through gap analysis carried out using feedback obtained from various academic stakeholders are termed as Bridge Courses. These courses also do not yield any credits but require a “Satisfactory” result to register into the attached professional courses.

**7.2 Course Precedence**

The following are the guidelines for registering into courses with pre-requisites.

- Every course may have one or more of its preceding course(s) as pre-requisite(s).
- To register for a course, the student must successfully be promoted in these course(s) earmarked as pre-requisite(s) for that course.

**7.3 Summer Term Courses**

KLEF offers summer term courses during May and June. The following are the guidelines to register in to courses offered in Summer Semester.

- A student may register for course/s in each summer term by paying the stipulated fee.
- Students registering for more than one (1) summer course must ensure that there is no clash in the time table.
- A student can register into a detained course or a not-registered course (course offered in regular semester, but student failed to register due to the non-compliance of pre-requisite condition but has paid the fee.) A student can also register for other than the above two mentioned categories of courses only if they are permitted for acceleration.
- In any case, a student can register only for a maximum of 12 credits during summer term.
- Attendance & Promotion policy for summer term is same as compared to the regular

semester except for condonation policy. Condonation is not applicable for summer termcourses.

#### **7.4 Practice School**

The Practice School (PS) program forms an important component of education at KLEF. It is an attempt to bridge the gap between an academic institution and the industry. The Program, which would be a simulation of real work environment, requires the students to undergo the rigor of professional environment, both in form and in substance. In the process, it provides an opportunity for the students to satisfy their inquisitiveness about the corporate world provides exposure to practicing professional skills and helps them acquire social skills by being in constant interaction with the professionals of an organization. During Practice School, some of the students may be offered stipend and/or job offer as per the discretion of the concerned industry.

##### **7.4.1 Practice School Duration**

Practice School is offered usually for a period of one semester. Should the need be, a student may put a request through the organization and the Head of the Department to the Dean Academics requesting for extension of the duration.

##### **7.4.2 Eligibility:**

###### **For B.Tech Program**

- Students who have not registered with placement (IRP) can only apply for PS- 1 in (VII semester).
- Students who have registered with placement (IRP) and after getting placement will be allowed in PS-2 (VIII semester).

###### **For remaining UG & PG Programs other than B.Tech**

- As per the academic program eligibility, the final year students are only eligible to register for Practice School over the period of one /two semesters.

##### **7.4.3 Guidelines**

The following guidelines are followed attending Practice-School.

- Practice School program carries six credits for a semester. Therefore, it involves substantial effort and requires seriousness, commitment and dedication from the students. One has to hard work for good experience and better placement opportunities. Students must be disciplined, hardworking and possess attitude to undergo On the Job Training (OJT).
- Students must abide by the rules and regulations of the company and the University.
- Practice School is not mandatory for the students. However, Practice School experience enhances the opportunities for placement.
- Circular will be sent regarding schedule of the selections as and when a company is visiting the campus. Interested students shall attend the selection process for the companies.
- The students who were not selected by the companies in the campus will be allotted a

company by the Director, Practice School. Allotment of company is done based on the CGPA of the students and the availability of vacancies in the companies of their relevant branch of engineering.

- Students who have submitted the Registration-cum-Data Form will not be guaranteed opportunity to attend the Practice School. The number of students sent to the practice school purely depends on the number of vacancies by various companies.
- At the time of allotment of companies, the students should be ready for opting companies in any location (Hyderabad, Bengaluru, Vizag, Chennai and Vijayawada etc.) depending on the availability of the vacancies in their respective branches. Once the students are selected by a company or allotted to a company, they shall not be allowed either to change company or to cancel the practice school program.

### 7.5 Award of Degree

#### **B.Tech, M.Tech, all B.Sc and M.Sc , B.A, B.Com, BBA, MBA, BCA, MCA:**

A student having cleared all the courses and met all the requirements for the award of degree with

- $5.25 \leq \text{CGPA} < 5.75$  will be awarded Pass class
- $5.75 \leq \text{CGPA} < 6.75$  will be awarded Second class
- $6.75 \leq \text{CGPA} < 7.75$  will be awarded First class
- $\text{CGPA} \geq 7.75$  will be awarded First class with Distinction provided the student has cleared all the courses in first attempt and must have fulfilled all the program requirements within the specified minimum years duration.

#### **BBA-LLB, LLB.:**

- $5.0 \leq \text{CGPA} < 5.5$  will be awarded Pass class
- $5.5 \leq \text{CGPA} < 6.5$  will be awarded Second class
- $6.5 \leq \text{CGPA} < 8.0$  will be awarded First class
- $\text{CGPA} \geq 8.0$  will be awarded First class with Distinction.

#### **B.Pharmacy & M.Pharmacy:**

- $5.0 \leq \text{CGPA} \leq 5.99$  will be awarded Second class
- $6.0 \leq \text{CGPA} \leq 7.49$  will be awarded First class
- $\text{CGPA} \geq 7.5$  will be awarded First class with Distinction.

#### **Bachelor of Architecture:**

- $5.5 \leq \text{CGPA} \leq 5.99$  will be awarded Second class
- $6.0 \leq \text{CGPA} \leq 7.49$  will be awarded First class
- $\text{CGPA} \geq 7.5$  will be awarded First class with Distinction

#### **BSc.(Hons) Agriculture:**

| OGPA            |                             |
|-----------------|-----------------------------|
| 5.000 – 5.999   | Pass                        |
| 6.000 – 6.999   | II division                 |
| 7.000 – 7.999   | I division                  |
| 8.000 and above | I division with distinction |



## CHAPTER 8 ATTENDANCE CRITERIA

### 8.1 Attendance Rules

The following Attendance Policy for promotion of every course

| S.No. | Program                          | Minimum Attendance % required in a course for promotion in that course |
|-------|----------------------------------|--|
| 1     | All Programs except BBA-LLB, LLB | 85   |
| 2     | BBA-LLB & LLB                    | 65   |

The student must maintain a minimum attendance of 85% for all programs, except for BBA-LLB which is 65%, in every course. In case of medical exigencies, the student/parent should inform the principal within a week by submitting necessary proofs and in such cases the attendance can be condoned up to an extent of 10%. by Principal on the recommendation of the Head of the Department.

1. Attendance in a course shall be counted from the date of commencement of the classwork.

2. Attendance for the students who are transferred from other institutes and for new admissions, attendance must be considered from the date of her/his admission.

3. In case of attendance falling marginally below 75% for all programs (for BBA-LLB is 65%) due to severe medical reasons or any other valid reasons, the Principal/Program chair may bring such cases, along with valid and adequate evidence, to the notice of the Dean Academics. The condonation board formed by Vice-Chancellor under the chairmanship of Dean-Academics will consider any further relaxation in attendance from the minimum attendance percentage requirement condition after going through case by case.

### 8.2 Attendance based Marks

There are no specific marks attached to attendance as such, however, if the Course Coordinator of a course desires to award certain marks, for attendance in a course, She/he can do so based on following guidelines, which thereby must be clearly reflected in the respective course handouts which should duly be approved by the Dean Academics. For any course, not more than 5% marks can be allotted for attendance.

For BBA-LLB the distribution of marks, if the attendance percentage is >76 is 1 mark, >81 is 2 marks. >86 is 3 marks, >91 is 4 marks and >96 is 5 marks, otherwise 0 marks.

For all other programs the distribution of marks for attendance is [85, 88] = 1 marks, [89, 91] = 2 marks, [92, 94] = 3 marks, [95, 97] = 4 marks and [98, 100] = 5 marks, below 85%, even in case of condonation, "0" marks.

The marks, if allotted for attendance will have to be considered for all L-T/ST-P-S components of a course cumulatively but not specifically for theory component for any course.

### **8.3 Attendance Waiver**

Students maintaining a CGPA  $\geq 9.00$  and SGPA  $\geq 9.00$  in the latest completed semester get a waiver for attendance in the following semester. Students who thus utilize an attendance waiver will be awarded the marks allocated for attendance (if any) based on their performance in an advanced assignment specified by the course coordinator (emerging topics related to the course). S/he can appear in all assessments and evaluation components without being marked ineligible due to attendance-based regulations.

### **8.4 Attendance Condonation for Participation in KLEF / National / International Events**

Only those students nominated/sponsored by the KLEF to represent in various forums like seminars/conferences/workshops/competitions or taking part in co- curricular/ extra- curricular events will be given compensatory attendance provided the student applies in writing for such a leave in advance and obtain sanction from the Principal basing on the recommendations of the Head of the Department (HoD) for academic related requests; or from the Dean Student Affairs for extra-curricular related requests. For participation in the KLEF's placement process the names of students will be forwarded by the placement cell in-charge to the respective Heads of the Departments.

Students participating in KLEF/National/International events like technical fests, workshops, conferences etc., will be condoned for 9 instructional days per semester, and in Entrepreneurship related activities a maximum of 18 instructional days per semester. This condonation is not applicable for summer term.

### **8.5 Eligibility for appearing in Sem –End Examination**

A Student registered for a course and maintained minimum attendance of 85% (except BBA LLB) is eligible to write the Semester-End Examination for that course unless found ineligible due to one or more of the following reasons:

- Shortfall of attendance
- Acts of indiscipline
- Withdrawal from a course

### **8.6 Absence in Assessment & Examination**

If a student fails to take any formative assessment component (due to ill-health or any valid reason), no second chance will be given, and zero marks will be awarded for the same. In cases of excused absence, the instructor may provide an opportunity to the student to reappear in quizzes or assignments or any other internal assessment criteria based on the approval from the principal & the concerned Head of the Department in written.

If a student fails to write Sem-In Exam-I or obtained less than 50% marks in Sem-In Exam-I, he must attend remedial classes and maintain a minimum 85% of attendance in remedial classes to be eligible for Make-up test for Sem-In exam-I. The marks scored in such remedial makeup will be considered. Further, the number of remedial classes to be conducted shall be 50% of regular classes held till the SEM-In exam-I. However, there is no make-up test for Sem-In Exam-II or for the Laboratory exams.

A student's absence for a Sem-In Exams under the following circumstances are only considered for makeup test:

Pre-approved participation in University/State/National/International co- curricular and extra-curricular activities

Ill health and medical emergencies for the student leading to hospitalization with certification by the doctor stating inability of student to attend Sem-In exams clearly within the necessary dates.

Death of immediate family member

### **8.7 Remedial Classes:**

The following categories of students are recommended to attend Remedial classes:

- Students who did not attend or obtain a minimum of 50% marks in the Sem-In exam1
- Students those for whom CO1/CO2 is (are) not attained in Sem-In Exam 1
- Any other student may also be permitted to attend remedial classes as per the discretion of the Principal.

The following are the guidelines to conduct remedial classes:

- Remedial classes which are scheduled to be conducted usually one- or two- weeks post conclusion of Sem-In exam1.
- The number of remedial classes to be conducted shall be 50% of regular classes held till the Sem-In exam-I.
- Remedial classes MUST NOT be scheduled during regular class work hours.

The following Active learning Methods (ALMs) are recommended for slow learners:

- One minute paper
- Think/Plan/Share
- Role play
- Focused listening and Listening for specifics
- Just-in time teaching
- Models
- Sheets
- Hands on activity

Course coordinators may also include alternate ALMs based on the course being taught.

## CHAPTER 9

### ASSESSMENT & EVALUATION PROCESS

The assessment in each theory subject consists of two Sem-In Exams (Sem-in Exam-I and Sem-In Exam -II), in-class quizzes/tutorials/home-assignments/Active Learning Methods (continues assessment), and the Semester-End Examination (SEE). The distribution of weightage for each assessment step is listed below. The distribution of internal marks in the table below is only a guideline. Instructors at their discretion may apportion some marks for attendance beyond 75%. In such cases, the marks shown for quizzes and assignments will be accordingly beadjusted. Students are advised to refer the course handout to get more detailed information on assessment.

- a. The Sem-In tests and the Semester-End Examinations will be conducted as per the Academic Calendar.
- b. As per the necessity, the Supplementary examinations will be conducted at the discretion of Dean Academics with the approval of the Vice-Chancellor.
- c. Students may have to take more than one examination in a day during Sem-In exams, Semester-End Examinations /Supplementary examinations.

#### 9.1 Semester-In Evaluation

The following guidelines are followed for the Semester-In evaluation.

- The process of evaluation is continuous throughout the semester.
- The distribution of marks for Semester-In evaluation is 60% of aggregate marks of the course for all the programs except B.Arch. (50%), B.Pharmacy (25%) & BBA-LLB, LL.B. (40%).

| Sl No. | College / School Name                | Semester-In<br>Evaluation<br>(Weightage %) (A) | Sem End<br>Examination<br>(Weightage %) (B) | Minimum<br>requirement for<br>pass % |    |
|--------|--------------------------------------|--|---|--------------------------------------|----|
|        |                                      |  |   | (A+B)                                | B  |
| 1      | School of Architecture<br>(B.Arch)   | 50   | 50  | 50                                   | 50 |
| 2      | College of Pharmacy<br>(B.Pharm)     | 25   | 75  | 50                                   | 50 |
| 3      | College of Law (BBA- LL.B,<br>LL.B.) | 40   | 60  | 40                                   | 40 |
| 4      | For all other Programs               | 60   | 40  | 40                                   | 40 |

- a. The distribution of weightage for various evaluation components are decided and notified by the course coordinator through the course handout after approval by the Dean Academics, prior to the beginning of the semester.
- b. In order to maintain transparency in evaluation, answer scripts are shown to the students for verification, within one week of conduct of exam. If there is any discrepancy in evaluation, the student can request the course-coordinator to re-evaluate.
- c. The solution key and scheme of evaluation for all examinations are displayed by the Course-Coordinator in the appropriate web portal of the course, on the day of the conduct of examination.
- d. In case the student is unable to appear for any evaluation component owing to hospitalization, participation in extra/ co-curricular activities representing KLEF/ state/

country; the Dean Academics can permit to conduct of re- examination for such students.

- e. In case a student has missed any of the two in-semester evaluations, S/he is eligible for and will be provided with an opportunity of appearing for re- examination.

### 9.2 Semester End Examination

- a. The pattern and duration of such examination are decided and notified by the Course Coordinator through the Course handout, after approval from the Dean Academic.
- b. To maintain transparency in evaluation, answer scripts are shown to the students for verification. If there is any discrepancy in evaluation, the student can request the Controller of Examination to re-evaluate.
- c. If a student earns F grade in any of the courses of a semester, an instant supplementary exam (for only Semester End Exam component) will be provided within a fortnight of the declaration of the results.

### 9.3 Assessment of Project/Research-Based Subjects

All project or research-based subjects must have a defined time-limit for completion. The specific time limits for completion and schedule for monitoring and evaluation of performance of students will be announced each term. The final project report, after getting the plagiarism certificate, only will be considered and evaluated by the panel of examiners. Student project reports must follow the guidelines prescribed by the office of Dean Academics.

### 9.4 Grading Process

At the end of all evaluation components based on the performance of the student, each student is awarded based on absolute/relative grading system. Relative grading is only applicable to a section of a course in which the number of registered students is greater than or equal to 25. Choice of grading system is decided by the Course-Coordinator with due approval of Dean Academics and is specified in the course handout.

#### 9.4.1 Absolute Grading

The list of absolute grades and its connotation are given below:

**B.Tech., B.Sc., BBA, BCA, B.Com:**

| Performance   | Letter Grade | Grade Point | Percentage of marks |
|---------------|--------------|-------------|---------------------|
| Outstanding   | O            | 10          | 90 - 100            |
| Excellent     | A+           | 9           | 80 - 89             |
| Very Good     | A            | 8           | 70 - 79             |
| Good          | B+           | 7           | 60 - 69             |
| Above Average | B            | 6           | 50 - 59             |
| Average       | C            | 5           | 46 - 49             |
| Pass          | P            | 4           | 40 - 45             |
| Fail          | F            | 0           | 0 – 39              |
| Absent        | AB           | 0           | Absent              |

**M.Tech., M.Sc., M.A., MCA, MBA:**

| Performance   | Letter Grade | Grade Point | Percentage of marks |
|---------------|--------------|-------------|---------------------|
| Outstanding   | O            | 10          | 90 - 100            |
| Excellent     | A+           | 9           | 80 - 89             |
| Very Good     | A            | 8           | 70 - 79             |
| Good          | B+           | 7           | 60 - 69             |
| Above Average | B            | 6           | 50 - 59             |
| Fail          | F            | 0           | 0 – 49              |
| Absent        | AB           | 0           | Absent              |

**B.Arch.:**

| Performance   | Letter Grade | Grade Point | Percentage of marks |
|---------------|--------------|-------------|---------------------|
| Outstanding   | O            | 10          | 90 - 100            |
| Excellent     | A+           | 9           | 80 - 89             |
| Very Good     | A            | 8           | 70 - 79             |
| Good          | B+           | 7           | 60 - 69             |
| Above Average | B            | 6           | 56 - 59             |
| Pass          | P            | 5           | 50 - 55             |
| Fail          | F            | 0           | 0 – 49              |
| Absent        | AB           | 0           | Absent              |

**B.Pharmacy, M.Pharmacy:**

| Performance | Letter Grade | Grade Point | Percentage of marks |
|-------------|--------------|-------------|---------------------|
| Outstanding | O            | 10          | 90 – 100            |
| Excellent   | A            | 9           | 80 – 89             |
| Good        | B            | 8           | 70 – 79             |
| Fair        | C            | 7           | 60 – 69             |
| Average     | D            | 6           | 50 – 59             |
| Fail        | F            | 0           | Less than 50        |
| Absent      | AB           | 0           | Absent              |

**B.Sc. (Honors) Agriculture:**

- The evaluation is done on a 10-point scale.
- 10 point = 100 marks.
- The percent of marks in a subject will be divided by 10 to obtain the grade point

### 9.4.2 Relative Grading

The following table lists the grades and its connotation for relative grading:

| Letter Grade | Grade Point | Grade Calculation  |
|--------------|-------------|--|
| O            | 10          | total marks $\geq 90\%$ and total marks $\geq \text{mean} + 1.50\sigma$    |
| A+           | 9           | $\mu + 0.50\sigma \leq \text{total marks} < \mu + 1.50\sigma$              |
| A            | 8           | $\mu \leq \text{total marks} < \mu + 0.50\sigma$                           |
| B+           | 7           | $\mu - 0.50\sigma \leq \text{total marks} < \mu$                           |
| B            | 6           | $\mu - 1.00\sigma \leq \text{total marks} < \mu - 0.50\sigma$              |
| C            | 5           | $\mu - 1.25\sigma \leq \text{total marks} < \mu - 1.00\sigma$              |
| P            | 4           | $\mu - 1.50\sigma \leq \text{total marks} < \mu - 1.25\sigma$ or $\geq 40$ |
| F            | 0           | total marks $< \mu - 1.50\sigma$ or total marks $\leq 39$                  |
| AB           | 0           | Absent   |

$\mu$  is the mean mark of the class excluding the marks of those students who scored  $\geq 90\%$  and  $\leq 40\%$  after rounding the percentages to the next highest integer.  $\sigma$  is the standard deviation of the marks.

#### BBA-LL.B., LL.B. (Relative Grading):

| Performance  | Letter Grade | Grade Point |
|--------------|--------------|-------------|
| Excellent    | X            | 10          |
| Very Good    | A            | 9           |
| Good         | B            | 8           |
| Fair         | C            | 7           |
| Satisfactory | D            | 6           |
| Pass         | E            | 5           |
| Fail         | F            | 0           |
| Absent       | AB           | 0           |

### 9.5 SGPA & CGPA

The SGPA is the ratio of sum of the product of the number of credit s with the grade points scored by a student in all the courses and the sum of the number of credits of all the courses undergone by a student, in a semester.

Where 'Ci' is the number of credits of the  $i^{\text{th}}$  course and 'Gi' is the grade point scored by the student in the  $i^{\text{th}}$  course.

The CGPA is also calculated in the same manner considering all the courses undergone by a student

over all the semesters of a program, where 'Si' is the SGPA of the i<sup>th</sup> semester and 'Ci' is the total number of credits in that semester.

- The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts.
- CGPA can be converted to percentage of marks:  $10 \times \text{CGPA} - 7.5$
- A student appearing for a course having lab integrated with theory and in case obtains less than 40% in either of lab or theory component of semester end examination, and in such case the student must reappear for the component only in which he has secured less than 40%. Till successful attainment of minimum 40% of both components, the student remains in the F grade for that course.
- Audit/Certificate courses are graded as satisfactory (S) or non-satisfactory (NS) only.
- At the end of each semester, the KLEF issues a grade sheet indicating the SGPA and CGPA of the student. However, grade sheets will not be issued to the student if he/she has any outstanding dues.

### 9.5.1 Illustration of Computation of SGPA and CGPA

Computation of SGPA and CGPA Illustration for SGPA

| COURSE   | CREDITS   | GRADE LETTER | GRADE POINT | CREDIT POINT<br>(Credit x Grade) |
|----------|-----------|--------------|-------------|----------------------------------|
| Course 1 | 3         | A            | 8           | 3 X 8 = 24                       |
| Course 2 | 4         | B+           | 7           | 4 X 7 = 28                       |
| Course 3 | 3         | B            | 6           | 3 X 6 = 18                       |
| Course 4 | 3         | O            | 10          | 3 X 10 = 30                      |
| Course 5 | 3         | C            | 5           | 3 X 5 = 15                       |
| Course 6 | 4         | B            | 6           | 4 X 6 = 24                       |
|          | <b>20</b> |              |             | <b>139</b>                       |

Thus,  $\text{SGPA} = 139/20 = 6.95$

Illustration for CGPA

| Item    | Semester |     |     |     |     |     |
|---------|----------|-----|-----|-----|-----|-----|
|         | I        | II  | III | IV  | V   | VI  |
| Credits | 20       | 22  | 25  | 26  | 26  | 25  |
| SGPA    | 6.9      | 7.8 | 5.6 | 6.0 | 6.3 | 8.0 |



$$CGPA = \frac{(20 \times 6.9 + 22 \times 7.8 + 25 \times 5.6 + 26 \times 6.0 + 26 \times 6.3 + 25 \times 8.0)}{(20 + 22 + 25 + 26 + 26 + 25)} = 6.73$$

#### 9.6 Betterment

- A student may reappear for semester end examination for betterment only in the theory part of the course for improving the grade, subject to the condition that, the student has passed the course, his/her CGPA is  $\leq 6.75$  and the grade in the respective course to be equal to or lower than "C". In the case of reappearing for a course, the best of the two grades will be considered.
- A Student can re-register in any course in any semester during the program for improvement of grade if the current grade in the course is lower than B+ and with due approval from Dean Academics in accordance with academic regulations.
- A student cannot reappear for semester end examination in courses like Industrial Training, courses with their L-T/ST-P-S Structure like O-O-X-X, Project, Practice School and Term Paper.
- A student is not eligible for award of B.Tech. Degree with Honors, and any Program Degree with distinction, in case s/he takes up the betterment option.

#### 9.7 Course Based Detention Policy

In any course, a student must maintain a minimum attendance as per the attendance policy referred in Chapter 8, to be eligible for appearing in the Sem-End examination. Failing to fulfill this condition, will deem such student to be detained in that course and become ineligible to take semester end exam.

## **CHAPTER 10**

### **CREDIT TRANSFER & PROMOTION**

#### **10.1 Change of Branch:**

A student admitted to a particular Branch of the B.Tech. Program will normally continue studying in that branch until the completion of the program. However, in special cases the KLEF may permit a student to change from one branch to another after the second semester, provided s/he has fulfilled admission requirement for the branch into which the change is requested. For all remaining UG /PG programs, the change of branch is not applicable.

The rules governing change of branch are as listed below:

- Top 1% (based on CGPA until 2<sup>nd</sup> semester) students will be permitted to change to any branch of their choice within the program discipline.
- Apart from students mentioned in clause (a) above, those who have successfully completed all the first and second semester courses and with CGPA  $\geq 8$  are also eligible to apply, but the change of Branch in such case is purely at the discretion of the KLEF.
- All changes of Branch will be effective from third semester. Change of branch shall not be permitted thereafter.
- Change of branch once made will be final and binding on the student. No student will be permitted, under any circumstances, to refuse the change of branch offered.
- Students in clause a and b may be permitted subject to the availability of seats in the desired branch.

#### **10.2 Credit transfer**

##### **10.2.1 Credit transfer between KLEF and other institution**

A) Credit transfer from other institutions to KLEF or vice versa is permitted only for undergraduate program.

B) Credit transfer from KLEF to other institutions: Student studying in KLEF can take transfer to another institution under the following conditions:

- KLEF has signed MOU with the institution.
- However, a student, after seeking transfer from KLEF can return to KLEF after a semester or year. Based on courses done in the other institution, equivalent credits shall be awarded to such students.

C) Credit transfer from another institution to KLEF: A student studying in another institution can take transfer to KLEF under the following conditions:

- When a student seeks transfer, equivalent credits will be assigned to the student based on the courses studied by the student.

- The student, when transferred from other institutions, has to stick to the rules and regulations of KLEF.
- To graduate from KLEF, a student must study at least half of the minimum duration prescribed for a program at KLEF.

#### 10.2.2 Credit Transfer Through MOOCs:

- Undergraduate students can get credits for MOOCs courses recommended by KLEF up to a maximum of 20% of their minimum credits required for graduation. The discretion of allocation of MOOCs courses equivalent to the courses in the curriculum lies with the office of the Dean Academics.
- A student may also be permitted to obtain 20 credits through MOOCs in addition to the minimum credits required for graduation. These 20 credits can also be utilized to acquire a Minor degree or an Honors degree if the courses are pronounced equivalent to those specified for the respective degrees by the office of the Dean Academics. These additional credits through MOOCs if to be considered for CGPA/Minor/Honors degree must be approved by Dean Academics prior to enrollment in the respective MOOCs.
- Students acquiring additional credits for Honors/Minor degree must adhere to the rules governing the award of the respective degree, otherwise, a student applying for registering into additional credits through MOOCs must possess a minimum CGPA of 7.5 till that semester.

### 10.3 Course Credit

A credit is a unit that gives weight to the value, level or time requirements of an academic course. The number of 'Contact Hours' in a week of a particular course determines its credit value. One credit is equivalent to one lecture hour per week or one tutorial hour per week or two hours per week of practical/ field work or four hours per week of skilling or one studio hour is equivalent to 1.5 credit during a semester.

### 10.4 Promotion Policy

A student shall be eligible for provisional promotion for registration of courses in the next semester subject to the following criterion:

| S.No | College Name                        | Promotion Policy – Year / Semester  |
|------|-------------------------------------|---|
| 1    | College of Architecture<br>(B.Arch) | A student shall be eligible for provisional promotion for registration of courses in the next semester subject to the following criterion:<br>A student is eligible for provisional promotion to a higher semester if S/he:<br><ul style="list-style-type: none"> <li>• A student shall not be permitted to enroll for the Architectural</li> </ul> |

|   |   |   |
|---|---|---|
|   |   | <p>Design course in a semester unless S/he has completed the Architectural Design course of the previous semester.</p> <ul style="list-style-type: none"> <li>• A student shall not be permitted to enroll for the tenth semester Architectural Design Thesis unless he / she has successfully completed Practical Training/ Practices School / Internship.</li> </ul> <p>In case a student is unable to secure minimum P grade for a particular course even after three consecutive attempts, S/he has to repeat the course by re-registration.</p>  |
| 2 | College of Arts, Humanities & Sciences (BA., BCA, M.Sc Chemistry, M.Sc Applied Mathematics, M.Sc Physics) | Not Applicable  |
| 3 | Business School (BBA, B.Com, MBA)   | Not Applicable  |
| 4 | College of Engineering (B.Tech, M.Tech)   | Not Applicable  |
| 6 | College of Pharmacy (B.Pharm)   | <p>1. He/she shall not be eligible to attend the courses of V semester until all the courses of I and II semesters are successfully completed.</p> <p>2. He/she shall not be eligible to attend the courses of VII semester until all the courses of I, II, III and IV semesters are successfully completed.</p> <p>3. A lateral entry student shall be eligible to carry forward all the courses of III, IV and V semesters till the VI semester examinations. However, he/she shall not be eligible to attend the courses of VII semester until all the courses of III and IV semesters are successfully completed.</p> <p>Any student who has given more than 4 chances for successful completion of I / III semester courses and more than 3 chances for successful completion of II / IV semester courses shall be permitted to attend V / VII semester classes ONLY during the subsequent academic year as the case may be. In simpler terms there shall NOT be any ODD BATCH for any semester.</p> |
| 7 | College of Law (BBA-LLB, LLB)   | Not Applicable  |
| 8 | College of Agriculture  | <p>Completion of all 1<sup>st</sup> year courses is mandatory for registration in 3<sup>rd</sup> year.</p> <p>Completion of all 2nd year courses is mandatory for registration in 4th year</p>  |

### 10.5 Re-Evaluation

Students desirous of seeing their Semester-End Examination answer scripts have to apply online to the COE for the same within the timeframe as declared by the COE by paying the prescribed fee. Student applications must be forwarded by the Head of the Department and the Principal of the

School and then re-evaluation fees are to be paid. The application along with the attached fee receipt must be submitted to the office of the COE.

There is no provision for re-evaluation in case of Lab/Practical/skilling exams, student project, viva-voce exam or seminar/design/mini-project courses.

The final grades awarded to each course shall be announced by the COE and the same will be made available to students through the website/notice boards.

#### **10.6 Academic Counseling Board (ACB)**

Academic Counseling Board is constituted by the Dean Academics. This board shall comprise of the Chairman, Convener, Principal/Director, HOD and Professor/Associate Professor. A student will be put under Academic Counseling Board in the following circumstances:

- Has CGPA of less than 6.00.
- Has 'F' grade or 'Detained' in multiple courses.

The first level of Counseling such students will be done by the Mentor of the student and the HoD followed by the ACB and the list of students who have to undergo the ACB counseling be forwarded by the HoD to the Office of Dean Academics.

The students undergoing the Academic Counseling Board process may be allowed to register only for a few courses based on the recommendation of Academic Counseling Board.

#### **10.7 Backlog Courses**

A course is considered to be a backlog if the student has obtained 'F' grade in the course.

#### **10.8 Rustication**

A student may be rusticated from the KLEF on disciplinary grounds, based on the recommendations of any empowered committee, by the Vice Chancellor.

#### **10.9 Award of Medals**

KLEF awards Gold and Silver medals to the top two candidates in each program after successful completion of their study. The medals are awarded based on their CGPA during the Annual Convocation with the following constraints:

- a. The grade obtained through betterment/ supplementary will not be considered for this award.
- b. S/he must have obtained first class with distinction for the award of Gold or Silver-medal.

## **CHAPTER 11**

### **STUDENT COUNSELING & FEEDBACK**

#### **Counseling:**

Student counseling / mentoring service ensures that every student gets to know the academic structure of the University and utilize maximum opportunities that the institute offers to fulfill their career and personal life goals. The objective of “Student Counseling/Mentoring Service” is to provide friendly support to the students for their well-being during their stay in the campus and for their holistic development.

Counselors offer individual counseling to help students resolve personal or interpersonal problems. They may also offer small group counseling to help students enhance listening and social skills, learn to empathize with others, and find social support through healthy peer relationships. Counselors also provide support to faculty by assisting with classroom management techniques and the development of programs to improve quality or safety. When necessary, counselors may also intervene in a disrupted learning environment.

However, the benefits of counselor-student relationships are as follows:

Maintain academic standards and set goals for academic success.

Develop skills to improve organization, study habits, and time management.

Work through personal problems that may affect academics or relationships.

Improve social skills.

Cope with university or community-related violence, accidents.

Identify interests, strengths, and aptitudes through assessment.

#### **Counseling Policy:**

Student counseling takes great place in K L University. Counseling is designed to facilitate student achievement, improve student behavior, subject analysis levels, attendance, and help students develop socially, professionals with bachelor's, master's degrees or beyond. Faculty counselors provide counseling and serve an educational role in K L University. We have Mentors, Academic, Career, Physiological, Co-Curricular & Extra Curricular activities counselors in order to support students who are experiencing personal or academic challenges, help students choose careers and plan for university and intervene when students face behavioral, physical, or mental health challenges.

#### **The duties of counselors:**

##### **Mentoring:**

Plan and design a system for student behavior, mental health and academic challenges, define structural and functional characteristics of the system in detail, plan provisions for academic

mentoring apart from classroom interaction.

**Academic Counseling:**

Develop a systematic and process-oriented mechanism to improve academic counseling in relation to student attendance, punctuality, performance of students in internal and semester examinations, course / program to be enrolled based on the strength and weakness of the student

**Career Counseling:**

Conduct personality test (SWEAR) to find suitable career path, Create awareness on the job opportunities, career paths that exist in a specific discipline.

**Psychological Counseling:**

Organize and strengthen the student counseling services, engage qualified and experienced mentors and advisories for each class of students for providing psychological guidance as required.

**Guidance on Co-Curricular & Extra Curricular activities:**

Form student clubs to give train and encourages the students to improve their skills, physical fitness and mental strength.

**Early intervention:**

Counselors receive training about learning difficulties and psychological concerns that commonly manifest in children and adolescents. They may also provide referrals, recommendations, and suggestion to parents about mental health of their wards.

**Special needs services:**

Counselors often support the special needs of students and may oversee programs that address requirements or learning difficulties.

**Counseling Procedures:**

The HOD will allot 20 Students once admitted into a program to a faculty with allocation priority commencing from professors and onwards. The faculty concerned will be called a counselor/mentor. One hour per week will be allocated by the departments to enable the counselors to counsel the students on various aspects. The counselor will maintain a separate sheet to record student performance and also different kinds of counseling undertaken.

Counselor shall communicate with parents through mail, SMS and also through telephonic conversations. Student's attendance, marks, placement etc. data must inform to parents once in a month. The communication undertaken shall be recorded in a separate register.

The following are the various aspects of counseling that the counselors will address during their interaction.

**Mentoring**

1. Counselor shall counsel the students regularly when the performance of the student is found be un-satisfactory
2. Form a Student-Teacher-Group to share regular updates and events.
3. Form a Parent-Teacher-Association to share regular updates and events.
4. Conduct the feedback on counseling.
5. The counseling data sheet shall be submitted to the principal for verification and approval.
6. At the end of the semester a summary report and recommendations will be sent to Dean Academics Office

**Academic Counseling**

1. Counselor shall acquire backlog data and record the same into the counseling sheets
2. Counselor will acquire data about the attendance and performance in the internal evaluation and record them into the counseling data sheet.
3. Counselors shall counsel the students regularly to track the performance of the students
4. The counseling data sheet shall be submitted to the principal for verification and approval.
5. At the end of the semester a summary report will be sent to Dean Academics Office.

**Career Counseling**

1. Counselor has to take SWEAR analysis data in first year.
2. Counselor shall acquire the data related to performance of the students in all the soft skills and other courses that contributes towards employability/ entrepreneurship/ career advancement the career counseling data sheets.
3. Counselor will acquire data about the attendance and performance of the students during all the placement drives conducted by KLU and records the same into the counseling sheet.
4. Councilors shall counsel the students regularly when the performance of the student is found be un-satisfactory.
5. The counseling sheet shall be verified by principal and corrective actions if any will be recommended to the respective departments.
6. At the end of the semester a summary report will be sent to Dean Academics Office.

**Psychological Counseling**

1. Counselor shall acquire data pertaining to psychological status of the students and record the same into the counseling sheets
2. Counselor will acquire data about the attendance and performance in the internal evaluation and record them into the counseling sheet and see whether the performance is in any way related.
3. Councilor shall counsel the students regularly when the performance of the student is found to



be un-satisfactory

4. Counselor should identify the need of any therapy required.
5. Once it is identified, the counselor will arrange the treatment according to the psychological status of the student.
6. Counselor should maintain the progression level of the student periodically.
7. The counseling sheet shall be verified by principal and corrective actions if any will be recommended to the respective departments.
8. At the end of the semester a summary report will be sent to Dean Academics Office.

HODs have to submit monthly /semester / Academic Year Counseling reports with necessary comments and proofs to Dean Academics office duly signed by concerned Principal/Director.

Visit following link <https://www.kluniversity.in/site/acadboard.htm>

### **Feedback System**

At KLEF, monitoring of feedback is a continuous process. Feedback is obtained from students and parents on various aspects. Feedback is taken through personal interaction with students, interaction with parents in addition to mid-semester and end-semester feedback.

The institution assesses the learning levels of the students, after admission and organizes special programs for advanced learners and slow learners.

### **Feedback Types:**

In first year SWEAR analysis is done for every student in such a way it identifies their interests, pre-existing knowledge, aspects to improve technical and logical skills based on their career choice. The following are the different types of feedback taken at regular intervals:

- (i). Student General Feedback (Twice in a Sem.)
- (ii). Student Satisfaction Survey (Once in a Sem.)
- (iii). Student Exit Feedback (Once in a Year)
- (iv). Academic Peers Feedback on Curriculum (Once in a Sem.)
- (v). Parents Feedback on Curriculum (Once in a Sem.)
- (vi). Alumni Feedback on Curriculum (Once in a Sem.)
- (vii). Industry Personnel Feedback on Curriculum (Once in a Sem.)
- (viii). Student Feedback on Curriculum (Once in a Sem.)
- (ix). Faculty Satisfaction Survey (Once in a Sem.)
- (x). Parent Teacher Association (Once in a Sem.)

### **Feedback Procedure:**

- General Feedback to be taken from the students on the aspects like Course Contents, Teaching Learning Process, Outcomes, Resources and Evaluation twice in every semester

(Mid semester and End Semester Feedback) in a structured format floated by dean academics office.

- Student Satisfaction Survey (SSS) to all innovative methods and approaches should be recorded at appropriate intervals and the process should be refined based on that. Students should be sensitized on the process and methods and their understanding of the same should be assured.
- Exit survey feedback to be taken from the final year students on the aspects like entrance test, admission process, Course Contents, Teaching Learning Process, Outcomes, Resources and Evaluation, placements etc.
- Structured feedback for design and review of syllabus – semester wise / year wise is received from Students, Alumni, Peers, Parent, Industry Personnel.
- Satisfaction Survey to be taken from the existing faculty on Course Contents, Teaching Learning Process, Outcomes, Resources and Evaluation once in every semester in a structured format floated by dean academics office.
- Parent Teacher Association (PTA) to develop the potential of parents and to strengthen their relationship with their children through planning and conducting a variety of developmental and recreational activities.
- Online Feedback is collected from all the students once at the end of the semester using well designed questionnaire. Informal feedback will be collected in parallel from selected student representatives within 4-5 weeks of commencement of the semester by the Office of Dean Academics.
- HODs have to submit monthly /semester / Academic Year Feedback reports with necessary comments and proofs to Dean Academics office duly signed by concerned Principal/Director. Visit following link <https://www.kluniversity.in/site/feedsys.htm>

**CHAPTER 12**  
**ENGINEERING UG PROGRAM STRUCTURE**

| Sl No | Course Code | Course Title                                 | Category | L | T | P | S | Cr | CH | Pre-requisite | Offered To                              | AI&DS | BT | CE | CSE | CSIT | ECE | ECS | EEE | IOT | ME |
|-------|-------------|--|----------|---|---|---|---|----|----|---------------|---|-------|----|----|-----|------|-----|-----|-----|-----|----|
| 1     | 20UC1101    | Integrated Professional English              | HSS      | 0 | 0 | 4 | 0 | 2  | 4  | Nil           | AI&DS,BT,CE,CSE,CSIT,ECE,ECS,EEE,IOT,ME | 2     | 2  | 2  | 2   | 2    | 2   | 2   | 2   | 2   | 2  |
| 2     | 20UC1202    | English Proficiency                          | HSS      | 0 | 0 | 4 | 0 | 2  | 4  | Nil           | AI&DS,BT,CE,CSE,CSIT,ECE,ECS,EEE,IOT,ME | 2     | 2  | 2  | 2   | 2    | 2   | 2   | 2   | 2   | 2  |
| 3     | 21UC2103    | Essential Skills for Employability           | HSS      | 0 | 0 | 4 | 0 | 2  | 4  | Nil           | AI&DS,BT,CE,CSE,CSIT,ECE,ECS,EEE,IOT,ME | 2     | 2  | 2  | 2   | 2    | 2   | 2   | 2   | 2   | 2  |
| 4     | 21UC2204    | Corporate Readiness Skills                   | HSS      | 0 | 0 | 4 | 0 | 2  | 4  | Nil           | AI&DS,BT,CE,CSE,CSIT,ECE,ECS,EEE,IOT,ME | 2     | 2  | 2  | 2   | 2    | 2   | 2   | 2   | 2   | 2  |
| 5     | 21UC0010    | Universal Human Values & Professional Ethics | HSS      | 2 | 0 | 0 | 0 | 2  | 2  | Nil           | AI&DS,BT,CE,CSE,CSIT,ECE,ECS,EEE,IOT,ME | 2     | 2  | 2  | 2   | 2    | 2   | 2   | 2   | 2   | 2  |
| 6     | 20UC0007    | Indian Heritage and Culture                  | HSS      | 2 | 0 | 0 | 0 | 0  | 2  | Nil           | AI&DS,BT,CE,CSE,CSIT,ECE,ECS,EEE,IOT,ME | 0     | 0  | 0  | 0   | 0    | 0   | 0   | 0   | 0   | 0  |
| 7     | 21UC0008    | Indian Constitution                          | HSS      | 2 | 0 | 0 | 0 | 0  | 2  | Nil           | AI&DS,BT,CE,CSE,CSIT,ECE,ECS,EEE,IOT,ME | 0     | 0  | 0  | 0   | 0    | 0   | 0   | 0   | 0   | 0  |
| 8     | 20UC0009    | Ecology & Environment                        | HSS      | 2 | 0 | 0 | 0 | 0  | 2  | Nil           | AI&DS,BT,CE,CSE,CSIT,ECE,ECS,EEE,IOT,ME | 0     | 0  | 0  | 0   | 0    | 0   | 0   | 0   | 0   | 0  |
| 9     | 21UC0011    | Gender Sensitization                         | HSS      | 2 | 0 | 0 | 0 | 2  | 2  | Nil           | AI&DS,BT,CE,CSE,CSIT,ECE,ECS,EEE,IOT,ME | 2     | 2  | 2  | 2   | 2    | 2   | 2   | 2   | 2   | 2  |

|                      |          |   |     |   |   |   |   |     |   |     |   |           |           |           |           |           |           |           |           |           |           |
|----------------------|----------|---|-----|---|---|---|---|-----|---|-----|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 10                   | 21UC0012 | Entrepreneurship                            | HSS | 2 | 0 | 0 | 0 | 0   | 2 | Nil | CSE                                     |           |           |           | 0         |           |           |           |           |           |           |
| <b>TOTAL CREDITS</b> |          |   |     |   |   |   |   |     |   |     |   | <b>12</b> | <b>12</b> | <b>12</b> | <b>12</b> | <b>12</b> | <b>12</b> | <b>12</b> | <b>12</b> | <b>12</b> | <b>12</b> |
| 11                   | 20MT1101 | Mathematics for Computing                   | BS  | 2 | 2 | 0 | 2 | 4.5 | 6 | NIL | AI&DS,BT,CE,CSE,CSIT,ECE,ECS,EEE,IOT,ME | 4.5       | 4.5       | 4.5       | 4.5       | 4.5       | 4.5       | 4.5       | 4.5       | 4.5       | 4.5       |
| 12                   | 21MT2102 | Mathematics for Engineers                   | BS  | 2 | 1 | 0 | 0 | 3   | 3 | Nil | AI&DS,CE,CSE,CSIT,ECE,ECS,EEE,IOT,ME    | 3         |           | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 3         |
| 13                   | 21UC1203 | Design Thinking and Innovation              | BS  | 0 | 0 | 4 | 0 | 2   | 4 | Nil | AI&DS,BT,CE,CSE,CSIT,ECE,ECS,EEE,IOT,ME | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         |
| 14                   | 21UC3105 | Problem Solving Skills-I                    | BS  | 0 | 0 | 2 | 2 | 1.5 | 4 | Nil | AI&DS,BT,CE,CSE,CSIT,ECE,ECS,EEE,IOT,ME | 1.5       | 1.5       | 1.5       | 1.5       | 1.5       | 1.5       | 1.5       | 1.5       | 1.5       | 1.5       |
| 15                   | 21UC3206 | Problem Solving Skills-II                   | BS  | 0 | 0 | 2 | 2 | 1.5 | 4 | Nil | AI&DS,BT,CE,CSE,CSIT,ECE,ECS,EEE,IOT,ME | 1.5       | 1.5       | 1.5       | 1.5       | 1.5       | 1.5       | 1.5       | 1.5       | 1.5       | 1.5       |
| 16                   |          | Science Elective - 1                        | BS  | 3 | 0 | 2 | 0 | 4   | 4 | Nil | AI&DS,BT,CE,CSE,CSIT,ECE,ECS,EEE,IOT,ME | 4         | 4         | 4         | 4         | 4         | 4         | 4         | 4         | 4         | 4         |
| 17                   |          | Science Elective - 2                        | BS  | 3 | 0 | 2 | 0 | 4   | 5 | Nil | AI&DS,BT,CE,CSE,CSIT,ECE,ECS,EEE,IOT,ME | 4         | 4         | 4         | 4         | 4         | 4         | 4         | 4         | 4         | 4         |
| 18                   | 21MT2011 | Bio Statistics                              | BS  | 2 | 1 | 0 | 0 | 3   | 3 | Nil | BT                                      |           | 3         |           |           |           |           |           |           |           |           |
| 19                   | 20AD2104 | Probability and Statistics for Data science | BS  | 2 | 1 | 0 | 0 | 3   | 3 | Nil | AI & DS                                 | 3         |           |           |           |           |           |           |           |           |           |

|               |          |  |                                    |   |   |   |   |   |   |     |                     |      |      |      |      |      |      |      |      |      |      |
|---------------|----------|--|------------------------------------|---|---|---|---|---|---|-----|---------------------|------|------|------|------|------|------|------|------|------|------|
| 20            | 21AD2206 | Mathematical Programming                       | BS                                 | 2 | 1 | 0 | 0 | 3 | 3 | Nil | AI & DS             | 3    |      |      |      |      |      |      |      |      |      |
| 22            | 21MT3101 | Probability and Statistics                     | BS                                 | 2 | 0 | 2 | 0 | 3 | 4 | Nil | ECS                 |      |      |      |      |      |      | 3    |      |      |      |
| 23            | 21MT1011 | Mathematical Methods                           | BS                                 | 2 | 1 | 0 | 0 | 3 | 3 | Nil | BT                  |      | 3    |      |      |      |      |      |      |      |      |
| 24            | 21MT2007 | Probability, Statistics and Numerical Methods  | BS                                 | 3 | 1 | 0 | 0 | 4 | 4 | Nil | CE                  |      |      | 4    |      |      |      |      |      |      |      |
| 25            | 21MT2101 | Transform Techniques & Numerical Methods       | BS                                 | 3 | 0 | 0 | 0 | 3 | 3 | Nil | ECE, IOT            |      |      |      |      |      | 3    |      |      | 3    |      |
| 26            | 21ME2209 | Numerical Computation for Mechanical Engineers | BS                                 | 3 | 0 | 2 | 0 | 4 | 5 | Nil | ME                  |      |      |      |      |      |      |      |      | 4    |      |
| 27            | 21MT2103 | Probability , Statistics and Queueing Theory   | BS                                 | 2 | 2 | 0 | 0 | 4 | 4 | Nil | CSE                 |      |      |      | 4    |      |      |      |      |      |      |
| 28            | 21CS2204 | Mathematical Programming                       | BS                                 | 2 | 2 | 0 | 0 | 4 | 4 | Nil | CSE                 |      |      |      | 4    |      |      |      |      |      |      |
| 30            | 20EE2104 | Mathematical Transforms for Signal processing  | BS                                 | 2 | 1 | 0 | 0 | 3 | 3 | Nil | EEE                 |      |      |      |      |      |      |      | 3    |      |      |
| TOTAL CREDITS |          |  |                                    |   |   |   |   |   |   |     |                     | 26.5 | 23.5 | 24.5 | 28.5 | 20.5 | 23.5 | 23.5 | 23.5 | 23.5 | 24.5 |
| 31            | 21PH1101 | Semi Conductor Physics                         | SCIE<br>NCE<br>ELEC<br>TIVE<br>- 1 | 3 | 1 | 0 | 0 | 4 | 4 | Nil | ECS                 |      |      |      |      |      |      | 4    |      |      |      |
| 32            | 21PH1005 | Physics  |                                    | 3 | 0 | 2 | 0 | 4 | 5 | Nil | BT                  |      | 4    |      |      |      |      |      |      |      |      |
| 33            | 21PH1004 | Solid State Physics                            |                                    | 3 | 0 | 2 | 0 | 4 | 5 | Nil | CSE, CSIT, ECE, IOT |      |      |      | 4    | 4    | 4    |      | 4    |      |      |
| 34            | 21PH1008 | Physics For Electronics Engineering            |                                    | 3 | 0 | 2 | 0 | 4 | 5 | Nil | ECE, EEE, IOT       |      |      |      | 4    | 4    | 4    |      | 4    |      |      |

|    |          |  |                                    |   |   |   |   |     |    |          |  |     |     |     |     |     |     |     |     |     |     |
|----|----------|--|------------------------------------|---|---|---|---|-----|----|----------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 35 | 21PH1010 | Mechanics  |                                    | 3 | 1 | 0 | 0 | 4   | 4  | Nil      | ME                                       |     |     | 4   |     |     |     |     |     | 4   |     |
| 36 | 21PH4101 | Quantum Physics for engineers                    |                                    | 3 | 0 | 0 | 0 | 3   | 3  | Nil      | CSE,CSIT                                 |     |     |     | 4   | 4   |     |     |     |     |     |
| 37 | 21PH2101 | Quantum Mechanics for Engineers                  |                                    | 3 | 1 | 0 | 0 | 4   | 4  | Nil      | ECE, IOT                                 |     |     |     |     |     | 4   |     | 4   |     |     |
| 38 | 21CY1001 | Engineering Chemistry                            | SCIE<br>NCE<br>ELEC<br>TIVE<br>- 2 | 3 | 0 | 2 | 0 | 4   | 5  | Nil      | AI&DS,CE,CSE, CSIT,ECS, IOT,ME           | 4   |     | 4   | 4   | 4   |     | 4   |     | 4   | 4   |
| 39 | 21CY1003 | Chemistry and Bionformatics For Engineers        |                                    | 3 | 0 | 2 | 0 | 4   | 5  | Nil      | BT, IOT                                  |     |     |     | 4   |     |     |     |     | 4   |     |
| 40 | 21CY1004 | Organic Electronics                              |                                    | 3 | 0 | 2 | 0 | 4   | 5  | Nil      | ECE. IOT                                 |     |     |     |     | 4   | 4   |     |     | 4   |     |
| 41 | 21EE2103 | Electromagnetic Fields and Engineering Materials |                                    | 3 | 1 | 0 | 0 | 4   | 4  | Nil      | EEE                                      |     |     |     |     |     |     |     | 4   |     |     |
| 42 | 21SC1101 | Computational Thinking for Structured Design     | ES                                 | 3 | 0 | 2 | 6 | 5.5 | 11 | Nil      | AI&DS,BT,CE,C SE,CSIT,ECE,ECS,EEE,IOT,ME | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| 43 | 20ME1103 | Design Tools Workshop – I                        | ES                                 | 0 | 0 | 4 | 0 | 2   | 4  | Nil      | AI&DS,BT,CE,C SE,CSIT,ECE,ECS,EEE,IOT,ME | 2   | 2   | 2   | 2   | 2   | 2   | 2   | 2   | 2   | 2   |
| 44 | 21SC1209 | Design Tools Workshop – II                       | ES                                 | 0 | 0 | 4 | 0 | 2   | 4  | Nil      | AI&DS,BT,CE,C SE,CSIT,ECE,ECS,EEE,IOT,ME | 2   | 2   | 2   | 2   | 2   | 2   | 2   | 2   | 2   | 2   |
| 45 | 21PH1010 | Mechanics  | ES                                 | 3 | 1 | 0 | 0 | 4   | 4  | Nil      | CE                                       |     |     | 4   |     |     |     |     |     |     |     |
| 46 | 21SC1202 | Data Structures                                  | ES                                 | 3 | 0 | 2 | 4 | 5   | 9  | 20SC1101 | AI&DS,BT,CE,C SE,CSIT,ECE,ECS,EEE,IOT,ME | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   | 5   |

|    |          |   |    |   |   |   |   |   |   |          |                                |   |   |   |   |   |   |   |   |   |   |
|----|----------|---|----|---|---|---|---|---|---|----------|--------------------------------|---|---|---|---|---|---|---|---|---|---|
| 47 | 21SC1203 | Computational Thinking for Object Oriented Design | ES | 3 | 0 | 2 | 4 | 5 | 9 | Nil      | CSE,CSIT                       |   |   |   | 5 | 5 |   |   |   |   |   |
| 48 | 21SC1203 | Object Oriented Programming                       | ES | 3 | 0 | 2 | 0 | 4 | 5 | Nil      | BT                             |   | 4 |   |   |   |   |   |   |   |   |
| 49 | 20EC1101 | Digital Logic & Processors                        | ES | 3 | 0 | 2 | 0 | 4 | 5 | Nil      | AI&DS,CSE,CSIT,ECE,ECS,EEE,IOT | 4 |   |   | 4 | 4 | 4 | 4 |   | 4 |   |
| 50 | 20AD2109 | Design and Analysis of Algorithms                 | ES | 3 | 0 | 2 | 0 | 4 | 5 | Nil      | AI&DS                          |   |   |   |   |   |   |   |   |   |   |
| 51 | 21AD1202 | Object Oriented Programming System(Python)        | ES | 3 | 0 | 2 | 4 | 5 | 9 | Nil      | AI&DS                          | 5 |   |   |   |   |   |   |   |   |   |
| 52 | 21ME1002 | Engineering Graphics and 2D Modeling              | ES | 1 | 0 | 4 | 0 | 3 | 5 | Nil      | ME                             |   |   |   |   |   |   |   |   |   | 3 |
| 53 | 21ME2104 | 3D Modeling and Physical Prototyping              | ES | 0 | 0 | 4 | 0 | 2 | 4 | 21ME1002 | ME                             |   |   |   |   |   |   |   |   |   | 2 |
| 54 | 21EE2205 | Circuits and Electronics                          | ES | 3 | 0 | 2 | 0 | 4 | 5 | Nil      | ME                             |   |   |   |   |   |   |   |   |   | 4 |
| 55 | 21ES2103 | Biochemical Thermodynamics                        | ES | 3 | 0 | 0 | 0 | 4 | 3 | Nil      | BT                             |   | 3 |   |   |   |   |   |   |   |   |
| 56 | 21ES2101 | Process Engineering Principles                    | ES | 2 | 0 | 2 | 4 | 4 | 8 | Nil      | BT                             |   | 4 |   |   |   |   |   |   |   |   |
| 57 | 21ES2102 | Transport Process in Biological Systems           | ES | 3 | 0 | 2 | 0 | 4 | 5 | Nil      | BT                             |   | 4 |   |   |   |   |   |   |   |   |
| 58 | 21CE1002 | Engineering Graphics                              | ES | 2 | 0 | 4 | 0 | 4 | 6 | Nil      | CE                             |   |   | 4 |   |   |   |   |   |   |   |
| 59 | 21EC1202 | Computer Organization & Architecture              | ES | 2 | 0 | 0 | 0 | 2 | 2 | 21EC1101 | ECE,IOT,EEE,ECS, CSE,CSIT      | 2 |   |   | 2 | 2 | 2 | 2 | 2 | 2 |   |
| 60 | 21EC1213 | Design of Basic Electronic Circuits               | ES | 3 | 0 | 0 | 0 | 3 | 3 | Nil      | ECE, ECS, IOT                  |   |   |   |   |   | 3 | 3 |   | 3 |   |

|               |          |   |    |   |   |   |   |     |   |           |         |      |      |      |      |      |      |      |      |      |      |
|---------------|----------|---|----|---|---|---|---|-----|---|-----------|---------|------|------|------|------|------|------|------|------|------|------|
| 61            | 20EC2112 | IT Workshop                                 | ES | 1 | 0 | 2 | 0 | 2   | 3 | Nil       | IOT     |      |      |      |      |      |      |      |      |      |      |
| 62            | 21EC2111 | Electronic System Design Workshop           | ES | 1 | 0 | 2 | 2 | 2.5 | 3 | Nil       | IOT,ECS |      |      |      |      |      |      |      |      |      |      |
| 63            | 21EC2104 | Electronic Devices and Circuit Design       | ES | 3 | 0 | 2 | 2 | 4.5 | 7 | Nil       | ECS     |      |      |      |      |      | 4.5  |      |      |      |      |
| 64            | 21EL2102 | Object Oriented Programming                 | ES | 2 | 0 | 2 | 4 | 4   | 8 | 21SC1 101 | ECS     |      |      |      |      |      | 4    |      |      |      |      |
| 65            | 20EE1201 | Basic Electrical and Electronic Engineering | ES | 3 | 1 | 2 | 0 | 5   | 6 | Nil       | EEE     |      |      |      |      |      |      | 5    |      |      |      |
| 66            | 20SC1203 | Object Oriented Programming                 | ES | 2 | 0 | 4 | 0 | 4   | 6 | 21SC1 101 | EEE     |      |      |      |      |      |      | 4    |      |      |      |
| 67            | 20EE2101 | Electrical Circuits                         | ES | 3 | 0 | 2 | 0 | 4   | 5 | NIL       | EEE     |      |      |      |      |      |      | 4    |      |      |      |
| TOTAL CREDITS |          |   |    |   |   |   |   |     |   |           |         | 25.5 | 29.5 | 22.5 | 25.5 | 25.5 | 23.5 | 32.0 | 29.5 | 23.5 | 23.5 |
| 68            | 21AD2105 | Software Engineering                        | PC | 3 | 0 | 0 | 0 | 3   | 3 | Nil       | AI & DS | 3    |      |      |      |      |      |      |      |      |      |
| 69            | 21AD2103 | Java Programming                            | PC | 2 | 0 | 0 | 4 | 3   | 6 | Nil       | AI & DS | 3.5  |      |      |      |      |      |      |      |      |      |
| 70            | 21AD2109 | Design and anlaysis of algorithms           | PC | 2 | 0 | 2 | 2 | 3.5 | 6 | Nil       | AI & DS | 3    |      |      |      |      |      |      |      |      |      |
| 71            | 21AD2101 | Artificial Intelligence                     | PC | 2 | 0 | 2 | 0 | 3   | 4 | Nil       | AI & DS | 3.5  |      |      |      |      |      |      |      |      |      |
| 72            | 21AD2107 | Operating Systems                           | PC | 3 | 0 | 0 | 2 | 3.5 | 5 | Nil       | AI & DS | 3    |      |      |      |      |      |      |      |      |      |
| 73            | 21AD2102 | Data Management                             | PC | 2 | 0 | 2 | 0 | 3   | 4 | Nil       | AI & DS | 4    |      |      |      |      |      |      |      |      |      |
| 74            | 21AD2203 | Data Warehouse and Data Mining              | PC | 3 | 0 | 2 | 0 | 4   | 5 | 21SC1 202 | AI & DS | 4    |      |      |      |      |      |      |      |      |      |



|    |          |                                     |    |   |   |   |   |     |   |           |         |     |   |  |  |  |  |  |  |  |
|----|----------|-------------------------------------|----|---|---|---|---|-----|---|-----------|---------|-----|---|--|--|--|--|--|--|--|
| 75 | 21AD2201 | Computer Networks and Security      | PC | 3 | 0 | 2 | 0 | 4   | 5 | Nil       | AI & DS | 3.5 |   |  |  |  |  |  |  |  |
| 76 | 21AD2204 | Enterprise Software Development     | PC | 2 | 0 | 2 | 2 | 3.5 | 6 | 20TS3 101 | AI & DS | 3.5 |   |  |  |  |  |  |  |  |
| 77 | 21AD2202 | Data Science & Visualization        | PC | 3 | 0 | 0 | 2 | 3.5 | 5 | 20MT1 101 | AI & DS | 3.5 |   |  |  |  |  |  |  |  |
| 78 | 21AD2205 | Machine Learning                    | PC | 3 | 0 | 0 | 2 | 3.5 | 5 | 20MT1 101 | AI & DS | 4   |   |  |  |  |  |  |  |  |
| 79 | 21AD3102 | Cloud Computing                     | PC | 3 | 0 | 2 | 0 | 4   | 5 | 21AD2 207 | AI&DS   | 3   |   |  |  |  |  |  |  |  |
| 80 | 21AD3101 | Automata Theory and Compiler Design | PC | 3 | 0 | 0 | 0 | 3   | 3 | 20MT1 101 | AI&DS   | 3   |   |  |  |  |  |  |  |  |
| 81 | 21AD3104 | Deep Learning                       | PC | 3 | 0 | 0 | 2 | 3.5 | 5 | 21AD2 205 | AI&DS   | 3.5 |   |  |  |  |  |  |  |  |
| 82 | 21BT2105 | Biochemistry                        | PC | 3 | 0 | 2 | 0 | 4   | 5 | Nil       | BT      |     | 4 |  |  |  |  |  |  |  |
| 83 | 21BT2108 | Molecular Biology                   | PC | 3 | 0 | 0 | 0 | 3   | 3 | Nil       | BT      |     | 3 |  |  |  |  |  |  |  |
| 84 | 21BT2109 | Immunology                          | PC | 3 | 0 | 2 | 0 | 4   | 5 | Nil       | BT      |     | 4 |  |  |  |  |  |  |  |
| 85 | 21BT3110 | Bioinformatics                      | PC | 3 | 0 | 2 | 0 | 4   | 5 | Nil       | BT      |     | 4 |  |  |  |  |  |  |  |
| 86 | 21BT3111 | Genetic Engineering                 | PC | 3 | 0 | 2 | 0 | 4   | 5 | Nil       | BT      |     | 4 |  |  |  |  |  |  |  |
| 87 | 21BT3112 | Fermentation Technology             | PC | 3 | 0 | 2 | 0 | 4   | 5 | Nil       | BT      |     | 4 |  |  |  |  |  |  |  |
| 88 | 21BT3113 | Biochemical Reaction Engineering    | PC | 3 | 0 | 2 | 0 | 4   | 5 | Nil       | BT      |     | 4 |  |  |  |  |  |  |  |
| 89 | 21BT3211 | Plant and Animal Biotechnology      | PC | 3 | 0 | 2 | 0 | 4   | 5 | Nil       | BT      |     | 4 |  |  |  |  |  |  |  |

|     |          |  |    |   |   |   |   |   |   |     |    |  |   |   |  |  |  |  |  |  |
|-----|----------|--|----|---|---|---|---|---|---|-----|----|--|---|---|--|--|--|--|--|--|
| 90  | 21BT3212 | Downstream Processing                                | PC | 3 | 0 | 2 | 0 | 4 | 5 | Nil | BT |  | 4 |   |  |  |  |  |  |  |
| 91  | 21BT3213 | Genetics   | PC | 3 | 0 | 0 | 0 | 3 | 3 | Nil | BT |  | 3 |   |  |  |  |  |  |  |
| 92  | 21BT2106 | Microbiology   | PC | 3 | 0 | 2 | 0 | 4 | 5 | Nil | BT |  | 4 |   |  |  |  |  |  |  |
| 93  | 21BT2107 | Bioanalytical Techniques                             | PC | 3 | 0 | 2 | 0 | 4 | 5 | Nil | BT |  | 4 |   |  |  |  |  |  |  |
| 94  | 21CE2205 | Geology  | PC | 3 | 0 | 2 | 0 | 4 | 5 | Nil | CE |  |   | 4 |  |  |  |  |  |  |
| 95  | 21CE2101 | Solid Mechanics                                      | PC | 3 | 0 | 2 | 0 | 4 | 5 | Nil | CE |  |   | 4 |  |  |  |  |  |  |
| 96  | 21CE2102 | Fluid Mechanics & Hydraulics                         | PC | 3 | 0 | 2 | 0 | 4 | 5 | Nil | CE |  |   | 4 |  |  |  |  |  |  |
| 97  | 21CE2103 | Surveying  | PC | 3 | 0 | 2 | 0 | 4 | 5 | Nil | CE |  |   | 4 |  |  |  |  |  |  |
| 98  | 21CE2201 | Structural Analysis                                  | PC | 3 | 1 | 0 | 0 | 4 | 4 | Nil | CE |  |   | 4 |  |  |  |  |  |  |
| 99  | 21CE2203 | Construction Materials & Concrete Technology         | PC | 3 | 0 | 2 | 0 | 4 | 5 | Nil | CE |  |   | 4 |  |  |  |  |  |  |
| 100 | 21CE2204 | Environmental Engineering                            | PC | 3 | 0 | 2 | 0 | 4 | 5 | Nil | CE |  |   | 4 |  |  |  |  |  |  |
| 101 | 21CE2202 | Building Planning, Drawing & Construction Management | PC | 3 | 0 | 2 | 0 | 4 | 5 | Nil | CE |  |   | 4 |  |  |  |  |  |  |
| 102 | 21CE2206 | Geotechnical Engineering                             | PC | 3 | 0 | 2 | 0 | 4 | 5 | Nil | CE |  |   | 4 |  |  |  |  |  |  |
| 103 | 21CE3101 | Design Of Reinforced Concrete Structures             | PC | 3 | 0 | 2 | 0 | 4 | 5 | Nil | CE |  |   | 4 |  |  |  |  |  |  |
| 104 | 21CE3103 | Transportation Engineering                           | PC | 3 | 0 | 2 | 0 | 4 | 5 | Nil | CE |  |   | 4 |  |  |  |  |  |  |

|     |           |                                      |    |   |   |   |   |     |   |          |      |  |  |   |   |     |  |  |  |  |
|-----|-----------|--------------------------------------|----|---|---|---|---|-----|---|----------|------|--|--|---|---|-----|--|--|--|--|
| 105 | 21CE3102  | Water Resources Engineering          | PC | 3 | 1 | 0 | 0 | 4   | 4 | Nil      | CE   |  |  | 4 |   |     |  |  |  |  |
| 106 | 21CE3201  | Design Of Steel Structures           | PC | 3 | 1 | 0 | 0 | 4   | 4 | Nil      | CE   |  |  | 4 |   |     |  |  |  |  |
| 107 | 21CE3202  | Quantity Surveying and Estimation    | PC | 3 | 0 | 2 | 0 | 4   | 5 | Nil      | CE   |  |  | 4 |   |     |  |  |  |  |
| 108 | 21CE4101  | Comprehensive Exam                   | PC | 0 | 0 | 6 | 0 | 3   | 6 | Nil      | CE   |  |  | 3 |   |     |  |  |  |  |
| 109 | 21CS2109  | Operating Systems                    | PC | 2 | 0 | 2 | 0 | 3   | 4 | 21EC1202 | CSE  |  |  |   | 3 |     |  |  |  |  |
| 110 | 21CS2116  | Advanced Object Oriented Programming | PC | 2 | 0 | 2 | 4 | 4   | 8 | Nil      | CSE  |  |  |   | 4 |     |  |  |  |  |
| 111 | 21CS2110  | Database Management Systems          | PC | 2 | 0 | 2 | 0 | 3   | 4 | 21SC1202 | CSE  |  |  |   | 3 |     |  |  |  |  |
| 112 | 21CS2111  | Software Engineering                 | PC | 2 | 1 | 0 | 0 | 3   | 3 | Nil      | CSE  |  |  |   | 3 |     |  |  |  |  |
| 113 | 21CS2215  | Automata Theory & Formal Languages   | PC | 2 | 1 | 0 | 0 | 3   | 3 | Nil      | CSE  |  |  |   | 3 |     |  |  |  |  |
| 114 | 21CS2212  | Computer Networks & Security         | PC | 2 | 2 | 0 | 0 | 4   | 4 | Nil      | CSE  |  |  |   | 4 |     |  |  |  |  |
| 115 | 21CS2213  | AI for Data Science                  | PC | 2 | 0 | 2 | 0 | 3   | 4 | 21SC1202 | CSE  |  |  |   | 3 |     |  |  |  |  |
| 116 | 21CS2214  | Design & Analysis of Algorithms      | PC | 2 | 0 | 2 | 4 | 4   | 8 | 21SC1202 | CSE  |  |  |   | 4 |     |  |  |  |  |
| 117 | 21CS2108  | Enterprise Programming               | PC | 2 | 0 | 2 | 4 | 4   | 8 | 21SC1203 | CSE  |  |  |   | 4 |     |  |  |  |  |
| 118 | 21CS4115  | Parallel & Distributed Computing     | PC | 2 | 1 | 0 | 0 | 3   | 3 | 21CS2109 | CSE  |  |  |   | 3 |     |  |  |  |  |
| 119 | 21CI2104R | Database Management Systems          | PC | 3 | 0 | 2 | 2 | 4.5 | 7 | 21SC1101 | CSIT |  |  |   |   | 4.5 |  |  |  |  |

|     |           |                                       |    |   |   |   |   |     |   |          |      |  |  |  |  |     |     |  |  |     |  |
|-----|-----------|---------------------------------------|----|---|---|---|---|-----|---|----------|------|--|--|--|--|-----|-----|--|--|-----|--|
| 120 | 21CI2102R | Elements of Software Engineering      | PC | 2 | 2 | 0 | 0 | 4   | 4 | Nil      | CSIT |  |  |  |  | 4   |     |  |  |     |  |
| 121 | 21CI2103R | Operating Systems                     | PC | 3 | 0 | 2 | 2 | 4.5 | 7 | 20EC1202 | CSIT |  |  |  |  | 4.5 |     |  |  |     |  |
| 122 | 21CI2105R | Computer Networks & Security          | PC | 3 | 1 | 0 | 0 | 4   | 4 | Nil      | CSIT |  |  |  |  | 4   |     |  |  |     |  |
| 123 | 21CI2216R | AI for DataScience                    | PC | 3 | 0 | 2 | 4 | 5   | 9 | 20MT1101 | CSIT |  |  |  |  | 5   |     |  |  |     |  |
| 124 | 21CI3113R | Design & Analysis of Algorithms       | PC | 3 | 0 | 2 | 4 | 5   | 9 | 21SC1202 | CSIT |  |  |  |  | 5   |     |  |  |     |  |
| 125 | 21CI2107S | Enterprise Programming                | PC | 3 | 0 | 2 | 4 | 5   | 9 | 21SC1203 | CSIT |  |  |  |  | 5   |     |  |  |     |  |
| 126 | 21CI2107R | Mathematical Programming              | PC | 2 | 2 | 0 | 0 | 4   | 4 | 20MT1101 | CSIT |  |  |  |  | 4   |     |  |  |     |  |
| 127 | 21CI2217R | Management Information Systems        | PC | 2 | 2 | 0 | 0 | 4   | 4 | Nil      | CSIT |  |  |  |  | 4   |     |  |  |     |  |
| 128 | 21TS3108R | Technical Skills (SPD-3)              | PC | 0 | 0 | 0 | 8 | 2   | 8 | Nil      | CSIT |  |  |  |  | 2   |     |  |  |     |  |
| 129 | 21TS3209R | Technical Skills (SPD-4)              | PC | 0 | 0 | 0 | 8 | 2   | 8 | Nil      | CSIT |  |  |  |  | 2   |     |  |  |     |  |
| 130 | 21EC2104  | Electronic Devices & Circuits         | PC | 3 | 0 | 2 | 2 | 4.5 | 7 | Nil      | ECE  |  |  |  |  |     | 4.5 |  |  | 4.5 |  |
| 131 | 21EC2105  | Communication Signals & System Design | PC | 3 | 1 | 0 | 0 | 4   | 4 | Nil      | ECE  |  |  |  |  |     | 4   |  |  |     |  |
| 132 | 21EC2106  | Embedded Systems Design               | PC | 3 | 0 | 2 | 2 | 4.5 | 7 | Nil      | ECE  |  |  |  |  |     | 4.5 |  |  |     |  |
| 133 | 21EC2107  | AI, ANN Tools and Applications        | PC | 3 | 0 | 0 | 2 | 3.5 | 3 | Nil      | ECE  |  |  |  |  |     | 3.5 |  |  | 3.5 |  |
| 134 | 21EC2208  | Analog and Digital Communication      | PC | 3 | 0 | 3 | 0 | 4.5 | 6 | Nil      | ECE  |  |  |  |  |     | 4.5 |  |  | 4.5 |  |

|     |           |  |    |   |   |   |   |     |   |          |               |  |  |  |  |  |   |     |  |   |  |
|-----|-----------|--|----|---|---|---|---|-----|---|----------|---------------|--|--|--|--|--|---|-----|--|---|--|
| 135 | 21EC2209  | Electromagnetic Waves & Transmission Lines | PC | 3 | 1 | 0 | 0 | 4   | 4 | Nil      | ECE           |  |  |  |  |  | 4 |     |  |   |  |
| 136 | 21EC2210  | Data Networks & Protocols                  | PC | 3 | 0 | 2 | 0 | 4   | 5 | Nil      | ECE, ECS, IOT |  |  |  |  |  | 4 | 4   |  | 4 |  |
| 137 | 21EC2211  | VLSI Design                                | PC | 3 | 0 | 2 | 0 | 4   | 5 | Nil      | ECE           |  |  |  |  |  | 4 |     |  |   |  |
| 138 | 21EC3112  | Digital Signal Processing                  | PC | 3 | 0 | 2 | 0 | 4   | 5 | Nil      | ECE           |  |  |  |  |  | 4 |     |  |   |  |
| 139 | 21EC3213  | Control Systems                            | PC | 3 | 1 | 0 | 0 | 4   | 4 | Nil      | ECE           |  |  |  |  |  | 4 |     |  |   |  |
| 140 | 21SC1203  | OOPS                                       | PC | 3 | 0 | 2 | 0 | 4   | 5 | Nil      | ECE           |  |  |  |  |  | 4 |     |  |   |  |
| 141 | 21EL3201  | Signal Analysis and Communication Systems  | PC | 2 | 0 | 2 | 0 | 3   | 4 | Nil      | ECS           |  |  |  |  |  |   | 3   |  |   |  |
| 142 | 21EL22101 | Operating Systems                          | PC | 3 | 0 | 2 | 0 | 4   | 5 | Nil      | ECS           |  |  |  |  |  |   | 4   |  |   |  |
| 143 | 21EL2202  | Embedded Systems Design                    | PC | 2 | 0 | 2 | 0 | 3   | 4 | Nil      | ECS           |  |  |  |  |  |   | 3   |  |   |  |
| 144 | 21EL2203  | Database Management Systems                | PC | 2 | 0 | 2 | 4 | 4   | 8 | Nil      | ECS           |  |  |  |  |  |   | 4   |  |   |  |
| 145 | 21EL3101  | VLSI Design                                |    | 2 | 0 | 2 | 2 | 3.5 | 6 | Nil      | ECS           |  |  |  |  |  |   | 3.5 |  |   |  |
| 146 | 21EL2204  | Web application Development                | PC | 2 | 0 | 2 | 4 | 4   | 8 | 21EL2102 | ECS           |  |  |  |  |  |   | 4   |  |   |  |
| 147 | 21EL3102  | Data Science                               | PC | 2 | 0 | 2 | 4 | 4   | 8 | 21MT3101 | ECS           |  |  |  |  |  |   | 4   |  |   |  |
| 148 | 21EL3103  | Software Engineering                       | PC | 2 | 1 | 0 | 0 | 3   | 3 | Nil      | ECS           |  |  |  |  |  |   | 3   |  |   |  |
| 149 | 21EL3104  | Artificial Intelligence                    | PC | 2 | 0 | 2 | 0 | 3   | 4 | Nil      | ECS           |  |  |  |  |  |   | 3   |  |   |  |

|     |          |   |    |   |   |   |   |     |   |          |     |  |  |  |  |  |  |     |   |  |  |
|-----|----------|---|----|---|---|---|---|-----|---|----------|-----|--|--|--|--|--|--|-----|---|--|--|
| 150 | 21EL3202 | Machine Learning  | PC | 2 | 0 | 2 | 2 | 3.5 | 6 | Nil      | ECS |  |  |  |  |  |  | 3.5 |   |  |  |
| 151 | 21EL3203 | Automata & Compiler Design                                | PC | 2 | 0 | 2 | 0 | 3   | 4 | Nil      | ECS |  |  |  |  |  |  | 3   |   |  |  |
| 152 | 21EL3204 | Deep Learning   | PC | 2 | 0 | 2 | 2 | 3.5 | 6 | Nil      | ECS |  |  |  |  |  |  | 3.5 |   |  |  |
| 153 | 21EE2203 | Elctrical Power Generation, Transmission and Distribution | PC | 3 | 0 | 0 | 0 | 3   | 3 | Nil      | EEE |  |  |  |  |  |  |     | 3 |  |  |
| 154 | 21EE2101 | Electrical Circuits                                       | PC | 3 | 0 | 2 | 0 | 4   | 5 | Nil      | EEE |  |  |  |  |  |  |     | 4 |  |  |
| 155 | 21EE2102 | Electrical Machines                                       | PC | 3 | 0 | 2 | 0 | 4   | 5 | Nil      | EEE |  |  |  |  |  |  |     | 4 |  |  |
| 156 | 21EE2201 | Analog Electronics  | PC | 3 | 1 | 2 | 0 | 5   | 6 | Nil      | EEE |  |  |  |  |  |  |     | 5 |  |  |
| 157 | 21EE3103 | Power System Analysis                                     | PC | 3 | 0 | 0 | 0 | 3   | 3 | Nil      | EEE |  |  |  |  |  |  |     | 3 |  |  |
| 158 | 21EE2202 | Industrial Applications of Electrical Machines            | PC | 3 | 0 | 2 | 0 | 4   | 5 | 21EE2102 | EEE |  |  |  |  |  |  |     | 4 |  |  |
| 159 | 21EE2204 | Power Electronics   | PC | 3 | 0 | 2 | 0 | 4   | 5 | 21EE2101 | EEE |  |  |  |  |  |  |     | 4 |  |  |
| 160 | 21EE3101 | Control Systems   | PC | 3 | 0 | 2 | 0 | 4   | 5 | Nil      | EEE |  |  |  |  |  |  |     | 4 |  |  |
| 161 | 21EE3202 | Power System Protection and Control                       | PC | 3 | 0 | 2 | 0 | 4   | 5 | Nil      | EEE |  |  |  |  |  |  |     | 4 |  |  |
| 162 | 21EE3102 | Measurements and Instrumentation                          | PC | 3 | 0 | 2 | 0 | 4   | 5 | Nil      | EEE |  |  |  |  |  |  |     | 4 |  |  |
| 163 | 21EE3104 | AI Techniques for Electrical Engineering                  | PC | 3 | 0 | 2 | 0 | 4   | 5 | Nil      | EEE |  |  |  |  |  |  |     | 4 |  |  |
| 164 | 21EE2205 | Embedded Controllers & Applications                       | PC | 3 | 0 | 2 | 0 | 4   | 5 | Nil      | EEE |  |  |  |  |  |  |     | 4 |  |  |

|     |          |  |    |   |   |   |   |     |   |          |     |  |  |  |  |  |  |  |  |     |   |
|-----|----------|--|----|---|---|---|---|-----|---|----------|-----|--|--|--|--|--|--|--|--|-----|---|
| 165 | 21IN2101 | Processors and Controllers                 | PC | 3 | 0 | 2 | 0 | 4   | 5 | nil      | IoT |  |  |  |  |  |  |  |  | 4   |   |
| 166 | 21IN2102 | Sensors and Actuators                      | PC | 3 | 0 | 2 | 0 | 4   | 5 | Nil      | IoT |  |  |  |  |  |  |  |  | 4   |   |
| 167 | 21IN2103 | Data Science and Data Analytics            | PC | 3 | 0 | 2 | 0 | 4   | 5 | Nil      | IoT |  |  |  |  |  |  |  |  | 4   |   |
| 168 | 21IN2201 | Embedded Systems Design                    | PC | 3 | 0 | 2 | 2 | 4.5 | 7 | Nil      | IoT |  |  |  |  |  |  |  |  | 4.5 |   |
| 169 | 21IN2202 | IoT Principles and Architecture            | PC | 3 | 0 | 0 | 0 | 3   | 3 | Nil      | IoT |  |  |  |  |  |  |  |  | 3   |   |
| 170 | 21IN3101 | Cloud Computing for IOT                    |    | 3 | 0 | 2 | 0 | 4   | 5 | Nil      | IoT |  |  |  |  |  |  |  |  | 4   |   |
| 171 | 21IN3201 | Internet Programming and Web Technologies  |    | 3 | 0 | 2 | 0 | 4   | 5 | Nil      | IoT |  |  |  |  |  |  |  |  | 4   |   |
| 172 | 21SC1203 | OOPS                                       |    | 3 | 0 | 2 | 0 | 4   | 5 | Nil      | IoT |  |  |  |  |  |  |  |  | 4   |   |
| 173 | 21ME2105 | Thermodynamics                             | PC | 3 | 0 | 0 | 0 | 3   | 3 | Nil      | ME  |  |  |  |  |  |  |  |  |     | 3 |
| 174 | 21ME2101 | Mechanics of Solids                        | PC | 3 | 0 | 2 | 0 | 4   | 5 | 21PH1010 | ME  |  |  |  |  |  |  |  |  |     | 4 |
| 175 | 21ME2106 | Fluid Mechanics & Hydraulic Machines       | PC | 3 | 0 | 2 | 0 | 4   | 5 | Nil      | ME  |  |  |  |  |  |  |  |  |     | 4 |
| 176 | 21ME2107 | Manufacturing Processes                    | PC | 3 | 0 | 2 | 0 | 4   | 4 | Nil      | ME  |  |  |  |  |  |  |  |  |     | 4 |
| 177 | 21ME2208 | Mechanical Engineering Design & Innovation | PC | 2 | 0 | 0 | 4 | 3   | 6 | 21ME2101 | ME  |  |  |  |  |  |  |  |  |     | 3 |
| 178 | 21ME2210 | Analysis of Thermal Systems                | PC | 2 | 0 | 0 | 4 | 3   | 6 | 21ME2105 | ME  |  |  |  |  |  |  |  |  |     | 3 |
| 179 | 21ME2211 | Kinematics of Machines                     | PC | 2 | 0 | 2 | 0 | 3   | 4 | 21PH1010 | ME  |  |  |  |  |  |  |  |  |     | 3 |

|               |          |   |    |   |   |   |   |   |   |          |  |    |    |    |    |    |    |      |    |    |    |
|---------------|----------|---|----|---|---|---|---|---|---|----------|--|----|----|----|----|----|----|------|----|----|----|
| 180           | 21PH2007 | Materials Technology                            | PC | 2 | 0 | 0 | 0 | 2 | 2 | NIL      | ME                                       |    |    |    |    |    |    |      |    |    | 2  |
| 181           | 21ME3118 | Dynamics of Machines                            | PC | 2 | 0 | 0 | 0 | 2 | 2 | 21PH1010 | ME                                       |    |    |    |    |    |    |      |    |    | 2  |
| 182           | 21ME2212 | Manufacturing Technology                        | PC | 2 | 0 | 2 | 0 | 3 | 4 | Nil      | ME                                       |    |    |    |    |    |    |      |    |    | 3  |
| 183           | 21ME3113 | Machine Design                                  | PC | 3 | 1 | 0 | 4 | 5 | 8 | 21ME2208 | ME                                       |    |    |    |    |    |    |      |    |    | 5  |
| 184           | 21ME3114 | Industry 4.0 & Design of Cyber Physical Systems | PC | 2 | 0 | 0 | 0 | 2 | 2 | Nil      | ME                                       |    |    |    |    |    |    |      |    |    | 2  |
| 185           | 21ME3115 | Heat Transfer                                   | PC | 3 | 0 | 2 | 0 | 4 | 5 | Nil      | ME                                       |    |    |    |    |    |    |      |    |    | 4  |
| 186           | 21ME3116 | Optimization Techniques                         | PC | 2 | 0 | 0 | 0 | 2 | 2 | Nil      | ME                                       |    |    |    |    |    |    |      |    |    | 2  |
| 187           | 21ME3119 | Heat Power Engineering                          | PC | 3 | 0 | 0 | 0 | 3 | 3 | Nil      | ME                                       |    |    |    |    |    |    |      |    |    | 3  |
| 188           | 21ME4120 | Instrumentation and Control                     | PC | 2 | 0 | 0 | 4 | 3 | 6 | Nil      | ME                                       |    |    |    |    |    |    |      |    |    | 3  |
| 189           | 21ME3217 | Production Technology                           | PC | 3 | 0 | 0 | 0 | 3 | 3 | Nil      | ME                                       |    |    |    |    |    |    |      |    |    | 3  |
| TOTAL CREDITS |          |   |    |   |   |   |   |   |   |          |  | 48 | 49 | 59 | 34 | 44 | 45 | 45.5 | 47 | 48 | 53 |
| 190           | PE-1     | Professional Elective-1                         | PE | 3 | 0 | 0 | 0 | 3 | 3 | Nil      | AI&DS,BT,CE,CSE,CSIT,ECE,EC S,EEE,IOT,ME | 3  | 3  | 3  | 4  | 3  | 3  | 3    | 3  | 3  | 3  |
| 191           | PE-2     | Professional Elective-2                         | PE | 2 | 0 | 0 | 4 | 3 | 3 | Nil      | AI&DS,BT,CE,CSE,CSIT,ECE,EC S,EEE,IOT,ME | 3  | 3  | 3  | 3  | 3  | 3  | 3    | 3  | 3  | 3  |
| 192           | PE-3     | Professional Elective-3                         | PE | 2 | 0 | 2 | 0 | 3 | 3 | Nil      | AI&DS,BT,CE,CSE,CSIT,ECE,EC S,EEE,IOT,ME | 3  | 3  | 3  | 4  | 3  | 3  | 3    | 3  | 3  | 3  |



|                      |          |   |    |   |   |   |   |   |   |     |  |           |           |           |           |           |           |           |           |           |           |
|----------------------|----------|---|----|---|---|---|---|---|---|-----|--|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 193                  | PE-4     | Professional Elective-4                               | PE | 1 | 0 | 2 | 4 | 3 | 3 | Nil | AI&DS,BT,CE,CSE,CSIT,ECE,EC S,EEE,IOT,ME | 3         | 4         | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 3         |
| 194                  | PE-5     | Professional Elective-5                               | PE | 1 | 1 | 2 | 0 | 3 | 3 | Nil | AI&DS,BT,CE,CSE,CSIT,ECE,EC S,EEE,IOT,ME | 3         | 4         | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 3         |
| <b>TOTAL CREDITS</b> |          |   |    |   |   |   |   |   |   |     |  | <b>15</b> | <b>17</b> | <b>15</b> | <b>17</b> | <b>15</b> | <b>15</b> | <b>15</b> | <b>15</b> | <b>15</b> | <b>15</b> |
| 195                  | OE-1     | Open Elective-1                                       | OE | 3 | 0 | 0 | 0 | 3 | 3 | Nil | AI&DS,BT,CE,CSE,CSIT,ECE,EC S,EEE,IOT,ME | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 3         |
| 196                  | OE-2     | Open Elective-2                                       | OE | 3 | 0 | 0 | 0 | 3 | 3 | Nil | AI&DS,BT,CE,CSE,CSIT,ECE,EC S,EEE,IOT,ME |           | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 3         |
| 197                  | OE-3     | Open Elective-3                                       | OE | 3 | 0 | 0 | 0 | 3 | 3 | Nil | AI&DS,BT,CE,CSE,CSIT,ECE,EC S,EEE,IOT,ME |           | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 3         |
| 198                  | FL       | Foreign Language Elective                             | OE | 2 | 0 | 0 | 0 | 2 | 2 | Nil | AI&DS,BT,CE,CSE,CSIT,ECE,EC S,EEE,IOT,ME | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         |
| 199                  | ME       | Management Elective                                   | OE | 3 | 0 | 0 | 0 | 3 | 3 | Nil | AI&DS,BT,CE,CSE,CSIT,ECE,EC S,EEE,IOT,ME | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 3         |
| <b>TOTAL CREDITS</b> |          |   |    |   |   |   |   |   |   |     |  | <b>8</b>  | <b>14</b> | <b>14</b> | <b>14</b> | <b>14</b> | <b>14</b> | <b>14</b> | <b>14</b> | <b>14</b> | <b>14</b> |
| 200                  | 21TS2101 | Technical Skilling 1- (Python Full Stack Development) | TS | 0 | 0 | 2 | 4 | 2 | 6 | Nil | CSE                                      |           |           |           | 2         |           |           |           |           |           |           |
| 201                  | 21TS2106 | Technical Skilling 1- (Python Full Stack Development) | TS | 0 | 0 | 2 | 4 | 2 | 6 | Nil | CSIT                                     |           |           |           |           | 2         |           |           |           |           |           |

|                      |          |   |    |   |   |   |   |   |   |     |           |          |          |          |          |          |          |          |          |          |
|----------------------|----------|---|----|---|---|---|---|---|---|-----|-----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 202                  | 21TS2202 | Technical Skilling 2-<br>(Mern Stack Web Development)                             | TS | 0 | 0 | 2 | 4 | 2 | 6 | Nil | CSE       |          |          |          | 2        |          |          |          |          |          |
| 203                  | 21TS2212 | Technical Skilling 2-<br>(Mern Stack Web Development)                             | TS | 0 | 0 | 2 | 4 | 2 | 6 | Nil | CSIT      |          |          |          |          | 2        |          |          |          |          |
| 204                  | 21TS3103 | Technical Skilling 3-<br>(Java Full Stack Development +<br>MICROSERVICES)         | TS | 0 | 0 | 2 | 4 | 2 | 6 | Nil | CSE       |          |          |          | 2        |          |          |          |          |          |
| 205                  | 21TS3204 | Technical Skilling 4-<br>(Web Architecting on<br>Cloud for Developers )           | TS | 0 | 0 | 2 | 4 | 2 | 6 | Nil | CSE       |          |          |          | 2        |          |          |          |          |          |
| 206                  | 21TS1005 | Tool Based Learning<br>1(Robotics Process<br>Automation and cloud<br>Foundations) | TS | 0 | 0 | 0 | 4 | 1 | 4 | Nil | CSE, CSIT |          |          |          | 1        | 1        |          |          |          |          |
| 207                  | 21TS2006 | Tool Based Learning<br>2(CRM Tools and<br>Mobile App<br>Development)              | TS | 0 | 0 | 0 | 4 | 0 | 4 | Nil | CSE       |          |          |          | 0        |          |          |          |          |          |
| 208                  | 21TS2007 | Tool Based Learning-2   | TS | 0 | 0 | 0 | 4 | 1 | 4 | Nil | CSIT      |          |          |          |          | 1        |          |          |          |          |
| 209                  | 21TS3008 | Tool Based learning-3   | TS | 0 | 0 | 0 | 4 | 1 | 4 | Nil | CSIT      |          |          |          |          | 1        |          |          |          |          |
| 210                  | 21TS3101 | Technical Proficiency-1   | TS | 0 | 0 | 0 | 8 | 2 | 8 | Nil | AIDS      | 2        |          |          |          |          |          |          |          |          |
| 211                  | 21TS3102 | Technical Proficiency-2   | TS | 0 | 0 | 0 | 8 | 2 | 8 | Nil | AIDS      | 2        |          |          |          |          |          |          |          |          |
| <b>TOTAL CREDITS</b> |          |   |    |   |   |   |   |   |   |     |           | <b>4</b> | <b>0</b> | <b>0</b> | <b>9</b> | <b>7</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> |
| 212                  | FC-1     | FLEXI CORE-1  |    | 2 | 0 | 2 | 0 | 3 | 4 | NIL | CSE ECE   | 3        |          |          | 3        | 4        | 4        |          |          | 4        |

|                      |          |                             |    |   |   |   |   |     |   |     |   |          |          |          |          |          |          |          |          |          |          |
|----------------------|----------|-----------------------------|----|---|---|---|---|-----|---|-----|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 213                  | FC-2     | FLEXI CORE-2                |    | 2 | 0 | 2 | 0 | 3   | 4 | NIL | CSE ECE                                 |          |          |          | 3        | 4        | 4        |          |          | 4        |          |
| <b>TOTAL CREDITS</b> |          |                             |    |   |   |   |   |     |   |     |   | <b>3</b> | <b>0</b> | <b>0</b> | <b>6</b> | <b>8</b> | <b>8</b> | <b>0</b> | <b>0</b> | <b>8</b> | <b>0</b> |
| 214                  | 21IE2040 | Social Internship           | PR | 0 | 0 | 0 | 4 | 1   | 4 | NIL | AI&DS,BT,CE,CSE,CSIT,ECE,ECS,EEE,IOT,ME | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        |
| 215                  | 21IE3041 | Technical Internship        | PR | 0 | 0 | 0 | 4 | 1   | 4 | NIL | AI&DS,BT,CE,CSE,CSIT,ECE,ECS,EEE,IOT,ME | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        |
| 216                  | 21IE4042 | Industry Internship         | PR | 0 | 0 | 0 | 4 | 1   | 4 | NIL | AI&DS,BT,CE,CSE,CSIT,ECE,ECS,EEE,IOT,ME | 1        | 1        | 1        |          | 1        | 1        | 1        | 1        | 1        | 1        |
| 217                  | 21IE4043 | Research Internship         | PR | 0 | 0 | 0 | 4 | 1   | 4 | Nil | CSE (H)                                 |          |          |          |          |          |          |          |          |          |          |
| 218                  | 21IE3042 | Research Seminar            | PR | 0 | 0 | 4 | 0 | 2   | 4 | Nil | CSE (H)                                 |          |          |          |          |          |          |          |          |          |          |
| 219                  | 21IE2046 | Project Based Learning - 1  | PR | 0 | 0 | 0 | 6 | 1.5 | 6 | Nil | AI&DS,BT,CE,CSE,CSIT,ECE,ECS,EEE,IOT,ME | 1.5      | 1.5      | 1.5      |          |          | 1.5      | 1.5      | 1.5      | 1.5      | 1.5      |
| 220                  | 21IE2047 | Project Based Learning - 2  | PR | 0 | 0 | 0 | 6 | 1.5 | 6 | Nil | AI&DS,BT,CE,CSE,CSIT,ECE,ECS,EEE,IOT,ME | 1.5      | 1.5      | 1.5      |          |          | 1.5      | 1.5      | 1.5      | 1.5      | 1.5      |
| 221                  | 21IE3043 | Term Paper                  | PR | 0 | 0 | 0 | 4 | 1   | 4 | NIL | AI&DS,BT,CE,CSE,CSIT,ECE,ECS,EEE,IOT,ME | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        |
| 222                  | 21IE3044 | Midgrade Capstone Project-1 | PR | 0 | 0 | 0 | 8 | 2   | 8 | NIL | AI&DS,BT,CE,CSE,CSIT,ECE,ECS,EEE,IOT,ME | 2        | 2        | 2        |          | 2        | 2        | 2        | 2        | 2        | 2        |
| 223                  | 21IE3045 | Midgrade Capstone Project-2 | PR | 0 | 0 | 0 | 8 | 2   | 8 | NIL | AI&DS,BT,CE,CSE,CSIT,ECE,ECS,EEE,IOT,ME | 2        | 2        | 2        |          | 2        | 2        | 2        | 2        | 2        | 2        |

|                     |          |                    |    |   |   |   |    |   |    |     |   |     |     |     |     |     |     |     |     |     |     |
|---------------------|----------|--------------------|----|---|---|---|----|---|----|-----|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 224                 | 21IE4048 | Project-1          | PR | 0 | 0 | 0 | 16 | 4 | 16 | NIL | AI&DS,BT,CE,C<br>SIT,ECE,ECS,EE<br>E,IOT,ME     | 4   | 4   | 4   |     | 4   | 4   | 4   | 4   | 4   | 4   |
| 225                 | 21IE4049 | Project-2          | PR | 0 | 0 | 0 | 16 | 4 | 16 | NIL | AI&DS,BT,CE,C<br>SIT,ECE,ECS,EE<br>E,IOT,ME     | 4   | 4   | 4   |     | 4   | 4   | 4   | 4   | 4   | 4   |
| 226                 | 21IE4053 | Capstone Project-1 |    | 0 | 0 | 0 | 24 | 6 | 24 | NIL | CSE   |     |     |     | 6   |     |     |     |     |     |     |
| 227                 | 21IE4054 | Capstone Project-2 |    | 0 | 0 | 0 | 24 | 6 | 24 | NIL | CSE   |     |     |     | 6   |     |     |     |     |     |     |
| 228                 | 21IE4050 | Practice School    | PR | 0 | 0 | 0 | 16 | 4 | 16 | NIL | AI&DS,BT,CE,C<br>SE,CSIT,ECE,EC<br>S,EEE,IOT,ME |     |     |     |     |     |     |     |     |     |     |
| 229                 | 21IE4051 | Internship-1       | PR | 0 | 0 | 0 | 16 | 4 | 16 | NIL | AI&DS,BT,CE,C<br>SE,CSIT,ECE,EC<br>S,EEE,IOT,ME |     |     |     |     |     |     |     |     |     |     |
| 230                 | 21IE4052 | Internship-2       | PR | 0 | 0 | 0 | 16 | 4 | 16 | NIL | AI&DS,BT,CE,C<br>SE,CSIT,ECE,EC<br>S,EEE,IOT,ME |     |     |     |     |     |     |     |     |     |     |
| TOTAL CREDITS       |          |                    |    |   |   |   |    |   |    |     |   | 19  | 19  | 19  | 15  | 16  | 19  | 19  | 19  | 19  | 19  |
| GRAND TOTAL CREDITS |          |                    |    |   |   |   |    |   |    |     |   | 161 | 164 | 166 | 161 | 162 | 160 | 161 | 160 | 163 | 161 |

### List of Professional Electives

| Specialization Name: Genetic Engineering      |             |                                       |   |   |   |   |    |
|---|-------------|---------------------------------------|---|---|---|---|----|
| S.No  | Course Code | Course Title                          | L | T | P | S | Cr |
| 1   | 21BT3051    | Molecular Genetics                    | 3 | 0 | 0 | 0 | 3  |
| 2   | 21BT3052    | Transgenic Technology                 | 3 | 0 | 0 | 0 | 3  |
| 3   | 21BT3053    | Molecular Expression Technology       | 3 | 0 | 0 | 0 | 3  |
| 4   | 21BT3054    | Genomics and Proteomics               | 3 | 0 | 0 | 0 | 3  |
| 5   | 21BT3055    | Molecular markers and Diagnostics     | 3 | 0 | 0 | 0 | 3  |
| 6   | 21BT3056    | Gene and the Environment              | 3 | 0 | 0 | 0 | 3  |
| 7   | 21BT3057    | Microbial Genetics                    | 3 | 0 | 0 | 0 | 3  |
| 8   | 21BT3058    | DNA Forensics                         | 3 | 0 | 0 | 0 | 3  |
| Specialization Name: Industrial Biotechnology |             |                                       |   |   |   |   |    |
| S.No  | Course Code | Course Title                          | L | T | P | S | Cr |
| 1   | 21BT3061    | Microbial Technology                  | 3 | 0 | 0 | 0 | 3  |
| 2   | 21BT3062    | Pharmaceutical Biotechnology          | 3 | 0 | 0 | 0 | 3  |
| 3   | 21BT3063    | Metabolic Engineering                 | 3 | 0 | 0 | 0 | 3  |
| 4   | 21BT3064    | Bioresource Technology                | 3 | 0 | 0 | 0 | 3  |
| 5   | 21BT3065    | Bioprocess Economics and Plant Design | 3 | 0 | 0 | 0 | 3  |
| 6   | 21BT3066    | Enzyme Engineering                    | 3 | 0 | 0 | 0 | 3  |
| 7   | 21BT3067    | Bioprocess Validation and cGMP        | 3 | 0 | 0 | 0 | 3  |
| 8   | 21BT3068    | Food Technology                       | 3 | 0 | 0 | 0 | 3  |
| 9   | 21BT3069    | Pharmacovigilance and Safety          | 3 | 0 | 0 | 0 | 3  |
| Specialization Name: Bioinformatics           |             |                                       |   |   |   |   |    |
| S.No  | Course Code | Course Title                          | L | T | P | S | Cr |
| 1   | 21BT3071    | PERL and Bioperl programming          | 3 | 0 | 0 | 0 | 3  |
| 2   | 21BT3072    | Biomedical Informatics                | 3 | 0 | 0 | 0 | 3  |
| 3   | 21BT3073    | Molecular Modelling and Drug Design   | 3 | 0 | 0 | 0 | 3  |
| 4   | 21BT3074    | Structural Biology                    | 3 | 0 | 0 | 0 | 3  |
| 5   | 21BT3075    | Systems Biology                       | 3 | 0 | 0 | 0 | 3  |
| 6   | 21BT3076    | Applied Bioinformatics                | 3 | 0 | 0 | 0 | 3  |
| 7   | 21BT3077    | Python and R Programming              | 3 | 0 | 0 | 0 | 3  |
| 8   | 21BT3078    | Data Base Management System           | 3 | 0 | 0 | 0 | 3  |
| Specialization Name: Medical Biotechnology    |             |                                       |   |   |   |   |    |
| S.No  | Course Code | Course Title                          | L | T | P | S | Cr |

|   |                    |   |          |          |          |          |           |
|---|--------------------|---|----------|----------|----------|----------|-----------|
| 1   | 21BT3081           | Stem cell technology                                    | 3        | 0        | 0        | 0        | 3         |
| 2   | 21BT3082           | Healthcare Biotechnology                                | 3        | 0        | 0        | 0        | 3         |
| 3   | 21BT3083           | Cancer Biology  | 3        | 0        | 0        | 0        | 3         |
| 4   | 21BT3084           | Neurobiology  | 3        | 0        | 0        | 0        | 3         |
| 5   | 21BT3085           | Bioelectronics & Biosensors                             | 3        | 0        | 0        | 0        | 3         |
| 6   | 21BT3086           | Tissue Engineering                                      | 3        | 0        | 0        | 0        | 3         |
| 7   | 21BT3087           | Virology  | 3        | 0        | 0        | 0        | 3         |
| 8   | 21BT3088           | Nano biotechnology                                      | 3        | 0        | 0        | 0        | 3         |
| <b>Specialization Name: Structural Engineering</b>                          |                    |   |          |          |          |          |           |
| <b>S.No</b>   | <b>Course Code</b> | <b>Course Title</b>                                     | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1   | 21CE3211           | Advanced Structural Analysis                            | 3        | 0        | 0        | 0        | 3         |
| 2   | 21CE3221           | Advanced Design of Reinforced Concrete Structures       | 3        | 0        | 0        | 0        | 3         |
| 3   | 21CE3231           | Prestressed concrete                                    | 3        | 0        | 0        | 0        | 3         |
| 4   | 21CE4141           | Bridge engineering                                      | 3        | 0        | 0        | 0        | 3         |
| 5   | 21CE4151           | Precast and Prefabricated structures                    | 3        | 0        | 0        | 0        | 3         |
| <b>Specialization Name: Geotechnical Engineering</b>                        |                    |   |          |          |          |          |           |
| <b>S.No</b>   | <b>Course Code</b> | <b>Course Title</b>                                     | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1   | 21CE3212           | Foundation engineering                                  | 3        | 0        | 0        | 0        | 3         |
| 2   | 21CE3222           | Ground improvement techniques                           | 3        | 0        | 0        | 0        | 3         |
| 3   | 21CE3232           | Design of earth retaining structures                    | 3        | 0        | 0        | 0        | 3         |
| 4   | 21CE4142           | Geotechnical earthquake engineering                     | 3        | 0        | 0        | 0        | 3         |
| 5   | 21CE4153           | Forensics in Civil Engineering                          | 3        | 0        | 0        | 0        | 3         |
| <b>Specialization Name : Water Resource &amp; Environmental Engineering</b> |                    |   |          |          |          |          |           |
| <b>S.No</b>   | <b>Course Code</b> | <b>Course Title</b>                                     | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1   | 21CE3213           | Sustainable engineering & technology                    | 3        | 0        | 0        | 0        | 3         |
| 2   | 21CE3223           | Environmental impact assessment and life cycle analyses | 3        | 0        | 0        | 0        | 3         |
| 3   | 21CE3233           | Solid Waste Management and Landfills                    | 3        | 0        | 0        | 0        | 3         |
| 4   | 21CE3214           | River engineering                                       | 3        | 0        | 0        | 0        | 3         |
| 5   | 21CE3224           | Urban water hydrology and hydraulics                    | 3        | 0        | 0        | 0        | 3         |
| <b>Specialization Name: Transportation Engineering</b>                      |                    |   |          |          |          |          |           |
| <b>S.No</b>   | <b>Course Code</b> | <b>Course Title</b>                                     | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1   | 21CE3215           | Intelligent transportation systems                      | 3        | 0        | 0        | 0        | 3         |
| 2   | 21CE3225           | Pavement materials & design                             | 3        | 0        | 0        | 0        | 3         |

|  |                    |  |          |          |          |          |           |
|--|--------------------|--|----------|----------|----------|----------|-----------|
| 3  | 21CE3235           | Traffic engineering and management                       | 3        | 0        | 0        | 0        | 3         |
| 4  | 21CE4145           | Urban transportation systems planning.                   | 3        | 0        | 0        | 0        | 3         |
| 5  | 21CE4155           | Railway engineering airport planning and design          | 3        | 0        | 0        | 0        | 3         |
| <b>Specialization Name: Construction Technology &amp; Management</b> |                    |  |          |          |          |          |           |
| <b>S.No</b>  | <b>Course Code</b> | <b>Course Title</b>                                      | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1  | 21CE3216           | Projects& Contract management                            | 3        | 0        | 0        | 0        | 3         |
| 2  | 21CE3226           | Quality and Safety Management                            | 3        | 0        | 0        | 0        | 3         |
| 3  | 21CE3236           | Form Work  | 3        | 0        | 0        | 0        | 3         |
| 4  | 21CE4146           | Construction Economics                                   | 3        | 0        | 0        | 0        | 3         |
| 5  | 21CE4156           | Sustainable Construction Technology                      | 3        | 0        | 0        | 0        | 3         |
| <b>Specialization Name: Smart Grid Technologies</b>                  |                    |  |          |          |          |          |           |
| <b>S.No</b>  | <b>Course Code</b> | <b>Course Title</b>                                      | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1  | 21EE3131           | Distribution System Practices                            | 3        | 0        | 0        | 0        | 3         |
| 2  | 21EE3132           | Distributed Energy Resources and Smart Grids             | 3        | 0        | 0        | 0        | 3         |
| 3  | 21EE3133           | Energy Management Systems and SCADA                      | 2        | 1        | 0        | 0        | 3         |
| 4  | 21EE3231           | Smart Grid Communication and Cybersecurity               | 3        | 0        | 0        | 0        | 3         |
| 5  | 21EE3232           | Internet of Things and Smart Grid Analytics              | 2        | 1        | 0        | 0        | 3         |
| <b>Specialization Name : Green Energy Technologies</b>               |                    |  |          |          |          |          |           |
| <b>S.No</b>  | <b>Course Code</b> | <b>Course Title</b>                                      | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1  | 21EE3121           | Solar and Micro Energy Technologies                      | 3        | 0        | 0        | 0        | 3         |
| 2  | 21EE3122           | Wind and Energy Storage Technologies                     | 3        | 0        | 0        | 0        | 3         |
| 3  | 21EE3123           | Energy Management and Green Buildings                    | 3        | 0        | 0        | 0        | 3         |
| 4  | 21EE3221           | AI and IOT for Green Energy Integration                  | 3        | 0        | 0        | 0        | 3         |
| 5  | 21EE3222           | Grid Integration of Renewable Energy Sources             | 3        | 0        | 0        | 0        | 3         |
| <b>Specialization Name : Electric Vehicle Technologies</b>           |                    |  |          |          |          |          |           |
| <b>S.No</b>  | <b>Course Code</b> | <b>Course Title</b>                                      | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1  | 21EE3141           | Power Train Design For Electric Vehicle                  | 3        | 0        | 0        | 0        | 3         |
| 2  | 21EE3142           | Battery State Estimation Algorithms for Electric Vehicle | 3        | 0        | 0        | 0        | 3         |
| 3  | 21EE3143           | Charging Stations For Electric Vehicles                  | 3        | 0        | 0        | 0        | 3         |
| 4  | 21EE3241           | AI and IOT for Electric Vehicle                          | 3        | 0        | 0        | 0        | 3         |
| 5  | 21EE3242           | Industrial Role of Electric Vehicle Engineers            | 3        | 0        | 0        | 0        | 3         |
| <b>Specialization Name : Industrial Automation</b>                   |                    |  |          |          |          |          |           |
| <b>S.No</b>  | <b>Course Code</b> | <b>Course Title</b>                                      | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |

|  |                    |  |          |          |          |          |           |
|--|--------------------|--|----------|----------|----------|----------|-----------|
| 1  | 21EE3111           | Industrial Automation and Robotics                               | 3        | 0        | 0        | 0        | 3         |
| 2  | 21EE3112           | Introduction to Industrial Internet of Things                    | 3        | 0        | 0        | 0        | 3         |
| 3  | 21EE3113           | Industrial Drives and Control                                    | 3        | 0        | 0        | 0        | 3         |
| 4  | 21EE3211           | Industrial Communication Protocols and Cyber Security            | 3        | 0        | 0        | 0        | 3         |
| 5  | 21EE3212           | Smart Sensors And Smart Networking                               | 3        | 0        | 0        | 0        | 3         |
| <b>Specialization Name: Engineering Design</b>     |                    |  |          |          |          |          |           |
| <b>S.No</b>  | <b>Course Code</b> | <b>Course Title</b>  | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1  | 21ME4051           | Theory of Elasticity and Plasticity                              | 3        | 0        | 0        | 0        | 3         |
| 2  | 21ME4052           | Dynamics of Multi Body Systems                                   | 2        | 0        | 2        | 0        | 3         |
| 3  | 21ME4053           | Modeling, Analysis and Design of Robotic Systems                 | 2        | 0        | 2        | 0        | 3         |
| 4  | 21ME4054           | Creep, Fatigue and Fracture Mechanics                            | 3        | 0        | 0        | 0        | 3         |
| 5  | 21ME4055           | Advanced Strength of Materials                                   | 2        | 0        | 2        | 0        | 3         |
| 6  | 21ME4056           | Mechanics of Composite Materials                                 | 2        | 0        | 2        | 0        | 3         |
| 7  | 21ME4057           | Sustainable Design & Social Innovation in Engineering Design     | 1        | 0        | 4        | 0        | 3         |
| <b>Specialization Name: Smart Manufacturing</b>    |                    |  |          |          |          |          |           |
| <b>S.No</b>  | <b>Course Code</b> | <b>Course Title</b>  | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1  | 21ME4061           | Modern Manufacturing Processes                                   | 2        | 0        | 2        | 0        | 3         |
| 2  | 21ME4062           | Additive Manufacturing   | 2        | 0        | 2        | 0        | 3         |
| 3  | 21ME4063           | Advanced Materials   | 3        | 0        | 0        | 0        | 3         |
| 4  | 21ME4064           | Flexible Manufacturing Systems                                   | 2        | 0        | 2        | 0        | 3         |
| 5  | 21ME4065           | Robotics & Industrial Automation                                 | 2        | 0        | 2        | 0        | 3         |
| 6  | 21ME4066           | Reverse Engineering and Rapid Prototyping                        | 3        | 0        | 0        | 0        | 3         |
| 7  | 21ME4067           | Sustainable Design & Social Innovation in Smart Manufacturing    | 1        | 0        | 4        | 0        | 3         |
| <b>Specialization Name: Automobile Engineering</b> |                    |  |          |          |          |          |           |
| <b>S.No</b>  | <b>Course Code</b> | <b>Course Title</b>  | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1  | 21ME4101           | Automobile Engineering   | 2        | 0        | 2        | 0        | 3         |
| 2  | 21ME4102           | Hybrid & Electric Vehicle Design                                 | 2        | 0        | 2        | 0        | 3         |
| 3  | 21ME4103           | Autotronics & Safety   | 2        | 0        | 2        | 0        | 3         |
| 4  | 21ME4104           | Robotics & Industrial Automation                                 | 2        | 0        | 2        | 0        | 3         |
| 5  | 21ME4105           | Automotive Electrical and Electronics System                     | 2        | 0        | 2        | 0        | 3         |
| 6  | 21ME4106           | Automobile Engine System and Performance                         | 2        | 0        | 2        | 0        | 3         |
| 7  | 21ME4107           | Sustainable Design & Social Innovation in Automobile Engineering | 1        | 0        | 4        | 0        | 3         |



| Specialization Name: Autotronics  |             |  |   |   |   |   |    |
|---|-------------|--|---|---|---|---|----|
| S.No  | Course Code | Course Title   | L | T | P | S | Cr |
| 1   | 21ME4081    | Autotronics  | 2 | 0 | 2 | 0 | 3  |
| 2   | 21ME4082    | Automotive Sensor and Applications                       | 2 | 0 | 2 | 0 | 3  |
| 3   | 21ME4083    | Electronic Engine Management System                      | 2 | 0 | 2 | 0 | 3  |
| 4   | 21ME4084    | Instrumentation in Automotive Industries                 | 2 | 0 | 2 | 0 | 3  |
| 5   | 21ME4085    | Autotronics and Vehicle Intelligence                     | 2 | 0 | 2 | 0 | 3  |
| 6   | 21ME4086    | Autonomous Vehicle Design                                | 2 | 0 | 2 | 0 | 3  |
| 7   | 21ME4087    | Sustainable Design & Social Innovation in Autotronics    | 1 | 0 | 4 | 0 | 3  |
| Specialization Name: Product Design   |             |  |   |   |   |   |    |
| S.No  | Course Code | Course Title   | L | T | P | S | Cr |
| 1   | 21ME4091    | Design for Quality and Reliability                       | 3 | 0 | 0 | 0 | 3  |
| 2   | 21ME4092    | Design of Agricultural Products & Machinery              | 3 | 0 | 0 | 0 | 3  |
| 3   | 21ME4093    | Designing Intelligence Systems                           | 3 | 0 | 0 | 0 | 3  |
| 4   | 21ME4094    | Sustainable Design                                       | 3 | 0 | 0 | 0 | 3  |
| 5   | 21ME4095    | Systems Thinking for Design                              | 3 | 0 | 0 | 0 | 3  |
| 6   | 21ME4096    | Design with Advanced Engineering Materials               | 3 | 0 | 0 | 0 | 3  |
| 7   | 21ME4097    | Sustainable Design & Social Innovation in Product Design | 1 | 0 | 4 | 0 | 3  |
| Specialization Name: Energy & CFD   |             |  |   |   |   |   |    |
| S.No  | Course Code | Course Title   | L | T | P | S | Cr |
| 1   | 21ME4071    | Hydrogen and Fuel Cell Technologies                      | 2 | 0 | 2 | 0 | 3  |
| 2   | 21ME4072    | Solar Energy Technologies                                | 2 | 0 | 2 | 0 | 3  |
| 3   | 21ME4073    | Advanced Energy Storage Systems                          | 2 | 0 | 2 | 0 | 3  |
| 4   | 21ME4074    | Energy Audit and Management                              | 3 | 0 | 0 | 0 | 3  |
| 5   | 21ME4075    | Computational Fluid Flow And Heat Transfer-FDM Approach  | 2 | 0 | 2 | 0 | 3  |
| 6   | 21ME4076    | CFD For Compressible And Incompressible Flows            | 2 | 0 | 2 | 0 | 3  |
| 7   | 21ME4077    | Thermal Management of Electric and Electronic Systems    | 3 | 0 | 0 | 0 | 3  |
| Specialization Name: Artificial Intelligence & Intelligent Process Automation |             |  |   |   |   |   |    |
| S.No  | Course Code | Course Title   | L | T | P | S | Cr |
| 1   | 21CS3021S   | Machine Learning   | 2 | 0 | 2 | 4 | 4  |
| 2   | 21CS3021A   | Machine Learning   | 3 | 0 | 4 | 4 | 6  |
| 3   | 21CS3021P   | Machine Learning   | 3 | 0 | 4 | 4 | 6  |

| 4   | 21CS3022    | Soft Computing  | 2 | 0 | 2 | 0 | 3  |
|---|-------------|---|---|---|---|---|----|
| 5   | 21CS3022P   | Soft Computing  | 3 | 0 | 4 | 0 | 5  |
| 6   | 21CS3026    | Artificial Neural Networks                                      | 2 | 0 | 2 | 0 | 3  |
| 7   | 21CS3026P   | Artificial Neural Networks                                      | 3 | 0 | 4 | 0 | 5  |
| 8   | 21CS3269    | Deep Learning   | 2 | 0 | 2 | 4 | 4  |
| 9   | 21CS3069A   | Deep Learning   | 3 | 0 | 4 | 4 | 6  |
| 10  | 21CS3069P   | Deep Learning   | 3 | 0 | 4 | 4 | 6  |
| 11  | 21CS3272    | Cognitive Computing   | 2 | 0 | 2 | 0 | 3  |
| 12  | 21CS3272P   | Cognitive Computing   | 3 | 0 | 4 | 0 | 5  |
| 13  | 21CS3271    | Perception and Computer Vision                                  | 2 | 0 | 2 | 0 | 3  |
| 14  | 21CS3271P   | Perception and Computer Vision                                  | 3 | 0 | 4 | 0 | 5  |
| 15  | 21CS3278    | Digital Video Processing  | 2 | 0 | 2 | 0 | 3  |
| 16  | 21CS3278P   | Digital Video Processing  | 3 | 0 | 4 | 0 | 5  |
| 17  | 21CS3282    | Machine Learning On Cloud                                       | 2 | 0 | 2 | 0 | 3  |
| 18  | 21CS3282P   | Machine Learning On Cloud                                       | 3 | 0 | 4 | 0 | 5  |
| 19  | 21CS3272    | Computational Epidemiology                                      | 2 | 0 | 2 | 0 | 3  |
| 20  | 21CS3272P   | Computational Epidemiology                                      | 3 | 0 | 4 | 0 | 5  |
| 21  | 21CS3273    | Natural Language Processing                                     | 2 | 0 | 2 | 0 | 3  |
| 22  | 21CS3273P   | Natural Language Processing                                     | 3 | 0 | 4 | 0 | 5  |
| 23  | 21CS3274    | Speech Processing   | 2 | 0 | 2 | 0 | 3  |
| 24  | 21CS3274P   | Speech Processing   | 3 | 0 | 4 | 0 | 5  |
| 25  | 21CS3292    | Design & Management of Distributed Applications for AI on Cloud | 2 | 0 | 2 | 0 | 3  |
| 26  | 21CS3292P   | Design & Management of Distributed Applications for AI on Cloud | 3 | 0 | 4 | 0 | 5  |
| 27  | 21CS3293    | Architecting Deep Learning Workloads on Cloud                   | 2 | 0 | 2 | 0 | 3  |
| 28  | 21CS3293P   | Architecting Deep Learning Workloads on Cloud                   | 3 | 0 | 4 | 0 | 5  |
| <b>Specialization Name: Data Science &amp; Big Data Analytics</b> |             |   |   |   |   |   |    |
| S.No  | Course Code | Course Title  | L | T | P | S | Cr |
| 1   | 21CS3051S   | Data Visualization Techniques                                   | 2 | 0 | 2 | 4 | 4  |
| 2   | 21CS3051A   | Data Visualization Techniques                                   | 3 | 0 | 4 | 4 | 6  |
| 3   | 21CS3051P   | Data Visualization Techniques                                   | 3 | 0 | 4 | 4 | 6  |
| 4   | 21CS3052    | Data Warehousing & Mining                                       | 2 | 0 | 2 | 0 | 3  |
| 5   | 21CS3052P   | Data Warehousing & Mining                                       | 3 | 0 | 4 | 0 | 5  |
| 6   | 21CS3275S   | Big Data Analytics  | 2 | 0 | 2 | 4 | 4  |

| 7   | 21CS3275A   | Big Data Analytics                             | 3 | 0 | 4 | 4 | 6  |
|---|-------------|--|---|---|---|---|----|
| 8   | 21CS3275P   | Big Data Analytics                             | 3 | 0 | 4 | 4 | 6  |
| 9   | 21CS3276    | Big Data Optimization                          | 2 | 0 | 2 | 0 | 3  |
| 10  | 21CS3276P   | Big Data Optimization                          | 3 | 0 | 4 | 0 | 5  |
| 11  | 21CS3277    | Bioinformatics                                 | 2 | 0 | 2 | 0 | 3  |
| 12  | 21CS3277P   | Bioinformatics                                 | 3 | 0 | 4 | 0 | 5  |
| 13  | 21CS3278    | Digital Video Processing                       | 2 | 0 | 2 | 0 | 3  |
| 14  | 21CS3278P   | Digital Video Processing                       | 3 | 0 | 4 | 0 | 5  |
| 15  | 21CS3283    | Data Analytics On Cloud                        | 2 | 0 | 2 | 0 | 3  |
| 16  | 21CS3283P   | Data Analytics On Cloud                        | 3 | 0 | 4 | 0 | 5  |
| 17  | 21CS3284    | Digital Media Analytics                        | 2 | 0 | 2 | 0 | 3  |
| 18  | 21CS3284P   | Digital Media Analytics                        | 3 | 0 | 4 | 0 | 5  |
| 19  | 21CS3272    | Computational Epidemiology                     | 2 | 0 | 2 | 0 | 3  |
| 20  | 21CS3272P   | Computational Epidemiology                     | 3 | 0 | 4 | 0 | 5  |
| 21  | 21CS3279    | Advanced Databases                             | 2 | 0 | 2 | 0 | 3  |
| 22  | 21CS3279P   | Advanced Databases                             | 3 | 0 | 4 | 0 | 5  |
| 23  | 21CS3289    | Business Analytics                             | 2 | 0 | 2 | 0 | 3  |
| 24  | 21CS3289P   | Business Analytics                             | 3 | 0 | 4 | 0 | 5  |
| 25  | 21CS3280    | Graph & Web Analytics                          | 2 | 0 | 2 | 0 | 3  |
| 26  | 21CS3280P   | Graph & Web Analytics                          | 3 | 0 | 4 | 0 | 5  |
| 27  | 21CS3294    | Data Governance on Cloud                       | 2 | 0 | 2 | 0 | 3  |
| 28  | 21CS3294P   | Data Governance on Cloud                       | 3 | 0 | 4 | 0 | 5  |
| <b>Specialization Name: Cyber Security &amp; Block Chain Technology</b> |             |  |   |   |   |   |    |
| S.No  | Course Code | Course Title                                   | L | T | P | S | Cr |
| 1   | 21CS3041S   | Crypt Analysis & Cyber Defense                 | 2 | 0 | 2 | 4 | 4  |
| 2   | 21CS3041A   | Crypt Analysis & Cyber Defense                 | 3 | 0 | 4 | 4 | 6  |
| 3   | 21CS3041P   | Crypt Analysis & Cyber Defense                 | 3 | 0 | 4 | 4 | 6  |
| 4   | 21CS3042    | Network & Infrastructure Security              | 2 | 0 | 2 | 0 | 3  |
| 5   | 21CS3042P   | Network & Infrastructure Security              | 3 | 0 | 4 | 0 | 5  |
| 6   | 21CS3045    | Introduction to Blockchain & Crypto Currencies | 2 | 0 | 2 | 0 | 3  |
| 7   | 21CS3045P   | Introduction to Blockchain & Crypto Currencies | 3 | 0 | 4 | 0 | 5  |
| 8   | 21CS3259S   | Digital Forensics                              | 2 | 0 | 2 | 4 | 4  |
| 9   | 21CS3259A   | Digital Forensics                              | 3 | 0 | 4 | 4 | 6  |
| 10  | 21CS3259P   | Digital Forensics                              | 3 | 0 | 4 | 4 | 6  |

| 11   | 21CS 3260   | Database & Systems Security         | 2 | 0 | 2 | 0 | 3  |
|--|-------------|-------------------------------------|---|---|---|---|----|
| 12   | 21CS 3260P  | Database & Systems Security         | 3 | 0 | 4 | 0 | 5  |
| 13   | 21CS3261    | Programming For Smart Contracts     | 2 | 0 | 2 | 0 | 3  |
| 14   | 21CS3261P   | Programming For Smart Contracts     | 3 | 0 | 4 | 0 | 5  |
| 15   | 21CS3287    | Cloud Security                      | 2 | 0 | 2 | 0 | 3  |
| 16   | 21CS3287P   | Cloud Security                      | 3 | 0 | 4 | 0 | 5  |
| 17   | 21CS3262    | Secure Software Engineering         | 2 | 0 | 2 | 0 | 3  |
| 18   | 21CS3262P   | Secure Software Engineering         | 3 | 0 | 4 | 0 | 5  |
| 19   | 21CS3264    | Web Security                        | 2 | 0 | 2 | 0 | 3  |
| 20   | 21CS3264P   | Web Security                        | 3 | 0 | 4 | 0 | 5  |
| 21   | 21CS3291    | Security Governance & Management    | 2 | 0 | 2 | 0 | 3  |
| 22   | 21CS3291P   | Security Governance & Management    | 3 | 0 | 4 | 0 | 5  |
| <b>Specialization Name: Cloud and Edge Computing</b> |             |                                     |   |   |   |   |    |
| S.No   | Course Code | Course Title                        | L | T | P | S | Cr |
| 1  | 21CS3037S   | Cloud Infrastructure & Services     | 2 | 0 | 2 | 4 | 4  |
| 2  | 21CS3037A   | Cloud Infrastructure & Services     | 3 | 0 | 4 | 4 | 6  |
| 3  | 21CS3037P   | Cloud Infrastructure & Services     | 3 | 0 | 4 | 4 | 6  |
| 4  | 21CS3032    | Advanced Operating Systems          | 2 | 0 | 2 | 0 | 3  |
| 5  | 21CS3032P   | Advanced Operating Systems          | 3 | 0 | 4 | 0 | 5  |
| 6  | 21CS3036    | Functional & Concurrent Programming | 2 | 0 | 2 | 0 | 3  |
| 7  | 21CS3036P   | Functional & Concurrent Programming | 3 | 0 | 4 | 0 | 5  |
| 8  | 21CS3086    | Cloud Devops                        | 2 | 0 | 2 | 0 | 3  |
| 9  | 21CS3086P   | Cloud Devops                        | 3 | 0 | 4 | 0 | 5  |
| 10   | 21CS3281S   | Cloud & Server less Computing       | 2 | 0 | 2 | 4 | 4  |
| 11   | 21CS3281A   | Cloud & Server less Computing       | 3 | 0 | 4 | 4 | 6  |
| 12   | 21CS3281P   | Cloud & Server less Computing       | 3 | 0 | 4 | 4 | 6  |
| 13   | 21CS3251    | Advanced Computer Architecture      | 2 | 0 | 2 | 0 | 3  |
| 14   | 21CS3251P   | Advanced Computer Architecture      | 3 | 0 | 4 | 0 | 5  |
| 15   | 21CS3252    | Parallel Algorithms                 | 2 | 0 | 2 | 0 | 3  |
| 16   | 21CS3252P   | Parallel Algorithms                 | 3 | 0 | 4 | 0 | 5  |
| 17   | 21CS3287    | Cloud Security                      | 2 | 0 | 2 | 0 | 3  |
| 18   | 21CS3287P   | Cloud Security                      | 3 | 0 | 4 | 0 | 5  |
| 19   | 21CS3285    | Architecting Cloud Solutions*       | 2 | 0 | 2 | 0 | 3  |
| 20   | 21CS3285P   | Architecting Cloud Solutions*       | 3 | 0 | 4 | 0 | 5  |

| 21   | 21CS3253    | Edge Computing                                    | 2 | 0 | 2 | 0 | 3  |
|--|-------------|---|---|---|---|---|----|
| 22   | 21CS3253P   | Edge Computing                                    | 3 | 0 | 4 | 0 | 5  |
| 23   | 21CS3038    | High Performance Computing                        | 2 | 0 | 2 | 0 | 3  |
| 24   | 21CS3038P   | High Performance Computing                        | 3 | 0 | 4 | 0 | 5  |
| 25   | 21CS3290    | Design Of Distributed Applications On Cloud (DDA) | 2 | 0 | 2 | 0 | 3  |
| 26   | 21CS3290P   | Design Of Distributed Applications On Cloud (DDA) | 3 | 0 | 4 | 0 | 5  |
| 27   | 21CS3288    | Cloud Networking                                  | 2 | 0 | 2 | 0 | 3  |
| 28   | 21CS3288P   | Cloud Networking                                  | 3 | 0 | 4 | 0 | 5  |
| <b>Specialization Name: Software Modelling and Design Patterns</b> |             |   |   |   |   |   |    |
| S.No   | Course Code | Course Title                                      | L | T | P | S | Cr |
| 1  | 21CS3062S   | Software Verification & Valuation                 | 2 | 0 | 2 | 4 | 4  |
| 2  | 21CS3062A   | Software Verification & Validation                | 3 | 0 | 4 | 4 | 6  |
| 3  | 21CS3062P   | Software Verification & Validation                | 3 | 0 | 4 | 4 | 6  |
| 4  | 21CS3064    | UX Design   | 2 | 0 | 2 | 0 | 3  |
| 5  | 21CS3064P   | UX Design   | 3 | 0 | 4 | 0 | 5  |
| 6  | 21CS3065    | Design Patterns & Clean Coding Techniques         | 2 | 0 | 2 | 0 | 3  |
| 7  | 21CS3065P   | Design Patterns & Clean Coding Techniques         | 3 | 0 | 4 | 0 | 5  |
| 8  | 21CS3256S   | Continuous Delivery & DevOps                      | 2 | 0 | 2 | 4 | 4  |
| 9  | 21CS3256A   | Continuous Delivery & DevOps                      | 3 | 0 | 4 | 4 | 6  |
| 10   | 21CS3256P   | Continuous Delivery & DevOps                      | 3 | 0 | 4 | 4 | 6  |
| 11   | 21CS3257    | SOFTWARE PROJECT MANAGEMENT                       | 2 | 0 | 2 | 0 | 3  |
| 12   | 21CS3257P   | SOFTWARE PROJECT MANAGEMENT                       | 3 | 0 | 4 | 0 | 5  |
| 13   | 21CS3231    | VISUAL PROGRAMING                                 | 2 | 0 | 2 | 0 | 3  |
| 14   | 21CS3231P   | VISUAL PROGRAMING                                 | 3 | 0 | 4 | 0 | 5  |
| 15   | 21CS3295    | SOFTWARE ARCHITECTURE & DESIGN                    | 2 | 0 | 2 | 0 | 3  |
| 16   | 21CS3295P   | SOFTWARE ARCHITECTURE & DESIGN                    | 3 | 0 | 4 | 0 | 5  |
| 17   | 21CS3258    | SOFTWARE RELIABILITY                              | 2 | 0 | 2 | 0 | 3  |
| 18   | 21CS3258P   | SOFTWARE RELIABILITY                              | 3 | 0 | 4 | 0 | 5  |
| 19   | 21CS3255    | CROSS-PLATFORM DEVELOPMENT FRAMEWORKS             | 2 | 0 | 2 | 0 | 3  |
| 20   | 21CS3255P   | CROSS-PLATFORM DEVELOPMENT FRAMEWORKS             | 3 | 0 | 4 | 0 | 5  |
| <b>Specialization Name: Graphical User eXperience</b>              |             |   |   |   |   |   |    |
| S.No   | Course Code | Course Title                                      | L | T | P | S | Cr |
| 1  | 21CS3071S   | Programming for Game Development                  | 2 | 0 | 2 | 4 | 4  |
| 2  | 21CS3071A   | Programming for Game Development                  | 3 | 0 | 4 | 4 | 6  |

|   |                    |   |          |          |          |          |           |
|---|--------------------|---|----------|----------|----------|----------|-----------|
| 3   | 21CS3071P          | Programming for Game Development                  | 3        | 0        | 4        | 4        | 6         |
| 4   | 21CS3064           | UX Design   | 2        | 0        | 2        | 0        | 3         |
| 5   | 21CS3064P          | UX Design   | 3        | 0        | 4        | 0        | 5         |
| 6   | 21CS3266S          | AR & VR Application Development                   | 2        | 0        | 2        | 4        | 4         |
| 7   | 21CS3266A          | AR & VR Application Development                   | 3        | 0        | 4        | 4        | 6         |
| 8   | 21CS3266P          | AR & VR Application Development                   | 3        | 0        | 4        | 4        | 6         |
| 9   | 21CS3296           | Computer Graphics                                 | 2        | 0        | 2        | 0        | 3         |
| 10  | 21CS3296P          | Computer Graphics                                 | 3        | 0        | 4        | 0        | 5         |
| 11  | 21CS3297           | 3d Modelling & Animation                          | 2        | 0        | 2        | 0        | 3         |
| 12  | 21CS3297P          | 3d Modelling & Animation                          | 3        | 0        | 4        | 0        | 5         |
| 13  | 21CS3278           | Digital Video Processing                          | 2        | 0        | 2        | 0        | 3         |
| 14  | 21CS3278P          | Digital Video Processing                          | 3        | 0        | 4        | 0        | 5         |
| 15  | 21CS3268           | Principles Of Game Design                         | 2        | 0        | 2        | 0        | 3         |
| 16  | 21CS3268P          | Principles Of Game Design                         | 3        | 0        | 4        | 0        | 5         |
| 17  | 21CS3267           | Business Of Games & Entrepreneurship              | 2        | 0        | 2        | 0        | 3         |
| 18  | 21CS3267P          | Business Of Games & Entrepreneurship              | 3        | 0        | 4        | 0        | 5         |
| <b>Specialization Name: Cross Platform Development Technologies</b> |                    |   |          |          |          |          |           |
| <b>S.No</b>   | <b>Course Code</b> | <b>Course Title</b>                               | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1   | 21CI3150           | Fundamentals of Mobile Application Development    | 2        | 0        | 2        | 4        | 4         |
| 2   | 21CI3151           | Advanced Mobile Application Development           | 2        | 0        | 2        | 0        | 3         |
| 3   | 21CI3252           | Framework Based Cross Platform App Development    | 2        | 0        | 2        | 4        | 4         |
| 4   | 21CI3253           | Secure Mobile Application Development             | 2        | 0        | 2        | 0        | 3         |
| 5   | 21CI3254           | 3D Application & Game Development for Mobiles     | 2        | 0        | 2        | 0        | 3         |
| 6   | 21CI3255           | Cross Platform User Experience Design             | 2        | 0        | 2        | 0        | 3         |
| <b>Specialization Name: Management Information systems</b>          |                    |   |          |          |          |          |           |
| <b>S.No</b>   | <b>Course Code</b> | <b>Course Title</b>                               | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1   | 21CI3156           | Enterprise Programming Planning                   | 2        | 0        | 2        | 4        | 4         |
| 2   | 21CI3157           | Information System Analysis & Design              | 2        | 0        | 2        | 0        | 3         |
| 3   | 21CI3258           | E-Commerce Design & Development                   | 2        | 0        | 2        | 4        | 4         |
| 4   | 21CI3259           | Data Analytics & Visualization                    | 2        | 0        | 2        | 0        | 3         |
| 5   | 21CI3260           | Data Warehousing & Mining                         | 2        | 0        | 2        | 0        | 3         |
| 6   | 21CI3261           | Information Security Governance & Risk Management | 2        | 0        | 2        | 0        | 3         |
| <b>Specialization Name: Software Modelling &amp; DevOps</b>         |                    |   |          |          |          |          |           |
| <b>S.No</b>   | <b>Course Code</b> | <b>Course Title</b>                               | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |

|  |                    |   |          |          |          |          |           |
|--|--------------------|---|----------|----------|----------|----------|-----------|
| 1  | 21CI3144           | Software Verification & Validation              | 2        | 0        | 2        | 4        | 4         |
| 2  | 21CI3145           | Design Patterns & Clean Coding Techniques       | 2        | 0        | 2        | 0        | 3         |
| 3  | 21CI3246           | Continuous Delivery & DevOps                    | 2        | 0        | 2        | 4        | 4         |
| 4  | 21CI3247           | Software Project Management                     | 2        | 0        | 2        | 0        | 3         |
| 5  | 21CI3248           | Visual Programming                              | 2        | 0        | 2        | 0        | 3         |
| 6  | 21CI3249           | Software Reliability                            | 3        | 0        | 0        | 0        | 3         |
| <b>Specialization Name: Data Science &amp; Analytics</b>   |                    |   |          |          |          |          |           |
| <b>S.No</b>  | <b>Course Code</b> | <b>Course Title</b>                             | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1  | 21CI3135           | Data Visualization Techniques                   | 2        | 0        | 2        | 4        | 4         |
| 2  | 21CI3136           | Functional & Concurrent Programming             | 2        | 0        | 2        | 0        | 3         |
| 3  | 21CI3137           | Data Warehousing & Mining                       | 2        | 0        | 2        | 0        | 3         |
| 4  | 21CI3238           | Big Data Analytics                              | 2        | 0        | 2        | 4        | 4         |
| 5  | 21CI3239           | Big Data Optimization                           | 2        | 0        | 2        | 0        | 3         |
| 6  | 21CI3240           | Bio Informatics                                 | 2        | 0        | 2        | 0        | 3         |
| 7  | 21CI3241           | Digital Video Processing                        | 2        | 0        | 2        | 0        | 3         |
| 8  | 21CI3242           | Advanced Databases                              | 2        | 0        | 2        | 0        | 3         |
| 9  | 21CI3243           | Graph & Web Analytics                           | 2        | 0        | 2        | 0        | 3         |
| <b>Specialization Name: Cyber Security &amp; Forensics</b> |                    |   |          |          |          |          |           |
| <b>S.No</b>  | <b>Course Code</b> | <b>Course Title</b>                             | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1  | 21CI3126           | Crypt Analysis & Cyber Defense                  | 2        | 0        | 2        | 4        | 4         |
| 2  | 21CI3127           | Network & Infrastructure Security               | 2        | 0        | 2        | 0        | 3         |
| 3  | 21CI3128           | Introduction to Block chain & Crypto Currencies | 2        | 0        | 2        | 0        | 3         |
| 4  | 21CI3219           | Digital Forensics                               | 2        | 0        | 2        | 4        | 4         |
| 5  | 21CI3230           | Database & System Security                      | 2        | 0        | 2        | 0        | 3         |
| 6  | 21CI3231           | Programming for Smart Contracts                 | 2        | 0        | 2        | 0        | 3         |
| 7  | 21CI3232           | Secure Software Engineering                     | 2        | 0        | 2        | 0        | 3         |
| 8  | 21CI3233           | Web Security                                    | 2        | 0        | 2        | 0        | 3         |
| 9  | 21CI3234           | Wireless Sensor Networks                        | 2        | 0        | 2        | 0        | 3         |
| <b>Specialization Name: Knowledge Engineering</b>          |                    |   |          |          |          |          |           |
| <b>S.No</b>  | <b>Course Code</b> | <b>Course Title</b>                             | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1  | 21CI3117           | Machine Learning                                | 2        | 0        | 2        | 4        | 4         |
| 2  | 21CI3118           | Soft Computing                                  | 2        | 0        | 2        | 0        | 3         |
| 3  | 21CI3119           | Artificial Neural Networks                      | 2        | 0        | 2        | 0        | 3         |
| 4  | 21CI3210           | Deep Learning                                   | 2        | 0        | 2        | 4        | 4         |

|   |                    |  |          |          |          |          |           |
|---|--------------------|--|----------|----------|----------|----------|-----------|
| 5   | 21CI3211           | Cognitive Computing                                      | 2        | 0        | 2        | 0        | 3         |
| 6   | 21CI3212           | Perception and Computer Vision                           | 2        | 0        | 2        | 0        | 3         |
| 7   | 21CI3213           | Computational Epidemiology                               | 2        | 0        | 2        | 0        | 3         |
| 8   | 21CI3214           | Natural Language Processing                              | 2        | 0        | 2        | 0        | 3         |
| 9   | 21CI3215           | Speech Processing  | 2        | 0        | 2        | 0        | 3         |
| <b>Specialization Name: Internet of Things</b>                              |                    |  |          |          |          |          |           |
| <b>S.No</b>   | <b>Course Code</b> | <b>Course Title</b>                                      | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1   | 21EC3051           | Advanced Embedded Systems                                | 3        | 0        | 0        | 0        | 3         |
| 2   | 21EC3052           | Embedded Systems for IoT                                 | 2        | 0        | 0        | 4        | 3         |
| 3   | 21EC3053           | Embedded and Real-time systems                           | 2        | 0        | 2        | 0        | 3         |
| 4   | 21EC3054           | Embedded Linux   | 2        | 0        | 2        | 0        | 3         |
| 5   | 21EC3055           | Cloud Architecture in IoT                                | 2        | 0        | 2        | 0        | 3         |
| 6   | 21EC3056           | Edge Computing & Data Analytics in IoT                   | 2        | 0        | 2        | 0        | 3         |
| <b>Specialization Name: VLSI</b>  |                    |  |          |          |          |          |           |
| <b>S.No</b>   | <b>Course Code</b> | <b>Course Title</b>                                      | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1   | 21EC3061           | Low Power VLSI Design                                    | 3        | 0        | 0        | 0        | 3         |
| 2   | 21EC3062           | Analog VLSI Design                                       | 2        | 0        | 0        | 4        | 3         |
| 3   | 21EC3063           | VLSI Sub system Design and Design for Testability        | 2        | 0        | 2        | 0        | 3         |
| 4   | 21EC3064           | ASIC & FPGA Chip Design                                  | 2        | 0        | 2        | 0        | 3         |
| 5   | 21EC3066           | System on Chip Design                                    | 2        | 0        | 2        | 0        | 3         |
| 6   | 21EC3065           | Algorithms for VLSI Design Automation                    | 2        | 0        | 2        | 0        | 3         |
| 7   | 21EC3067           | Mixed Signal IC design                                   | 2        | 0        | 2        | 0        | 3         |
| <b>Specialization Name: Robotics &amp; Automation</b>                       |                    |  |          |          |          |          |           |
| <b>S.No</b>   | <b>Course Code</b> | <b>Course Title</b>                                      | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1   | 21EC3071           | Introduction to Robotics                                 | 3        | 0        | 0        | 0        | 3         |
| 2   | 21EC3072           | Autonomous Vehicles & Automotive Electronics             | 2        | 0        | 0        | 4        | 3         |
| 3   | 21EC3073           | Advanced Robotics  | 2        | 0        | 2        | 0        | 3         |
| 4   | 21EC3074           | Computer Vision & Applications                           | 2        | 0        | 2        | 0        | 3         |
| 5   | 21EC3075           | Human Machine Interface & Brain Machine Interface        | 2        | 0        | 2        | 0        | 3         |
| 6   | 21EC3076           | Designing Automation Systems & Assistive Robotic Systems | 2        | 0        | 2        | 0        | 3         |
| <b>Specialization Name: Machine Learning &amp; Digital Media Processing</b> |                    |  |          |          |          |          |           |
| <b>S.No</b>   | <b>Course Code</b> | <b>Course Title</b>                                      | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1   | 21EC3081           | Speech Signal Processing                                 | 3        | 0        | 0        | 0        | 3         |



|  |                    |   |          |          |          |          |           |
|--|--------------------|---|----------|----------|----------|----------|-----------|
| 2  | 21EC3082           | Natural Language Processing & Applications            | 2        | 0        | 0        | 4        | 3         |
| 3  | 21EC3083           | Computer Vision & Applications                        | 2        | 0        | 2        | 0        | 3         |
| 4  | 21EC3084           | Big Data Analytics                                    | 2        | 0        | 2        | 0        | 3         |
| 5  | 21EC3085           | Data Visualization                                    | 2        | 0        | 2        | 0        | 3         |
| <b>Specialization Name: RF &amp; Microwave</b>                           |                    |   |          |          |          |          |           |
| <b>S.No</b>  | <b>Course Code</b> | <b>Course Title</b>                                   | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1  | 21EC3091           | Microwave Engineering                                 | 3        | 0        | 0        | 0        | 3         |
| 2  | 21EC3092           | Antenna Design & Wave Propagation                     | 2        | 0        | 0        | 4        | 3         |
| 3  | 21EC3093           | Radar Engineering & Navigational Aids                 | 2        | 0        | 2        | 0        | 3         |
| 4  | 21EC3094           | Modern Antennas, Millimeter Waves & Applications      | 2        | 0        | 2        | 0        | 3         |
| 5  | 21EC3095           | Electronic Warfare, EMI & EMC                         | 2        | 0        | 2        | 0        | 3         |
| <b>Specialization Name: Data Communications</b>                          |                    |   |          |          |          |          |           |
| <b>S.No</b>  | <b>Course Code</b> | <b>Course Title</b>                                   | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1  | 21EC4051           | 4G Wireless Technologies and Cellular Communication   | 3        | 0        | 0        | 0        | 3         |
| 2  | 21EC4052           | 5G Wireless Technologies                              | 2        | 0        | 0        | 4        | 3         |
| 3  | 21EC4053           | Machine Learning for Wireless Communications          | 2        | 0        | 2        | 0        | 3         |
| 4  | 21EC4054           | Optical Wireless Communications                       | 2        | 0        | 2        | 0        | 3         |
| 5  | 21EC4055           | Modern Satellite Communication Systems                | 2        | 0        | 2        | 0        | 3         |
| <b>Specialization Name: Computer Communication &amp; 5G Technologies</b> |                    |   |          |          |          |          |           |
| <b>S.No</b>  | <b>Course Code</b> | <b>Course Title</b>                                   | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1  | 21EC4061           | TCP/IP & Other Protocol Suite                         | 3        | 0        | 0        | 0        | 3         |
| 2  | 21EC4062           | VoIP Systems & Broad Band Networks                    | 2        | 0        | 0        | 4        | 3         |
| 3  | 21EC4063           | 5G Mobile, Wireless Technologies & IEEE 802 Standards | 2        | 0        | 2        | 0        | 3         |
| 4  | 21EC4064           | Cloud-Computing & Network Security                    | 2        | 0        | 2        | 0        | 3         |
| 5  | 21EC4065           | IP Multimedia Sub-System & Emerging Technologies      | 2        | 0        | 2        | 0        | 3         |
| <b>Specialization Name: Bio-Medical Instrumentation</b>                  |                    |   |          |          |          |          |           |
| <b>S.No</b>  | <b>Course Code</b> | <b>Course Title</b>                                   | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1  | 21EC4071           | Electronic Circuits for Medical Instrumentation       | 3        | 0        | 0        | 0        | 3         |
| 2  | 21EC4072           | Biomedical Signal and Image Processing                | 2        | 0        | 0        | 4        | 3         |
| 3  | 21EC4073           | Advanced Biomedical signal processing                 | 2        | 0        | 2        | 0        | 3         |
| 4  | 21EC4074           | Biomedical device design Fundamentals                 | 2        | 0        | 2        | 0        | 3         |
| 5  | 21EC4075           | Bio Inspired Robotics                                 | 2        | 0        | 2        | 0        | 3         |
| 6  | 21EC4076           | Biological & Cyber-Physical Systems                   | 2        | 0        | 2        | 0        | 3         |

| Specialization Name: Web Technologies   |             |   |   |   |   |   |    |
|---|-------------|---|---|---|---|---|----|
| S.No  | Course Code | Course Title                                      | L | T | P | S | Cr |
| 1   | 21EL3104    | Web Programming using Python and Django           | 2 | 0 | 2 | 0 | 3  |
| 2   | 21EL3205    | Cloud Computing for web Engineer                  | 2 | 0 | 2 | 0 | 3  |
| 3   | 21EL3206    | Big data Analytics for Web Engineer               | 2 | 0 | 2 | 0 | 3  |
| 4   | 21EL3207    | Essentials of Block Chain Technology              | 2 | 0 | 2 | 0 | 3  |
| 5   | 21EL3208    | Robotic Process Automation                        | 2 | 0 | 2 | 0 | 3  |
| Specialization Name: Embedded Systems   |             |   |   |   |   |   |    |
| S.No  | Course Code | Course Title                                      | L | T | P | S | Cr |
| 1   | 21EL3211    | Hardware software co design                       | 2 | 0 | 2 | 0 | 3  |
| 2   | 21EL3203    | Embedded Real Time Operating System               | 2 | 0 | 2 | 0 | 3  |
| 3   | 21EL3204    | Networking of Embedded Systems                    | 2 | 0 | 2 | 0 | 3  |
| 4   | 21EL4103    | System on Chip                                    | 2 | 0 | 2 | 0 | 3  |
| 5   | 21EL4104    | Embedded Security                                 | 2 | 0 | 2 | 0 | 3  |
| Specialization Name: Internet of Things                                       |             |   |   |   |   |   |    |
| S.No  | Course Code | Course Title                                      | L | T | P | S | Cr |
| 1   | 21EL3106    | Fundamentals of IoT                               | 2 | 0 | 2 | 0 | 3  |
| 2   | 21EL3107    | Internet of Things : Architectures and Protocols  | 2 | 0 | 2 | 0 | 3  |
| 3   | 21EL3108    | IoT Sensing and Actuating Devices                 | 2 | 0 | 2 | 0 | 3  |
| 4   | 21EL3209    | wireless sensor networks                          | 2 | 0 | 2 | 0 | 3  |
| 5   | 21EL3210    | Cloud computing for IoT                           | 2 | 0 | 2 | 0 | 3  |
| Specialization Name: Renewable Energy & Smart Cities                          |             |   |   |   |   |   |    |
| S.No  | Course Code | Course Title                                      | L | T | P | S | Cr |
| 1   | 21IN3051    | Flexible Hybrid Electronics for IoT Systems       | 3 | 0 | 0 | 0 | 3  |
| 2   | 21IN3052    | Energy Harvesting Technologies for IoT            | 2 | 0 | 0 | 4 | 3  |
| 3   | 21IN3053    | Systems for Renewable Energy & Smart Grid         | 2 | 0 | 2 | 0 | 3  |
| 4   | 21IN3054    | Industrial IoT                                    | 2 | 0 | 2 | 0 | 3  |
| 5   | 21IN3055    | Systems for Smart Cities & Smart Villages         | 2 | 0 | 2 | 0 | 3  |
| Specialization Name: Artificial Intelligence & Intelligent Process Automation |             |   |   |   |   |   |    |
| S.No  | Course Code | Course Title                                      | L | T | P | S | Cr |
| 1   | 21IN3091    | AI Applications Design                            | 3 | 0 | 0 | 0 | 3  |
| 2   | 21IN3084    | Computer Vision & Applications                    | 2 | 0 | 0 | 4 | 3  |
| 3   | 21IN3085    | Human Machine Interface & Brain Machine Interface | 2 | 0 | 2 | 0 | 3  |
| 4   | 21IN3094    | Advanced Machine Learning, DNN & CNN              | 2 | 0 | 2 | 0 | 3  |

|  |                    |   |          |          |          |          |           |
|--|--------------------|---|----------|----------|----------|----------|-----------|
| 5  | 21IN3095           | Automated Vehicles & Avionics                     | 2        | 0        | 2        | 0        | 3         |
| <b>Specialization Name: IoT for Health care</b>                              |                    |   |          |          |          |          |           |
| <b>S.No</b>  | <b>Course Code</b> | <b>Course Title</b>                               | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1  | 21IN3071           | Electronic Circuits for Medical Instrumentation   | 3        | 0        | 0        | 0        | 3         |
| 2  | 21IN3072           | Biomedical Signal and Image Processing            | 2        | 0        | 0        | 4        | 3         |
| 3  | 21IN3073           | Advanced Biomedical signal processing             | 2        | 0        | 2        | 0        | 3         |
| 4  | 21IN3074           | Biomedical device design Fundamentals             | 2        | 0        | 2        | 0        | 3         |
| 5  | 21IN3075           | Bio Inspired Robotics                             | 2        | 0        | 2        | 0        | 3         |
| <b>Specialization Name: Robotics &amp; Automation</b>                        |                    |   |          |          |          |          |           |
| <b>S.No</b>  | <b>Course Code</b> | <b>Course Title</b>                               | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1  | 21IN3081           | Control Systems & Introduction to Robotics        | 3        | 0        | 0        | 0        | 3         |
| 2  | 21IN3082           | Autonomous Vehicles & Automotive Electronics      | 2        | 0        | 0        | 4        | 3         |
| 3  | 21IN3083           | Advanced Robotics                                 | 2        | 0        | 2        | 0        | 3         |
| 4  | 21IN3084           | Computer Vision & Applications                    | 2        | 0        | 2        | 0        | 3         |
| 5  | 21IN3085           | Human Machine Interface & Brain Machine Interface | 2        | 0        | 2        | 0        | 3         |
| <b>Specialization Name: Cyber Security &amp; Block Chain Technology</b>      |                    |   |          |          |          |          |           |
| <b>S.No</b>  | <b>Course Code</b> | <b>Course Title</b>                               | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1  | 21IN3111           | Big Data Analysis & Decision Making               | 3        | 0        | 0        | 0        | 3         |
| 2  | 21IN3112           | Block Chain & Cyber Security                      | 2        | 0        | 0        | 4        | 3         |
| 3  | 21IN3113           | Cloud Computing Network Security                  | 2        | 0        | 2        | 0        | 3         |
| 4  | 21IN3114           | NLP & Sentiment Analysis                          | 2        | 0        | 2        | 0        | 3         |
| 5  | 21IN3094           | Advanced Machine Learning, DNN & CNN              | 2        | 0        | 2        | 0        | 3         |
| <b>Specialization Name: Machine Learning &amp; Digital Media Processing</b>  |                    |   |          |          |          |          |           |
| <b>S.No</b>  | <b>Course Code</b> | <b>Course Title</b>                               | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1  | 21IN3101           | Speech Signal Processing                          | 3        | 0        | 0        | 0        | 3         |
| 2  | 21IN3102           | Computer Vision & Applications                    | 2        | 0        | 0        | 4        | 3         |
| 3  | 21IN3103           | Natural Language Processing & Applications        | 2        | 0        | 2        | 0        | 3         |
| 4  | 21IN3104           | Big Data Analytics                                | 2        | 0        | 2        | 0        | 3         |
| 5  | 21IN3105           | Digital Twin Technologies                         | 2        | 0        | 2        | 0        | 3         |
| <b>Specialization Name: Computer Communication &amp; NexGEN Technologies</b> |                    |   |          |          |          |          |           |
| <b>S.No</b>  | <b>Course Code</b> | <b>Course Title</b>                               | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>Cr</b> |
| 1  | 21IN3121           | TCP/IP & Other Protocol Suite                     | 3        | 0        | 0        | 0        | 3         |
| 2  | 21IN3122           | VoIP Systems & Broad Band Networks                | 3        | 0        | 0        | 0        | 3         |

| 3   | 21IN3123    | 5G Mobile, Wireless Technologies & IEEE 802 Standards    | 3 | 0 | 0 | 0 | 3  |
|---|-------------|--|---|---|---|---|----|
| 4   | 21IN3113    | Cloud-Computing & Network Security / (Hardware Security) | 3 | 0 | 0 | 0 | 3  |
| 5   | 21IN3125    | IP Multimedia Sub-System & Emerging Technologies         | 3 | 0 | 0 | 0 | 3  |
| <b>Specialization Name: Embedded System</b>                         |             |  |   |   |   |   |    |
| S.No  | Course Code | Course Title   | L | T | P | S | Cr |
| 1   | 21IN3061    | Advanced Embedded Systems Design                         | 3 | 0 | 0 | 0 | 3  |
| 2   | 21IN3062    | Embedded Systems for IoT                                 | 2 | 0 | 0 | 4 | 3  |
| 3   | 21IN3063    | Embedded Linux   | 2 | 0 | 2 | 0 | 3  |
| 4   | 21IN3064    | Embedded and Real-time systems                           | 2 | 0 | 2 | 0 | 3  |
| 5   | 21IN3065    | Edge Computing & Big Data Analytics in IoT               | 2 | 0 | 2 | 0 | 3  |
| <b>Specialization Name: Perception Language and Technologies</b>    |             |  |   |   |   |   |    |
| S.No  | Course Code | Course Title   | L | T | P | S | Cr |
| 1   | 21AD3201    | Soft Computing   | 2 | 0 | 2 | 0 | 3  |
| 2   | 21AD3107    | Signal Processing  | 2 | 0 | 2 | 0 | 3  |
| 3   | 21AD3202    | Natural Language Processing                              | 3 | 0 | 0 | 0 | 3  |
| 4   | 21AD3203    | Computer Vision  | 2 | 0 | 2 | 0 | 3  |
| 5   | 21AD3204    | Speech processing  | 2 | 0 | 2 | 0 | 3  |
| 6   | 21AD3210    | High Performance Computing                               | 2 | 0 | 2 | 0 | 3  |
| <b>Specialization Name: Interactive and Embodied Data Analytics</b> |             |  |   |   |   |   |    |
| S.No  | Course Code | Course Title   | L | T | P | S | Cr |
| 1   | 21AD3106    | Big Data Engineering                                     | 2 | 0 | 2 | 0 | 3  |
| 2   | 21AD3205    | Analytics for the IoT                                    | 2 | 0 | 2 | 0 | 3  |
| 3   | 21AD3206    | Social Media Analytics                                   | 3 | 0 | 0 | 0 | 3  |
| 4   | 21AD3207    | Graph & Web Analytics                                    | 2 | 0 | 2 | 0 | 3  |
| 5   | 21AD3211    | Cyber Security Analytics                                 | 2 | 0 | 2 | 0 | 3  |
| 6   | 21AD3208    | Recommender Systems                                      | 2 | 0 | 2 | 0 | 3  |

#### List of Flexi-Core Courses

| S.No | Course Code | Course Title                                | L | T | P | S | Cr |
|------|-------------|---|---|---|---|---|----|
| 1    | 21EC3015    | Wireless Communications                     | 3 | 0 | 2 | 0 | 4  |
| 2    | 21EC3016    | RF System Design                            | 3 | 0 | 2 | 0 | 4  |
| 3    | 21EC3017    | Biomedical Electronics & IOT for Healthcare | 3 | 0 | 2 | 0 | 4  |
| 4    | 21EC3018    | Electronics Instruments & Automation        | 3 | 0 | 2 | 0 | 4  |
| 5    | 21EC3019    | High Performance Computing                  | 3 | 0 | 2 | 0 | 4  |

|    |            |  |   |   |   |   |   |
|----|------------|--|---|---|---|---|---|
| 6  | 21EC3020   | Electrical Technologies & Solar Power Systems    | 3 | 0 | 2 | 0 | 4 |
| 7  | 21EC3021   | Machine Learning with Python                     | 3 | 0 | 2 | 0 | 4 |
| 8  | 21CS3064RA | UX Design  | 2 | 0 | 2 | 0 | 3 |
| 9  | 21CS3064PA | UX Design  | 3 | 0 | 4 | 0 | 5 |
| 10 | 21CS3060RA | Continuous Delivery & Devops                     | 2 | 0 | 2 | 0 | 3 |
| 11 | 21CS3060PA | Continuous Delivery & Devops                     | 3 | 0 | 4 | 0 | 5 |
| 12 | 21CS3116RA | Signal Processing                                | 2 | 2 | 0 | 0 | 4 |
| 13 | 21CS3116PA | Signal Processing                                | 3 | 2 | 2 | 0 | 6 |
| 14 | 21CS3036RA | Cloud Infrastructure & Services                  | 2 | 0 | 2 | 0 | 3 |
| 15 | 21CS3036PA | Cloud Infrastructure & Services                  | 3 | 0 | 4 | 0 | 5 |
| 16 | 21CS3040RA | Crypt Analysis & Cyber Defense                   | 2 | 0 | 2 | 0 | 3 |
| 17 | 21CS3040PA | Crypt Analysis & Cyber Defense                   | 3 | 0 | 4 | 0 | 5 |
| 18 | 21CS3015RA | Embedded Systems                                 | 2 | 0 | 2 | 0 | 3 |
| 19 | 21CS3015PA | Embedded Systems                                 | 3 | 0 | 4 | 0 | 5 |
| 20 | 21CS3232RA | Machine Learning                                 | 2 | 0 | 2 | 0 | 3 |
| 21 | 21CS3232PA | Machine Learning                                 | 3 | 0 | 4 | 0 | 5 |
| 22 | 21CS3133RA | Data Visualization Techniques                    | 2 | 0 | 2 | 0 | 3 |
| 23 | 21CS3133PA | Data Visualization Techniques                    | 3 | 0 | 4 | 0 | 5 |
| 24 | 21CS3255RA | Cross-Platform Development Frameworks            | 2 | 0 | 2 | 0 | 3 |
| 25 | 21CS3255PA | Cross-Platform Development Frameworks            | 3 | 0 | 4 | 0 | 5 |
| 26 | 21CS3234RA | Application Development On Cloud                 | 2 | 0 | 2 | 0 | 3 |
| 27 | 21CS3234PA | Application Development On Cloud                 | 3 | 0 | 4 | 0 | 5 |
| 28 | 21CS3235RA | Solutions Architecting On Cloud                  | 2 | 0 | 2 | 0 | 3 |
| 29 | 21CS3235PA | Solutions Architecting On Cloud                  | 3 | 0 | 4 | 0 | 5 |
| 30 | 21CS3231RA | Visual Programing                                | 2 | 0 | 2 | 0 | 3 |
| 31 | 21CS3231PA | Visual Programing                                | 3 | 0 | 4 | 0 | 5 |
| 32 | 21CS3279RA | Advanced Database Systems                        | 2 | 0 | 2 | 0 | 3 |
| 33 | 21CS3279PA | Advanced Database Systems                        | 3 | 0 | 4 | 0 | 5 |
| 34 | 21CS3045RA | Introduction To Blockchain And Crypto Currencies | 2 | 2 | 0 | 0 | 4 |
| 35 | 21CS3045PA | Introduction To Blockchain And Crypto Currencies | 3 | 2 | 2 | 0 | 6 |
| 36 | 21CS3042RA | Network & Infrastructure Security                | 2 | 0 | 2 | 0 | 3 |
| 37 | 21CS3042PA | Network & Infrastructure Security                | 3 | 0 | 4 | 0 | 5 |
| 38 | 21CS3119RA | Internet Of Things                               | 2 | 0 | 2 | 0 | 3 |
| 39 | 21CS3119PA | Internet Of Things                               | 3 | 0 | 4 | 0 | 5 |
| 40 | 21CS3204RA | Compiler Design                                  | 2 | 0 | 2 | 0 | 3 |

|    |            |   |   |   |   |   |   |
|----|------------|---|---|---|---|---|---|
| 41 | 21CS3204PA | Compiler Design                               | 3 | 0 | 4 | 0 | 5 |
| 42 | 21CS3036RA | Functional & Concurrent Programming           | 2 | 0 | 2 | 0 | 3 |
| 43 | 21CS3036PA | Functional & Concurrent Programming           | 3 | 0 | 4 | 0 | 5 |
| 44 | 21CS3065RA | Quantum Computing                             | 2 | 0 | 2 | 0 | 3 |
| 45 | 21CS3065PA | Quantum Computing                             | 3 | 0 | 4 | 0 | 5 |
| 46 | 21IN3020   | Electrical Technologies & Solar Power Systems | 3 | 0 | 2 | 0 | 4 |
| 47 | 21IN3021   | Advanced Flexible Hybrid Electronics for IoT  | 3 | 0 | 2 | 0 | 4 |
| 48 | 21IN3022   | Advanced Microcontrollers                     | 3 | 0 | 2 | 0 | 4 |
| 49 | 21IN3023   | Digital System Design                         | 3 | 0 | 2 | 0 | 4 |
| 50 | 21IN3024   | Biomedical Electronics & IoT for Healthcare   | 3 | 0 | 2 | 0 | 4 |
| 51 | 21IN3025   | Electronics Instruments & Automation          | 3 | 0 | 2 | 0 | 4 |
| 52 | 21IN3026   | Automotive Electronics & Avionics             | 3 | 0 | 2 | 0 | 4 |
| 53 | 21IN3027   | High Performance Computing                    | 3 | 0 | 2 | 0 | 4 |
| 54 | 21IN3028   | Machine Learning with Python                  | 3 | 0 | 2 | 0 | 4 |
| 55 | 21IN3029   | Database Management System and Security       | 3 | 0 | 2 | 0 | 4 |
| 56 | 21IN3030   | Operating Systems                             | 3 | 0 | 2 | 0 | 4 |
| 57 | 21IN3031   | Wireless Communications                       | 3 | 0 | 2 | 0 | 4 |
| 58 | 21IN3032   | Wireless Sensor Network and Security          | 3 | 0 | 2 | 0 | 4 |
| 59 | 21AD3201   | Soft Computing                                | 2 | 0 | 2 | 0 | 3 |
| 60 | 21AD3107   | Signal Processing                             | 2 | 0 | 2 | 0 | 3 |
| 61 | 21AD3106   | Big Data Engineering                          | 2 | 0 | 2 | 0 | 3 |
| 62 | 21CI3156R  | Automata Theory & Formal Languages            | 2 | 1 | 0 | 0 | 3 |
| 63 | 21CI3154R  | Application Development on Cloud              | 2 | 0 | 2 | 0 | 3 |
| 64 | 21CI3155R  | Solutions Architect on Cloud                  | 2 | 0 | 2 | 0 | 3 |

#### List of Open Electives

| S.No | Course Code | Course Title                            | L | T | P | S | Cr |
|------|-------------|---|---|---|---|---|----|
| 1    | 21BT40A1    | IPR & Patent Laws                       | 3 | 0 | 0 | 0 | 3  |
| 2    | 21CE40A2    | Environmental Pollution Control Methods | 3 | 0 | 0 | 0 | 3  |
| 3    | 21CE40A3    | Solid and Hazardous waste management    | 3 | 0 | 0 | 0 | 3  |
| 4    | 21CE40A4    | Remote Sensing & GIS                    | 3 | 0 | 0 | 0 | 3  |
| 5    | 21CE40A5    | Disaster Management                     | 3 | 0 | 0 | 0 | 3  |
| 6    | 21CS40A7    | Fundamentals of Software Engineering    | 3 | 0 | 0 | 0 | 3  |
| 7    | 21CS40A6    | Fundamentals of DBMS                    | 3 | 0 | 0 | 0 | 3  |
| 8    | 21CS40A8    | Fundamentals of IT                      | 3 | 0 | 0 | 0 | 3  |

|    |          |                                     |   |   |   |   |   |
|----|----------|-------------------------------------|---|---|---|---|---|
| 9  | 21ME40B4 | Robotics                            | 3 | 0 | 0 | 0 | 3 |
| 10 | 21ME40B5 | Mechatronics                        | 3 | 0 | 0 | 0 | 3 |
| 11 | 21ME40B6 | Operations Research                 | 3 | 0 | 0 | 0 | 3 |
| 12 | 21ME40B7 | Hybrid Electric vehicles            | 3 | 0 | 0 | 0 | 3 |
| 13 | 21ME40B8 | Industry 4.0                        | 3 | 0 | 0 | 0 | 3 |
| 14 | 21ME40B9 | Industrial Automation               | 3 | 0 | 0 | 0 | 3 |
| 15 | 21ME40C1 | Logistics & Supply chain management | 3 | 0 | 0 | 0 | 3 |
| 16 | 21ME40C2 | Total Quality Management            | 3 | 0 | 0 | 0 | 3 |
| 17 | 21ME40C3 | Smart Mobility                      | 3 | 0 | 0 | 0 | 3 |
| 18 | 21ME40C4 | Managerial Economics for Engineers  | 3 | 0 | 0 | 0 | 3 |
| 19 | 21EL40B1 | Linux Programming                   | 3 | 0 | 0 | 0 | 3 |
| 20 | 21EL40B2 | E-Commerce                          | 3 | 0 | 0 | 0 | 3 |
| 21 | 21GN40C1 | Self-Development                    | 3 | 0 | 0 | 0 | 3 |
| 22 | 21GN40C3 | Emotional Intelligence              | 3 | 0 | 0 | 0 | 3 |
| 23 | 21GN40C5 | Behavioral Sciences                 | 3 | 0 | 0 | 0 | 3 |
| 24 | 21GN40D1 | National Cadet Corps (NCC)-1        | 2 | 0 | 2 | 0 | 3 |
| 25 | 21GN40D2 | National Cadet Corps (NCC)-2        | 2 | 0 | 2 | 0 | 3 |
| 26 | 21GN40D3 | National Cadet Corps (NCC)-3        | 2 | 0 | 2 | 0 | 3 |
| 27 | 21GN40D4 | National Service Scheme-1           | 2 | 0 | 2 | 0 | 3 |
| 28 | 21GN40D5 | National Service Scheme-2           | 2 | 0 | 2 | 0 | 3 |
| 29 | 21GN40D6 | National Service Scheme-3           | 2 | 0 | 2 | 0 | 3 |

#### Foreign Language Electives

| S.No | Course Code | Course Title     | L | T | P | S | Cr |
|------|-------------|------------------|---|---|---|---|----|
| 1    | 21FL3051    | Arabic Language  | 2 | 0 | 0 | 0 | 2  |
| 2    | 21FL3052    | Bengali Language | 2 | 0 | 0 | 0 | 2  |
| 3    | 21FL3053    | Chinese Language | 2 | 0 | 0 | 0 | 2  |
| 4    | 21FL3054    | French Language  | 2 | 0 | 0 | 0 | 2  |
| 5    | 21FL3055    | German Language  | 2 | 0 | 0 | 0 | 2  |
| 6    | 21FL3056    | Hindi Language   | 2 | 0 | 0 | 0 | 2  |
| 7    | 21FL3057    | Italian Language | 2 | 0 | 0 | 0 | 2  |
| 8    | 21FL3059    | Kannada Language | 2 | 0 | 0 | 0 | 2  |
| 9    | 21FL3060    | Russian Language | 2 | 0 | 0 | 0 | 2  |
| 10   | 21FL3061    | Sinhala Language | 2 | 0 | 0 | 0 | 2  |

|  |          |                     |   |   |   |   |   |
|--|----------|---------------------|---|---|---|---|---|
| 11   | 21FL3062 | Spanish Language    | 2 | 0 | 0 | 0 | 2 |
| 12   | 21FL3058 | Japanese Language-1 | 2 | 0 | 0 | 0 | 2 |
| <b>Additional Open Electives to complete three levels of Japanese Language</b> |          |                     |   |   |   |   |   |
| 1  | 21FL3063 | Japanese Language-2 | 3 | 0 | 0 | 0 | 3 |
| 2  | 21FL3064 | Japanese Language-3 | 3 | 0 | 0 | 0 | 3 |
| 3  | 21GN40D7 | NCC-4               | 2 | 0 | 6 | 0 | 5 |
| 4  | 21GN40D8 | CAMP-1              | 0 | 0 | 4 | 0 | 5 |
| 5  | 21GN40D9 | CAMP-2              | 0 | 0 | 4 | 0 | 5 |

#### **Management Electives**

| S.No | Course Code | Course Title                            | L | T | P | S | Cr |
|------|-------------|---|---|---|---|---|----|
| 1    | 21MB4051    | Paradigms in Management Thought         | 3 | 0 | 0 | 0 | 3  |
| 2    | 21MB4052    | Indian Economy                          | 3 | 0 | 0 | 0 | 3  |
| 3    | 21MB4053    | Managing Personal Finances              | 3 | 0 | 0 | 0 | 3  |
| 4    | 21MB4054    | Basics of Marketing for Engineers       | 3 | 0 | 0 | 0 | 3  |
| 5    | 21MB4055    | Organization Management                 | 3 | 0 | 0 | 0 | 3  |
| 6    | 21MB4056    | Resources Safety and Quality Management | 3 | 0 | 0 | 0 | 3  |
| 7    | 21MB4057    | Economics for Engineers                 | 3 | 0 | 0 | 0 | 3  |
| 8    | 21MB4058    | Construction project Management         | 2 | 0 | 0 | 0 | 2  |



## ENGINEERING PG PROGRAM STRUCTURES

### M.Tech - Bio Technology

| S.No                       | Course Code | Course Title                             | Category | L | T | P  | S | Cr        | CH | Pre-requisite |
|----------------------------|-------------|--|----------|---|---|----|---|-----------|----|---------------|
| 1                          | 21BT5101    | Mathematics and Biostatistics            | PC       | 3 | 1 | 0  | 0 | 4         | 4  | Nil           |
| 2                          | 21BT5102    | Biochemical Engineering                  | PC       | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 3                          | 21BT5103    | Molecular Biology and r-DNA Technology   | PC       | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 4                          | 21BT5104    | Applied Bioinformatics                   | PC       | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 5                          | 21BT5105    | Plant and Animal Biotechnology           | PC       | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 6                          | 21BT5106    | Immunotechnology                         | PC       | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 7                          | 21BT5107    | Bioreactor modeling and Simulation       | PC       | 3 | 1 | 0  | 0 | 4         | 4  | Nil           |
| 8                          | 21BT5108    | Downstream Processing                    | PC       | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 9                          |             | Elective -1                              | PE       | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 10                         |             | Elective -2                              | PE       | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 11                         |             | Elective -3                              | PE       | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 12                         |             | Elective -4                              | PE       | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 13                         | 21IE5148    | Seminar                                  | PR       | 0 | 0 | 4  | 0 | 2         | 4  | Nil           |
| 14                         | 21IE5149    | Term paper                               | PR       | 0 | 0 | 4  | 0 | 2         | 4  | Nil           |
| 15                         | 21IE6150    | Dissertation                             | PR       | 0 | 0 | 36 | 0 | 18        | 36 | Nil           |
| 16                         | 21IE6250    | Dissertation                             | PR       | 0 | 0 | 36 | 0 | 18        | 36 | Nil           |
| <b>Grand Total Credits</b> |             |  |          |   |   |    |   | <b>84</b> |    |               |
| <b>Elective -1</b>         |             |  |          |   |   |    |   |           |    |               |
| 1                          | 21BT51A1    | Protein Engineering                      | PE-1     | 3 | 0 | 0  | 0 | 3         | 3  | NIL           |
| 2                          | 21BT51A2    | Enzyme Technology                        | PE-1     | 3 | 0 | 0  | 0 | 3         | 3  | NIL           |
| 3                          | 21BT51A3    | Medical Biotechnology                    | PE-1     | 3 | 0 | 0  | 0 | 3         | 3  | NIL           |
| 4                          | 21BT51A4    | Stem cell technology                     | PE-1     | 3 | 0 | 0  | 0 | 3         | 3  | NIL           |
| 5                          | 21BT51A5    | Molecular Modeling and Drug Design       | PE-1     | 3 | 0 | 0  | 0 | 3         | 3  | NIL           |
| <b>Elective – 2</b>        |             |  |          |   |   |    |   |           |    |               |
| 1                          | 21BT51B1    | Food Technology                          | PE-2     | 3 | 0 | 0  | 0 | 3         | 3  | NIL           |
| 2                          | 21BT51B5    | Bioreactor Operations                    | PE-2     | 3 | 0 | 0  | 0 | 3         | 3  | NIL           |
| 3                          | 21BT51B3    | Bio mining                               | PE-2     | 3 | 0 | 0  | 0 | 3         | 3  | NIL           |
| 4                          | 21BT51B4    | Bioprocess validation and cGMP           | PE-2     | 3 | 0 | 0  | 0 | 3         | 3  | NIL           |
| <b>Elective -3</b>         |             |  |          |   |   |    |   |           |    |               |
| 1                          | 21BT52C6    | Computational programming for Biologists | PE-3     | 3 | 0 | 0  | 0 | 3         | 3  | NIL           |
| 2                          | 21BT52C2    | Bioprocess Technology                    | PE-3     | 3 | 0 | 0  | 0 | 3         | 3  | NIL           |
| 3                          | 21BT52C3    | Environmental Biotechnology              | PE-3     | 3 | 0 | 0  | 0 | 3         | 3  | NIL           |

|                     |          |   |      |   |   |   |   |   |   |     |
|---------------------|----------|---|------|---|---|---|---|---|---|-----|
| 4                   | 21BT52C4 | Nano Biotechnology  | PE-3 | 3 | 0 | 0 | 0 | 3 | 3 | NIL |
| 5                   | 21BT52C7 | Intellectual Property Rights, Biosafety and Bioethics             | PE-3 | 3 | 0 | 0 | 0 | 3 | 3 | NIL |
| <b>Elective – 4</b> |          |   |      |   |   |   |   |   |   |     |
| 1                   | 21BT52D1 | Regulatory affairs & Clinical trials                              | PE-4 | 3 | 0 | 0 | 0 | 3 | 3 | NIL |
| 2                   | 21BT52D2 | Bioprocess economics and plant design                             | PE-4 | 3 | 0 | 0 | 0 | 3 | 3 | NIL |
| 3                   | 21BT52D5 | Methods in genomics, transcriptomics, proteomics and metabolomics | PE-4 | 3 | 0 | 0 | 0 | 3 | 3 | NIL |
| 4                   | 21BT52D6 | Advanced Biocatalyst and Biocatalysis                             | PE-4 | 3 | 0 | 0 | 0 | 3 | 3 | NIL |

### M.Tech - Construction Technology & Management

| Sl No                      | Course Code | Course Title   | Category | L | T | P  | S | Cr        | CH | Pre-requisite |
|----------------------------|-------------|--|----------|---|---|----|---|-----------|----|---------------|
| 1                          | 20CE5121    | Construction Planning Scheduling and Control                     | PC       | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 2                          | 20CE5122    | Sustainable Construction Materials and Methods                   | PC       | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 3                          | 20CE5123    | Lean Construction Practices                                      | PC       | 3 | 1 | 0  | 0 | 4         | 4  | Nil           |
| 4                          | 20CE5124    | Building Information Modelling                                   | PC       | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 5                          | 20CE5225    | Mechanized Construction and Machinery                            | PC       | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 6                          | 20CE5226    | Project Formulation Appraisal                                    | PC       | 3 | 1 | 0  | 0 | 4         | 4  | Nil           |
| 7                          | 20CE5227    | Construction Laws and Regulations                                | PC       | 3 | 1 | 0  | 0 | 4         | 4  | Nil           |
| 8                          | 20CE5228    | Quality Management and Safety Management Systems in Construction | PC       | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 9                          |             | Elective-1   | PE       | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 10                         |             | Elective-2   | PE       | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 11                         |             | Elective-3   | PE       | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 12                         |             | Elective-4   | PE       | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 13                         | 21IE5149    | Seminar  | PR       | 0 | 0 | 4  | 0 | 2         | 4  | Nil           |
| 14                         | 21IE5250    | Term Paper   | PR       | 0 | 0 | 4  | 0 | 2         | 4  | Nil           |
| 15                         | 21IE6150    | Dissertation   | PR       | 0 | 0 | 36 | 0 | 18        | 36 | Nil           |
| 16                         | 21IE6250    | Dissertation   | PR       | 0 | 0 | 36 | 0 | 18        | 36 | Nil           |
| <b>Grand Total Credits</b> |             |  |          |   |   |    |   | <b>84</b> |    |               |

|                     |          |   |      |   |   |   |   |   |   |     |
|---------------------|----------|---|------|---|---|---|---|---|---|-----|
| <b>Elective – 1</b> |          |   |      |   |   |   |   |   |   |     |
| 1                   | 20CE51E1 | Material Procurement Management                 | PE-1 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 2                   | 20CE51E2 | Green Buildings                                 | PE-1 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| <b>Elective – 2</b> |          |   |      |   |   |   |   |   |   |     |
| 3                   | 20CE51F1 | Construction Personnel Management               | PE-2 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 4                   | 20CE51F2 | Pre-Engineering Construction and Technology     | PE-2 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| <b>Elective – 3</b> |          |   |      |   |   |   |   |   |   |     |
| 5                   | 20CE52G1 | Statistical Methods in Construction             | PE-3 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 6                   | 20CE52G2 | Project Risk Management                         | PE-3 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| <b>Elective – 4</b> |          |   |      |   |   |   |   |   |   |     |
| 7                   | 20CE52H1 | Emerging Construction Technologies              | PE-4 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 8                   | 20CE52H2 | Resource Management and Control in Construction | PE-4 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |

### M.Tech - Geo Technical Engineering

| Sl No | Course Code | Course Title  | Category | L | T | P | S | Cr | CH | Pre-requisite |
|-------|-------------|---|----------|---|---|---|---|----|----|---------------|
| 1     | 20CE5161    | Advanced Soil Mechanics                               | PC       | 3 | 0 | 2 | 0 | 4  | 5  | Nil           |
| 2     | 20CE5162    | Sub Surface Investigations                            | PC       | 3 | 0 | 2 | 0 | 4  | 5  | Nil           |
| 3     | 20CE5163    | Geo Environmental Engineering                         | PC       | 3 | 0 | 2 | 0 | 4  | 5  | Nil           |
| 4     | 20CE5164    | Ground Improvement Techniques                         | PC       | 3 | 0 | 2 | 0 | 4  | 5  | Nil           |
| 5     | 20CE5265    | Soil Dynamics and Geotechnical Earthquake Engineering | PC       | 3 | 0 | 2 | 0 | 4  | 5  | Nil           |
| 6     | 20CE5266    | Geo Synthetics and Design of Retaining Walls          | PC       | 3 | 0 | 2 | 0 | 4  | 5  | Nil           |
| 7     | 20CE5267    | Design of Earth and Earth Retaining Structures        | PC       | 3 | 0 | 2 | 0 | 4  | 5  | Nil           |
| 8     | 20CE5268    | Advanced Foundation Engineering                       | PC       | 3 | 0 | 2 | 0 | 4  | 5  | Nil           |
| 9     |             | Elective-1  | PE       | 3 | 0 | 0 | 0 | 3  | 3  | Nil           |
| 10    |             | Elective-2  | PE       | 3 | 0 | 0 | 0 | 3  | 3  | Nil           |
| 11    |             | Elective-3  | PE       | 3 | 0 | 0 | 0 | 3  | 3  | Nil           |
| 12    |             | Elective-4  | PE       | 3 | 0 | 0 | 0 | 3  | 3  | Nil           |
| 13    | 21IE5149    | Seminar   | PR       | 0 | 0 | 4 | 0 | 2  | 4  | Nil           |

|                            |          |  |      |   |   |    |   |           |    |     |
|----------------------------|----------|--|------|---|---|----|---|-----------|----|-----|
| 14                         | 21IE5250 | Term Paper                                   | PR   | 0 | 0 | 4  | 0 | 2         | 4  | Nil |
| 15                         | 21IE6150 | Dissertation                                 | PR   | 0 | 0 | 36 | 0 | 18        | 36 | Nil |
| 16                         | 21IE6250 | Dissertation                                 | PR   | 0 | 0 | 36 | 0 | 18        | 36 | Nil |
| <b>Grand Total Credits</b> |          |  |      |   |   |    |   | <b>84</b> |    |     |
| <b>Elective – 1</b>        |          |  |      |   |   |    |   |           |    |     |
| 1                          | 20CE51M1 | Soil structure interaction                   | PE-1 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 2                          | 20CE51M2 | Finite Element Methods                       | PE-1 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| <b>Elective – 2</b>        |          |  |      |   |   |    |   |           |    |     |
| 3                          | 20CE51N1 | Stability Analysis of Slopes                 | PE-2 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 4                          | 20CE51N2 | Design of Highways and Airfiled Pavements    | PE-2 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| <b>Elective – 3</b>        |          |  |      |   |   |    |   |           |    |     |
| 5                          | 20CE52O1 | Solid Waste Management and Landfills         | PE-3 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 6                          | 20CE52O2 | Offshore Geotechnical engineering            | PE-3 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| <b>Elective – 4</b>        |          |  |      |   |   |    |   |           |    |     |
| 7                          | 20CE52P1 | RS and GIS Applications in Civil Engineering | PE-4 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 8                          | 20CE52P2 | Constitutive Modeling in Geo-techniques      | PE-4 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |

### M.Tech - Structural Engineering

| SI No | Course Code | Course Title                              | Cate gory | L | T | P | S | Cr | CH | Pre-requisite |
|-------|-------------|---|-----------|---|---|---|---|----|----|---------------|
| 1     | 20CE5101    | Advanced Mechanics of Solids              | PC        | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 2     | 20CE5102    | Advanced Pre-stressed Concrete Design     | PC        | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 3     | 20CE5103    | Advanced Concrete Technology              | PC        | 3 | 0 | 2 | 0 | 4  | 5  | Nil           |
| 4     | 20CE5104    | Structural Dynamics                       | PC        | 3 | 0 | 2 | 0 | 4  | 5  | Nil           |
| 5     | 20CE5205    | Theory of Plates and Shells               | PC        | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 6     | 20CE5206    | Finite Element Analysis                   | PC        | 3 | 0 | 2 | 0 | 4  | 5  | Nil           |
| 7     | 20CE5207    | Bridge Engineering                        | PC        | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 8     | 20CE5208    | Earthquake resistant design of structures | PC        | 3 | 0 | 2 | 0 | 4  | 5  | Nil           |
| 9     |             | Elective-1                                | PE        | 3 | 0 | 0 | 0 | 3  | 3  | Nil           |
| 10    |             | Elective-2                                | PE        | 3 | 0 | 0 | 0 | 3  | 3  | Nil           |
| 11    |             | Elective-3                                | PE        | 3 | 0 | 0 | 0 | 3  | 3  | Nil           |

|                            |          |   |    |   |   |    |   |           |    |     |
|----------------------------|----------|---|----|---|---|----|---|-----------|----|-----|
| 12                         |          | Elective-4                              | PE | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 13                         | 21IE5149 | Seminar                                 | PR | 0 | 0 | 4  | 0 | 2         | 4  | Nil |
| 14                         | 21IE5250 | Term Paper                              | PR | 0 | 0 | 4  | 0 | 2         | 4  | Nil |
| 15                         | 21IE6150 | Dissertation                            | PR | 0 | 0 | 36 | 0 | 18        | 36 | Nil |
| 16                         | 21IE6250 | Dissertation                            | PR | 0 | 0 | 36 | 0 | 18        | 36 | Nil |
| <b>Grand Total Credits</b> |          |   |    |   |   |    |   | <b>84</b> |    |     |
| <b>Elective – 1</b>        |          |   |    |   |   |    |   |           |    |     |
| 1                          | 20CE51A1 | Pre Engineered Structures               | PC | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 2                          | 20CE51A2 | Design of Offshore Structures           | PC | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| <b>Elective – 2</b>        |          |   |    |   |   |    |   |           |    |     |
| 3                          | 20CE51B1 | Design and Detailing of Structures      | PC | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 4                          | 20CE51B2 | Repair and Rehabilitation of Structures | PC | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| <b>Elective – 3</b>        |          |   |    |   |   |    |   |           |    |     |
| 5                          | 20CE52C1 | Fracture Mechanics                      | PC | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 6                          | 20CE52C2 | Design of Tall Structures               | PC | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| <b>Elective – 4</b>        |          |   |    |   |   |    |   |           |    |     |
| 7                          | 20CE52D1 | Green Buildings                         | PC | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 8                          | 20CE52D2 | Stability of structures                 | PC | 3 | 0 | 0  | 0 | 3         | 3  | Nil |

### M.Tech – Computer Science & Engineering

| SI No | Course Code | Course Title                                  | Category | L | T | P | S | Cr | CH | Pre-requisite |
|-------|-------------|---|----------|---|---|---|---|----|----|---------------|
| 1     | 21CS5101    | Mathematical Foundations for Computer Science | PC       | 3 | 2 | 0 | 0 | 5  | 5  | Nil           |
| 2     | 21CS5102    | Computer Organization & Architecture          | PC       | 3 | 2 | 0 | 0 | 5  | 5  | Nil           |
| 3     | 21CS5103    | Data Structures & Algorithms                  | PC       | 3 | 0 | 2 | 0 | 4  | 5  | Nil           |
| 4     | 21CS5104    | Machine Learning & Reinforcement Learning     | PC       | 3 | 0 | 2 | 0 | 4  | 5  | Nil           |
| 5     | 21CS5205    | Operating System Design                       | PC       | 3 | 2 | 0 | 0 | 5  | 5  | Nil           |
| 6     | 21CS5206    | Computer Networks & Security                  | PC       | 3 | 2 | 0 | 0 | 5  | 5  | Nil           |
| 7     | 21CS5207    | Object Oriented Analysis and Design           | PC       | 3 | 0 | 2 | 0 | 4  | 5  | Nil           |
| 8     | 21CS5208    | Enterprise Programming                        | PC       | 3 | 0 | 2 | 0 | 4  | 5  | Nil           |
| 9     |             | Elective-1                                    | PE       | 2 | 0 | 2 | 4 | 4  | 8  | Nil           |
| 10    |             | Elective-2                                    | PE       | 2 | 0 | 2 | 0 | 3  | 4  | Nil           |
| 11    |             | Elective-3                                    | PE       | 3 | 0 | 4 | 4 | 6  | 11 | Nil           |
| 12    |             | Elective-4                                    | PE       | 3 | 0 | 4 | 4 | 6  | 11 | Nil           |

|                            |          |                                     |      |   |   |    |   |           |    |     |
|----------------------------|----------|-------------------------------------|------|---|---|----|---|-----------|----|-----|
| 13                         | 21IE5149 | Seminar                             | PR   | 0 | 0 | 4  | 0 | 2         | 4  | Nil |
| 14                         | 21IE5250 | Term Paper                          | PR   | 0 | 0 | 4  | 0 | 2         | 4  | Nil |
| 15                         | 21IE6150 | Dissertation                        | PR   | 0 | 0 | 36 | 0 | 18        | 36 | Nil |
| 16                         | 21IE6250 | Dissertation                        | PR   | 0 | 0 | 36 | 0 | 18        | 36 | Nil |
| <b>Grand Total Credits</b> |          |                                     |      |   |   |    |   | <b>95</b> |    |     |
| <b>Elective-1</b>          |          |                                     |      |   |   |    |   |           |    |     |
| 1                          | 21CS51A1 | Soft Computing                      | PE-1 | 2 | 0 | 2  | 4 | 4         | 8  | Nil |
| 2                          | 21CS51A2 | Machine Learning                    | PE-1 | 2 | 0 | 2  | 4 | 4         | 8  | Nil |
| 3                          | 21CS51A3 | Data Mining                         | PE-1 | 2 | 0 | 2  | 4 | 4         | 8  | Nil |
| 4                          | 21CS51A4 | Natural Language Processing         | PE-1 | 2 | 0 | 2  | 4 | 4         | 8  | Nil |
| <b>Elective-2</b>          |          |                                     |      |   |   |    |   |           |    |     |
| 1                          | 21CS51B1 | Requirements Engineering            | PE-2 | 2 | 0 | 2  | 0 | 3         | 4  | Nil |
| 2                          | 21CS51B2 | Principles of Programming Languages | PE-2 | 2 | 0 | 2  | 0 | 3         | 4  | Nil |
| 3                          | 21CS51B3 | Compiler Design                     | PE-2 | 2 | 0 | 2  | 0 | 3         | 4  | Nil |
| 4                          | 21CS51B4 | Software Verification & Validation  | PE-2 | 2 | 0 | 2  | 0 | 3         | 4  | Nil |
| <b>Elective-3</b>          |          |                                     |      |   |   |    |   |           |    |     |
| 1                          | 21CS52C1 | Cryptography & Network Security     | PE-3 | 3 | 0 | 4  | 4 | 6         | 11 | Nil |
| 2                          | 21CS52C2 | Mobile computing                    | PE-3 | 3 | 0 | 4  | 4 | 6         | 11 | Nil |
| 3                          | 21CS52C3 | High Performance Computing          | PE-3 | 3 | 0 | 4  | 4 | 6         | 11 | Nil |
| 4                          | 21CS52C4 | Network management Systems          | PE-3 | 3 | 0 | 4  | 4 | 6         | 11 | Nil |
| 5                          | 21CS52C5 | Continuous Delivery & Devops        | PE-3 | 3 | 0 | 4  | 4 | 6         | 11 | Nil |
| <b>Elective-4</b>          |          |                                     |      |   |   |    |   |           |    |     |
| 1                          | 21CS52D1 | Service Oriented Architecture       | PE-4 | 3 | 0 | 4  | 4 | 6         | 11 | Nil |
| 2                          | 21CS52D2 | Visual Programming                  | PE-4 | 3 | 0 | 4  | 4 | 6         | 11 | Nil |
| 3                          | 21CS52D3 | Digital Image Processing            | PE-4 | 3 | 0 | 4  | 4 | 6         | 11 | Nil |
| 4                          | 21CS52D4 | Big Data Analytics                  | PE-4 | 3 | 0 | 4  | 4 | 6         | 11 | Nil |

### M.Tech – Digital Forensics and Cyber Security

| Sl No | Course Code | Course Title                              | Category | L | T | P | S | Cr | CH | Pre-requisite |
|-------|-------------|---|----------|---|---|---|---|----|----|---------------|
| 1     | 21CS5121    | Introduction to Cyber Security            | PC       | 3 | 2 | 0 | 0 | 5  | 5  | Nil           |
| 2     | 21CS5120    | Software Security                         | PC       | 3 | 2 | 0 | 0 | 5  | 5  | Nil           |
| 3     | 21CS5122    | Cloud Infrastructure & Services           | PC       | 3 | 0 | 2 | 0 | 4  | 5  | Nil           |
| 4     | 21CS5119    | Machine Learning & Reinforcement Learning | PC       | 3 | 0 | 2 | 0 | 4  | 5  | Nil           |
| 5     | 21CS5221    | Cryptography for Cyber Defence            | PC       | 3 | 0 | 2 | 0 | 4  | 5  | Nil           |

|                            |          |  |      |   |   |    |   |           |    |     |
|----------------------------|----------|--|------|---|---|----|---|-----------|----|-----|
| 6                          | 21CS5222 | Malware Analysis & Reverse Engineering         | PC   | 3 | 0 | 2  | 0 | 4         | 5  | Nil |
| 7                          | 21CS5223 | Cyber Incident Response & Resilience           | PC   | 3 | 0 | 2  | 0 | 4         | 5  | Nil |
| 8                          | 21CS5224 | Cyber Law, Governance & Compliance             | PC   | 3 | 0 | 2  | 0 | 4         | 5  | Nil |
| 9                          |          | Elective-1                                     | PE   | 2 | 0 | 2  | 4 | 4         | 8  | Nil |
| 10                         |          | Elective-2                                     | PE   | 2 | 0 | 2  | 0 | 3         | 4  | Nil |
| 11                         |          | Elective-3                                     | PE   | 3 | 0 | 4  | 4 | 6         | 11 | Nil |
| 12                         |          | Elective-4                                     | PE   | 3 | 0 | 4  | 4 | 6         | 11 | Nil |
| 13                         | 21IE5149 | Seminar  | PR   | 0 | 0 | 4  | 0 | 2         | 4  | Nil |
| 14                         | 21IE5250 | Term Paper                                     | PR   | 0 | 0 | 4  | 0 | 2         | 4  | Nil |
| 15                         | 21IE6150 | Dissertation                                   | PR   | 0 | 0 | 36 | 0 | 18        | 36 | Nil |
| 16                         | 21IE6250 | Dissertation                                   | PR   | 0 | 0 | 36 | 0 | 18        | 36 | Nil |
| <b>Grand Total Credits</b> |          |  |      |   |   |    |   | <b>93</b> |    |     |
| <b>Elective – 1</b>        |          |  |      |   |   |    |   |           |    |     |
| 1                          | 21CS51I1 | Mobile Device Threats & Investigation          | PE-1 | 2 | 0 | 2  | 4 | 4         | 8  | Nil |
| 2                          | 21CS51I2 | Fundamentals of E-Discovery                    | PE-1 | 2 | 0 | 2  | 4 | 4         | 8  | Nil |
| 3                          | 21CS51I3 | Fuzzy sets and Fuzzy Logic                     | PE-1 | 2 | 0 | 2  | 4 | 4         | 8  | Nil |
| 4                          | 21CS51I4 | Digital Forensics                              | PE-1 | 2 | 0 | 2  | 4 | 4         | 8  | Nil |
| <b>Elective – 2</b>        |          |  |      |   |   |    |   |           |    |     |
| 5                          | 21CS51J1 | Introduction to Big Data Analytics             | PE-2 | 2 | 0 | 2  | 0 | 3         | 4  | Nil |
| 6                          | 21CS51J2 | Social Media Forensics                         | PE-2 | 2 | 0 | 2  | 0 | 3         | 4  | Nil |
| 7                          | 21CS51J3 | Critical Information Infrastructure Security   | PE-2 | 2 | 0 | 2  | 0 | 3         | 4  | Nil |
| <b>Elective – 3</b>        |          |  |      |   |   |    |   |           |    |     |
| 8                          | 21CS52K1 | Infrastructure Attacks and Defence             | PE-3 | 2 | 0 | 2  | 4 | 4         | 8  | Nil |
| 9                          | 21CS52K2 | Software Vulnerability Analysis and Resilience | PE-3 | 2 | 0 | 2  | 4 | 4         | 8  | Nil |
| 10                         | 21CS52K3 | Parallel & Cloud Computing                     | PE-3 | 2 | 0 | 2  | 4 | 4         | 8  | Nil |
| 11                         | 21CS52K4 | Cloud Security                                 | PE-3 | 3 | 0 | 4  | 4 | 6         | 11 | Nil |
| <b>Elective – 4</b>        |          |  |      |   |   |    |   |           |    |     |
| 12                         | 21CS52L1 | Applied Cryptography and Steganography         | PE-4 | 2 | 0 | 2  | 0 | 3         | 4  | Nil |
| 13                         | 21CS52L2 | Software Modelling                             | PE-4 | 2 | 0 | 2  | 0 | 3         | 4  | Nil |
| 14                         | 21CS52L3 | Digital Image Processing                       | PE-4 | 2 | 0 | 2  | 0 | 3         | 4  | Nil |
| 15                         | 21CS52L4 | Programming For Smart Contracts                | PE-4 | 3 | 0 | 4  | 4 | 6         | 11 | Nil |

### M.Tech - Artificial Intelligence and Data Science

| Sl No                      | Course Code | Course Name                                       | Category | L | T | P  | S | Cr        | CH | Pre-requisite |
|----------------------------|-------------|---|----------|---|---|----|---|-----------|----|---------------|
| 1                          | 21CS5109    | Mathematical Programming - 1                      | PC       | 3 | 2 | 0  | 0 | 5         | 5  | Nil           |
| 2                          | 21CS5110    | Computational Thinking For Object Oriented Design | PC       | 3 | 0 | 4  | 0 | 5         | 7  | Nil           |
| 3                          | 21CS5111    | Big Data Analytics                                | PC       | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 4                          | 21CS5112    | Machine Learning & Reinforcement Learning         | PC       | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 5                          | 21CS5113    | Mathematical Programming - 2                      | PC       | 2 | 2 | 0  | 0 | 4         | 4  | Nil           |
| 6                          | 21CS5114    | Data Structures & Algorithms                      | PC       | 3 | 0 | 4  | 4 | 6         | 11 | Nil           |
| 7                          | 21CS5115    | Advanced Databases                                | PC       | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 8                          | 21CS5116    | Deep Learning                                     | PC       | 3 | 0 | 4  | 4 | 6         | 11 | Nil           |
| 9                          |             | Elective-1  | PE       | 2 | 0 | 2  | 4 | 4         | 8  | Nil           |
| 10                         |             | Elective-2  | PE       | 2 | 0 | 2  | 0 | 3         | 4  | Nil           |
| 11                         |             | Elective-3  | PE       | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 12                         |             | Elective-4  | PE       | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 13                         | 21IE5149    | Seminar   | PR       | 0 | 0 | 4  | 0 | 2         | 4  | Nil           |
| 14                         | 21IE5250    | Term Paper  | PR       | 0 | 0 | 4  | 0 | 2         | 4  | Nil           |
| 15                         | 21IE6150    | Dissertation                                      | PR       | 0 | 0 | 36 | 0 | 18        | 36 | Nil           |
| 16                         | 21IE6250    | Dissertation                                      | PR       | 0 | 0 | 36 | 0 | 18        | 36 | Nil           |
| <b>Grand Total Credits</b> |             |   |          |   |   |    |   | <b>93</b> |    |               |
| <b>Elective-1</b>          |             |   |          |   |   |    |   |           |    |               |
| 1                          | 21CS51E1    | Cloud infrastructure & Services                   | PE-1     | 2 | 0 | 2  | 4 | 4         | 8  | Nil           |
| 2                          | 21CS51E2    | Parallel & Distributed Computing                  | PE-1     | 2 | 0 | 2  | 4 | 4         | 8  | Nil           |
| 3                          | 21CS51E3    | Cloud Devops                                      | PE-1     | 2 | 0 | 2  | 4 | 4         | 8  | Nil           |
| <b>Elective-2</b>          |             |   |          |   |   |    |   |           |    |               |
| 1                          | 21CS51F1    | Computer Vision and Perception                    | PE-2     | 2 | 0 | 2  | 0 | 3         | 4  | Nil           |
| 2                          | 21CS51F2    | Soft Computing                                    | PE-2     | 2 | 0 | 2  | 0 | 3         | 4  | Nil           |
| 3                          | 21CS51F3    | Artificial Neural Networks                        | PE-2     | 2 | 0 | 2  | 0 | 3         | 4  | Nil           |
| <b>Elective-3</b>          |             |   |          |   |   |    |   |           |    |               |
| 1                          | 21CS51G1    | Data Warehousing & Mining                         | PE-3     | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 2                          | 21CS51G2    | Graph & Web Analytics                             | PE-3     | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 3                          | 21CS51G3    | Big Data Optimization                             | PE-3     | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| <b>Elective-4</b>          |             |   |          |   |   |    |   |           |    |               |
| 1                          | 21CS52H1    | Cognitive Computing                               | PE-4     | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 2                          | 21CS52H2    | Natural Language Processing                       | PE-4     | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 3                          | 21CS52H3    | Edge Computing                                    | PE-4     | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |



**M.Tech – Robotics & Automation**

| Sl No                      | Course Code | Course Title  | Category | L | T | P  | S | Cr        | CH | Pre-requisite |
|----------------------------|-------------|---|----------|---|---|----|---|-----------|----|---------------|
| 1                          | 21RA5141    | Non-linear systems and control optimization for robotics    | PC       | 3 | 1 | 2  | 0 | 5         | 6  | Nil           |
| 2                          | 21RA5142    | Robotics: Cyber Physical Systems                            | PC       | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 3                          | 21RA5143    | IIoE 4.0 for Automation and Robotic systems                 | PC       | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 4                          | 21EC5104    | Artificial intelligence & Machine learning                  | PC       | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 5                          | 21TS51A1    | Technical Skilling (Huawei – AI and WC) , ADAMS             | PC       | 0 | 0 | 0  | 8 | 2         | 8  | Nil           |
| 6                          | 21RA5244    | Advanced Robotic Wireless Sensor Networks                   | PC       | 3 | 1 | 2  | 0 | 5         | 6  | Nil           |
| 7                          | 21RA5245    | Autonomous mobile robots and Automotive Electronics         | PC       | 3 | 1 | 2  | 0 | 5         | 6  | Nil           |
| 8                          | 21RA5246    | Micro electro mechanical Sensors and Actuators for Robotics | PC       | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 9                          | 21RA5247    | Algorithms for Robotics Sensor Fusion                       | PC       | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 10                         | 21TS52A2    | Technical Skilling  | PC       | 0 | 0 | 0  | 8 | 2         | 8  | Nil           |
| 11                         |             | Elective-1  | PE       | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 12                         |             | Elective-2  | PE       | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 13                         |             | Elective-3  | PE       | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 14                         |             | Elective-4  | PE       | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 15                         | 21IE5149    | Seminar   | PR       | 0 | 0 | 4  | 0 | 2         | 4  | Nil           |
| 16                         | 21IE5250    | Term Paper  | PR       | 0 | 0 | 4  | 0 | 2         | 4  | Nil           |
| 17                         | 21IE6150    | Dissertation  | PR       | 0 | 0 | 36 | 0 | 18        | 36 | Nil           |
| 18                         | 21IE6250    | Dissertation  | PR       | 0 | 0 | 36 | 0 | 18        | 36 | Nil           |
| <b>Grand Total Credits</b> |             |   |          |   |   |    |   | <b>90</b> |    |               |
| <b>Elective – 1</b>        |             |   |          |   |   |    |   |           |    |               |
| 1                          | 21RA51A1    | Robotics: Design of Sensors, Drives and Actuators           | PE-1     | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 2                          | 21RA51A2    | Autonomous mobile Robot systems                             | PE-1     | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 3                          | 21RA51A3    | Deep Neural Network algorithm for Robotics                  | PE-1     | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 4                          | 21RA51A4    | Swam Robotics Control Systems                               | PE-1     | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| <b>Elective – 2</b>        |             |   |          |   |   |    |   |           |    |               |
| 5                          | 21RA51B1    | Automated Dynamic Analysis of MEMS sensors & actuators      | PE-2     | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |

|                     |          |  |      |   |   |   |   |   |   |     |
|---------------------|----------|--|------|---|---|---|---|---|---|-----|
| 6                   | 21RA51B2 | Human Machine Interface & Brain Machine Interface          | PE-2 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 7                   | 21EC51B1 | LiDAR & RADAR System Control                               | PE-2 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 8                   | 21EC51B3 | Computer Vision & Applications                             | PE-2 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| <b>Elective – 3</b> |          |  |      |   |   |   |   |   |   |     |
| 9                   | 21RA51C1 | Adaptive motion control systems for automation and         | PE-3 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 10                  | 21RA51C2 | FPGA-Based Wireless System Design                          | PE-3 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 11                  | 21RA51C3 | Signal Processing for Robotics                             | PE-3 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 12                  | 21RA51C4 | Cloud Robotics and Automation                              | PE-3 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| <b>Elective – 4</b> |          |  |      |   |   |   |   |   |   |     |
| 13                  | 21RA51D1 | Optimization algorithms for autonomous systems             | PE-4 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 14                  | 21RA51D2 | Automotive Electronics & Avionics                          | PE-4 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 15                  | 21RA51D3 | Operation Research, System Engineering, Design &           | PE-4 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 16                  | 21RA51D4 | Design of automation systems and Assistive Robotic systems | PE-4 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |

### M.Tech - Radar & Communications

| Sl No | Course Code | Course Title                                  | Category | L | T | P | S | Cr | CH | Pre-requisite |
|-------|-------------|---|----------|---|---|---|---|----|----|---------------|
| 1     | 21EC5101    | Wireless Communication and Data Networks      | PC       | 3 | 1 | 2 | 0 | 5  | 6  | Nil           |
| 2     | 21EC5102    | Modern Radars & Autonomous Vehicles           | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 3     | 21EC5103    | Smart Antennas                                | PC       | 3 | 0 | 2 | 0 | 4  | 5  | Nil           |
| 4     | 21EC5104    | Artificial Intelligence & Machine Learning    | PC       | 3 | 0 | 2 | 0 | 4  | 5  | Nil           |
| 5     | 21TS51R1    | Technical Skilling - I                        | PC       | 0 | 0 | 0 | 8 | 2  | 8  | Nil           |
| 6     | 21EC5205    | 5G NR - Next Generation Wireless Technologies | PC       | 3 | 1 | 2 | 0 | 5  | 6  | Nil           |
| 7     | 21EC5206    | RF System Design                              | PC       | 3 | 0 | 2 | 0 | 4  | 5  | Nil           |
| 8     | 21EC5207    | EMI/EMC & Electronic Warfare                  | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 9     | 21EC5208    | Modern Satellite Communication Systems        | PC       | 3 | 0 | 2 | 0 | 4  | 5  | Nil           |
| 10    | 21TS52R2    | Technical Skilling - II                       | PC       | 0 | 0 | 0 | 8 | 2  | 8  | Nil           |
| 11    |             | Elective-1                                    | PE       | 3 | 0 | 0 | 0 | 3  | 3  | Nil           |
| 12    |             | Elective-2                                    | PE       | 3 | 0 | 0 | 0 | 3  | 3  | Nil           |
| 13    |             | Elective-3                                    | PE       | 3 | 0 | 0 | 0 | 3  | 3  | Nil           |
| 14    |             | Elective-4                                    | PE       | 3 | 0 | 0 | 0 | 3  | 3  | Nil           |

|                            |          |   |      |   |   |    |   |           |    |     |
|----------------------------|----------|---|------|---|---|----|---|-----------|----|-----|
| 15                         | 21IE5149 | Seminar                                       | PR   | 0 | 0 | 4  | 0 | 2         | 4  | Nil |
| 16                         | 21IE5250 | Term Paper                                    | PR   | 0 | 0 | 4  | 0 | 2         | 4  | Nil |
| 17                         | 21IE6150 | Dissertation                                  | PR   | 0 | 0 | 36 | 0 | 18        | 36 | Nil |
| 18                         | 21IE6250 | Dissertation                                  | PR   | 0 | 0 | 36 | 0 | 18        | 36 | Nil |
| <b>Grand Total Credits</b> |          |   |      |   |   |    |   | <b>90</b> |    |     |
| <b>Elective – 1</b>        |          |   |      |   |   |    |   |           |    |     |
| 1                          | 21EC51A1 | GPS & Global Navigation Satellite System      | PE-1 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 2                          | 21EC51A2 | Wireless multimedia Communications            | PE-1 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 3                          | 21EC51A3 | Microwave and Millimetric wave Circuits       | PE-1 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 4                          | 21EC51A4 | Radiation Systems                             | PE-1 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| <b>Elective – 2</b>        |          |   |      |   |   |    |   |           |    |     |
| 5                          | 21EC51B1 | LiDAR & RADAR System Control                  | PE-2 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 6                          | 21EC51B2 | Internet of Things Architecture and Protocols | PE-2 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 7                          | 21EC51B3 | Computer Vision & Video Surveillance Systems  | PE-2 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 8                          | 21EC51B4 | Remote Sensing & Sensors                      | PE-2 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| <b>Elective – 3</b>        |          |   |      |   |   |    |   |           |    |     |
| 9                          | 21EC51C1 | Machine Learning for Wireless Communications  | PE-3 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 10                         | 21EC51C2 | Phased array systems                          | PE-3 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 11                         | 21EC51C3 | High Performance Communication Networking     | PE-3 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 12                         | 21EC51C4 | Estimation & Detection Theory                 | PE-3 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| <b>Elective – 4</b>        |          |   |      |   |   |    |   |           |    |     |
| 13                         | 21EC51D1 | FPGA-Based Wireless System Design             | PE-4 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 14                         | 21EC51D2 | Optical Wireless Communications               | PE-4 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 15                         | 21EC51T1 | RF Mixed Signal IC Design                     | PE-4 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 16                         | 21EC51D4 | Block Chain & Cyber Security                  | PE-4 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |

### M.Tech – Internet of Things

| Sl No | Course Code | Course Title                                  | Category | L | T | P | S | Cr | CH | Pre-requisite |
|-------|-------------|---|----------|---|---|---|---|----|----|---------------|
| 1     | 21EC51R2    | Internet of Things Architecture and Protocols | PC       | 3 | 0 | 0 | 0 | 3  | 3  | Nil           |
| 2     | 21IN5101    | Embedded Controllers & SoCs                   | PC       | 3 | 1 | 2 | 0 | 5  | 6  | Nil           |
| 3     | 21EC5101    | Wireless Communication and Data Networks      | PC       | 3 | 1 | 2 | 0 | 5  | 6  | Nil           |

|                            |          |   |      |   |   |    |   |           |    |     |
|----------------------------|----------|---|------|---|---|----|---|-----------|----|-----|
| 4                          | 21EC5104 | Artificial Intelligence and Machine Learning                | PC   | 3 | 0 | 2  | 0 | 4         | 5  | Nil |
| 5                          | 21TS5111 | Technical Skilling-I  | PC   | 0 | 0 | 0  | 8 | 2         | 8  | Nil |
| 6                          | 21IN5202 | Wireless Sensor Network and Security                        | PC   | 3 | 1 | 2  | 0 | 5         | 6  | Nil |
| 7                          | 21IN5203 | IoT Cloud computing   | PC   | 3 | 0 | 2  | 0 | 4         | 5  | Nil |
| 8                          | 21IN5204 | Big data Analytics for IoT                                  | PC   | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 9                          | 21IN5205 | IoT System Design Techniques                                | PC   | 3 | 1 | 2  | 0 | 5         | 6  | Nil |
| 10                         | 21TS5212 | Technical Skilling-II                                       | PC   | 0 | 0 | 0  | 8 | 2         | 8  | Nil |
| 11                         |          | Elective-1  | PE   | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 12                         |          | Elective-2  | PE   | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 13                         |          | Elective-3  | PE   | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 14                         |          | Elective-4  | PE   | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 15                         | 21IE5149 | Seminar   | PR   | 0 | 0 | 4  | 0 | 2         | 4  | Nil |
| 16                         | 21IE5250 | Term Paper  | PR   | 0 | 0 | 4  | 0 | 2         | 4  | Nil |
| 17                         | 21IE6150 | Dissertation  | PR   | 0 | 0 | 36 | 0 | 18        | 36 | Nil |
| 18                         | 21IE6250 | Dissertation  | PR   | 0 | 0 | 36 | 0 | 18        | 36 | Nil |
| <b>Grand Total Credits</b> |          |   |      |   |   |    |   | <b>90</b> |    |     |
| <b>Elective – 1</b>        |          |   |      |   |   |    |   |           |    |     |
| 1                          | 21IN51A1 | IIoT 4.0 for Automation in Industries                       | PE-1 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 2                          | 21IN51A2 | Energy Harvesting Technologies for IoT                      | PE-1 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 3                          | 21IN51A3 | Advanced Embedded System Design                             | PE-1 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 4                          | 21IN51A4 | Data Management and Security                                | PE-1 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| <b>Elective – 2</b>        |          |   |      |   |   |    |   |           |    |     |
| 5                          | 21EC51B3 | Computer Vision & Applications                              | PE-2 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 6                          | 21RA51B2 | Human Machine Interface & Brain-Machine Interface (HMIBMI)  | PE-2 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 7                          | 21IN51B2 | Data Bases, Data Modelling & Data Structure                 | PE-2 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 8                          | 21EC51Q2 | System on Chip Design                                       | PE-2 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| <b>Elective – 3</b>        |          |   |      |   |   |    |   |           |    |     |
| 9                          | 21IN51C1 | Edge Computing and Mobile Applications                      | PE-3 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 10                         | 21IN51C2 | 5G NR - Next Generation Wireless Technologies               | PE-3 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 11                         | 21RA51D1 | Optimization algorithms for autonomous systems              | PE-3 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 12                         | 21RA51C1 | Adaptive motion control systems for automation and robotics | PE-3 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |

| <b>Elective – 4</b> |          |                                   |      |   |   |   |   |   |   |     |
|---------------------|----------|-----------------------------------|------|---|---|---|---|---|---|-----|
| 13                  | 21EC51D4 | Block chain & Cyber Security      | PE-4 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 14                  | 21RA51D2 | Automotive Electronics & Avionics | PE-4 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 15                  | 21EC51D1 | FPGA-Based Wireless System Design | PE-4 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 16                  | 21IN51D4 | Cyber-Physical Systems            | PE-4 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |

### M.Tech – VLSI

| Sl No                      | Course Code | Course Title                                  | Category | L | T | P  | S | Cr        | CH | Pre-requisite |
|----------------------------|-------------|---|----------|---|---|----|---|-----------|----|---------------|
| 1                          | 21EC5128    | MOS Circuit Design                            | PC       | 3 | 1 | 2  | 0 | 5         | 6  | Nil           |
| 2                          | 21EC5129    | Digital VLSI Design                           | PC       | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 3                          | 21EC5130    | Low power VLSI System Design                  | PC       | 3 | 1 | 0  | 0 | 4         | 4  | Nil           |
| 4                          | 21EC5104    | Artificial Intelligence & Machine Learning    | PC       | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 5                          | 21TS51V1    | Technical Skilling-I (HDL)                    | PC       | 0 | 0 | 0  | 8 | 2         | 8  | Nil           |
| 6                          | 21EC5232    | Analog IC Design                              | PC       | 3 | 1 | 2  | 0 | 5         | 6  | Nil           |
| 7                          | 21EC5233    | Testing of VLSI Circuits                      | PC       | 3 | 1 | 2  | 0 | 5         | 6  | Nil           |
| 8                          | 21EC5234    | Algorithms for VLSI Design Automation         | PC       | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 9                          | 21EC5235    | ASIC and FPGA Design                          | PC       | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 10                         | 21TS52V2    | Technical Skilling-II (DFT)                   | PC       | 0 | 0 | 0  | 8 | 2         | 8  | Nil           |
| 11                         |             | Elective-1                                    | PE       | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 12                         |             | Elective-2                                    | PE       | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 13                         |             | Elective-3                                    | PE       | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 14                         |             | Elective-4                                    | PE       | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 15                         | 21IE5149    | Seminar                                       | PR       | 0 | 0 | 4  | 0 | 2         | 4  | Nil           |
| 16                         | 21IE5250    | Term Paper                                    | PR       | 0 | 0 | 4  | 0 | 2         | 4  | Nil           |
| 17                         | 21IE6150    | Dissertation                                  | PR       | 0 | 0 | 36 | 0 | 18        | 36 | Nil           |
| 18                         | 21IE6250    | Dissertation                                  | PR       | 0 | 0 | 36 | 0 | 18        | 36 | Nil           |
| <b>Grand Total Credits</b> |             |   |          |   |   |    |   | <b>90</b> |    |               |
| <b>Elective – 1</b>        |             |   |          |   |   |    |   |           |    |               |
| 1                          | 21EC51Q1    | IC Fabrication Technology                     | PE-1     | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 2                          | 21EC51Q2    | System on Chip Design                         | PE-1     | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 3                          | 21EC51Q3    | Nano Electronics                              | PE-1     | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 4                          | 21EC51Q4    | Semiconductor Device Modeling                 | PE-1     | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| <b>Elective – 2</b>        |             |   |          |   |   |    |   |           |    |               |
| 5                          | 21EC51R1    | VLSI Signal Processing                        | PE-2     | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 6                          | 21EC51R2    | Internet of Things Architecture and Protocols | PE-2     | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 7                          | 21EC51R3    | VLSI Circuits for Bio-Medical Applications    | PE-2     | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |

|                     |          |  |      |   |   |   |   |   |   |     |
|---------------------|----------|--|------|---|---|---|---|---|---|-----|
| 8                   | 21EC51R4 | Optimization Techniques in VLSI Design | PE-2 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| <b>Elective – 3</b> |          |  |      |   |   |   |   |   |   |     |
| 9                   | 21EC51S1 | Advanced Digital IC Design             | PE-3 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 10                  | 21EC51S2 | Embedded System Design                 | PE-3 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 11                  | 21EC51S3 | CAD Tools for VLSI                     | PE-3 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 12                  | 21EC51S4 | Memory Design and Testing              | PE-3 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| <b>Elective – 4</b> |          |  |      |   |   |   |   |   |   |     |
| 13                  | 21EC51T1 | FPGA-Based Wireless System Design      | PE-4 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 14                  | 21EC51T2 | RF Mixed Signal IC Design              | PE-4 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 15                  | 21EC51T3 | MEMS System Design                     | PE-4 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 16                  | 21EC51T4 | Block Chain & Cyber Security           | PE-4 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |

### M.Tech – Power Systems

| Sl No                      | Course Code | Course Title                             | Category | L | T | P  | S | Cr        | CH | Pre-requisite |
|----------------------------|-------------|--|----------|---|---|----|---|-----------|----|---------------|
| 1                          | 21EE5101    | Power System Dynamics & stability        | PC       | 3 | 1 | 0  | 0 | 4         | 4  | Nil           |
| 2                          | 21EE5102    | Advanced Power System Analysis           | PC       | 3 | 1 | 2  | 0 | 5         | 6  | Nil           |
| 3                          | 21EE5103    | Deregulated Operation of Power Systems   | PC       | 3 | 1 | 0  | 0 | 4         | 4  | Nil           |
| 4                          | 21EE5114    | Modern Control Theory                    | PC       | 3 | 1 | 0  | 0 | 4         | 4  | Nil           |
| 5                          | 21EE5201    | Real Time Control of Power System        | PC       | 3 | 1 | 2  | 0 | 5         | 6  | Nil           |
| 6                          | 21EE5202    | AI Techniques in Power Systems           | PC       | 3 | 1 | 0  | 0 | 4         | 4  | Nil           |
| 7                          | 21EE5203    | Digital Protection of Power Systems      | PC       | 3 | 1 | 0  | 0 | 4         | 4  | Nil           |
| 8                          | 21EE5214    | Smart Grids Technologies                 | PC       | 3 | 1 | 0  | 0 | 4         | 4  | Nil           |
| 9                          |             | Elective-1                               | PE       | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 10                         |             | Elective-2                               | PE       | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 11                         |             | Elective-3                               | PE       | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 12                         |             | Elective-4                               | PE       | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 13                         | 21IE5149    | Seminar                                  | PR       | 0 | 0 | 4  | 0 | 2         | 4  | Nil           |
| 14                         | 21IE5250    | Term Paper                               | PR       | 0 | 0 | 4  | 0 | 2         | 4  | Nil           |
| 15                         | 21IE6150    | Dissertation                             | PR       | 0 | 0 | 36 | 0 | 18        | 36 | Nil           |
| 16                         | 21IE6250    | Dissertation                             | PR       | 0 | 0 | 36 | 0 | 18        | 36 | Nil           |
| <b>Grand Total Credits</b> |             |  |          |   |   |    |   | <b>86</b> |    |               |
| <b>Elective – 1</b>        |             |  |          |   |   |    |   |           |    |               |
| 1                          | 21EE51S1    | Reactive Power Compensation & Management | PE-1     | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |

|                     |          |   |      |   |   |   |   |   |   |     |
|---------------------|----------|---|------|---|---|---|---|---|---|-----|
| 2                   | 21EE51S2 | Distribution System Planning & Automation       | PE-1 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 3                   | 21EE51S3 | Floating Solar and Off -Shore wind Technologies | PE-1 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| <b>Elective – 2</b> |          |   |      |   |   |   |   |   |   |     |
| 4                   | 21EE51E1 | Power System Reliability                        | PE-2 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 5                   | 21EE51B2 | Digital Signal Processors and Applications      | PE-2 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 6                   | 21EE51B3 | Optimization Techniques                         | PE-2 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| <b>Elective – 3</b> |          |   |      |   |   |   |   |   |   |     |
| 7                   | 21EE52C1 | FACTS   | PE-3 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 8                   | 21EE52C2 | Energy Conservation & Audit                     | PE-3 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 9                   | 21EE52C3 | Adaptive Control Systems                        | PE-3 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| <b>Elective – 4</b> |          |   |      |   |   |   |   |   |   |     |
| 10                  | 21EE52D1 | Alternative Sources of Electrical Energy        | PE-4 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 11                  | 21EE52D2 | Power Quality                                   | PE-4 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 12                  | 21EE52D3 | Energy Management Systems                       | PE-4 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |

### M.Tech - Power Electronics and Drives

| Sl No                      | Course Code | Course Title                                 | Category | L | T | P  | S | Cr        | CH | Pre-requisite |
|----------------------------|-------------|--|----------|---|---|----|---|-----------|----|---------------|
| 1                          | 21EE5111    | Modeling and Analysis of Electrical Machines | PC       | 3 | 1 | 0  | 0 | 4         | 4  | Nil           |
| 2                          | 21EE5112    | Analysis of Power Converters                 | PC       | 3 | 1 | 2  | 0 | 5         | 6  | Nil           |
| 3                          | 21EE5113    | Power Electronic Control Of Drives           | PC       | 3 | 0 | 2  | 0 | 4         | 5  | Nil           |
| 4                          | 21EE5114    | Modern Control Theory                        | PC       | 3 | 1 | 0  | 0 | 4         | 4  | Nil           |
| 5                          | 21EE5211    | Switched Mode Power Supplies                 | PC       | 3 | 1 | 2  | 0 | 5         | 6  | Nil           |
| 6                          | 21EE5212    | Advanced Electrical Drives                   | PC       | 3 | 1 | 0  | 0 | 4         | 4  | Nil           |
| 7                          | 21EE5213    | Electric Vehicle Technology                  | PC       | 3 | 1 | 0  | 0 | 4         | 4  | Nil           |
| 8                          | 21EE5214    | Smart Grids Technologies                     | PC       | 3 | 1 | 0  | 0 | 4         | 4  | Nil           |
| 9                          |             | Elective-1                                   | PE       | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 10                         |             | Elective-2                                   | PE       | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 11                         |             | Elective-3                                   | PE       | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 12                         |             | Elective-4                                   | PE       | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |
| 13                         | 21EE5149    | Seminar                                      | PR       | 0 | 0 | 4  | 0 | 2         | 4  | Nil           |
| 14                         | 21EE5250    | Term Paper                                   | PR       | 0 | 0 | 4  | 0 | 2         | 4  | Nil           |
| 15                         | 21EE6150    | Dissertation                                 | PR       | 0 | 0 | 36 | 0 | 18        | 36 | Nil           |
| 16                         | 21EE6250    | Dissertation                                 | PR       | 0 | 0 | 36 | 0 | 18        | 36 | Nil           |
| <b>Grand Total Credits</b> |             |  |          |   |   |    |   | <b>86</b> |    |               |
| <b>Elective – 1</b>        |             |  |          |   |   |    |   |           |    |               |
| 1                          | 21EE51A1    | Soft Computing Techniques                    | PE-1     | 3 | 0 | 0  | 0 | 3         | 3  | Nil           |

|                     |          |   |      |   |   |   |   |   |   |     |
|---------------------|----------|---|------|---|---|---|---|---|---|-----|
| 2                   | 21EE51A2 | Distributed generation systems                  | PE-1 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 3                   | 21EE51S3 | Floating Solar and off shore wind technologies  | PE-1 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| <b>Elective – 2</b> |          |   |      |   |   |   |   |   |   |     |
| 4                   | 21EE51B1 | Green Building and Energy systems               | PE-2 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 5                   | 21EE51B2 | Digital Signal Processors and Applications      | PE-2 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 6                   | 21EE51B3 | Optimization Techniques                         | PE-2 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| <b>Elective – 3</b> |          |   |      |   |   |   |   |   |   |     |
| 7                   | 21EE52C1 | FACTS   | PE-3 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 8                   | 21EE52N2 | Energy Storage Systems                          | PE-3 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 9                   | 21EE52N3 | Grid integration of Renewable energy systems    | PE-3 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| <b>Elective – 4</b> |          |   |      |   |   |   |   |   |   |     |
| 10                  | 21EE52E1 | Charging Technology for Electric Vehicles       | PE-4 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 11                  | 21EE52E2 | Battery Management Systems for Electric Vehicle | PE-4 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |
| 12                  | 21EE52D2 | Power Quality                                   | PE-4 | 3 | 0 | 0 | 0 | 3 | 3 | Nil |

### M.Tech – Thermal Engineering

| Sl No | Course Code | Course Title                             | Category | L | T | P | S | Cr | CH | Pre-requisite |
|-------|-------------|--|----------|---|---|---|---|----|----|---------------|
| 1     | 18ME5109    | Numerical Methods in Thermal Engineering | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 2     | 18ME5110    | Advanced Thermodynamics                  | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 3     | 18ME5111    | Design of Thermal Systems                | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 4     | 18ME5112    | Advanced Heat and Mass Transfer          | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 5     | 18ME5213    | Incompressible and Compressible Flows    | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 6     | 18ME5214    | Computational Fluid Dynamics             | PC       | 3 | 0 | 2 | 0 | 4  | 5  | Nil           |
| 7     | 18ME5215    | Refrigeration and Cryogenics             | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 8     | 18ME5216    | Measurements in Thermal Engineering      | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 9     |             | Elective-1                               | PE       | 3 | 0 | 0 | 0 | 3  | 3  | Nil           |
| 10    |             | Elective-2                               | PE       | 3 | 0 | 0 | 0 | 3  | 3  | Nil           |
| 11    |             | Elective-3                               | PE       | 3 | 0 | 0 | 0 | 3  | 3  | Nil           |
| 12    |             | Elective-4                               | PE       | 3 | 0 | 0 | 0 | 3  | 3  | Nil           |
| 13    | 18IE5149    | Seminar                                  | PR       | 0 | 0 | 4 | 0 | 2  | 4  | Nil           |



|                            |          |   |      |   |   |    |   |    |           |     |
|----------------------------|----------|---|------|---|---|----|---|----|-----------|-----|
| 14                         | 18IE5250 | Term Paper                              | PR   | 0 | 0 | 4  | 0 | 2  | 4         | Nil |
| 15                         | 21IE6150 | Dissertation                            | PR   | 0 | 0 | 36 | 0 | 18 | 36        | Nil |
| 16                         | 21IE6250 | Dissertation                            | PR   | 0 | 0 | 36 | 0 | 18 | 36        | Nil |
| <b>Grand Total Credits</b> |          |   |      |   |   |    |   |    | <b>84</b> |     |
| <b>Elective – 1</b>        |          |   |      |   |   |    |   |    |           |     |
| 1                          | 18ME51E1 | Heat Exchanger Design                   | PE-1 | 3 | 0 | 0  | 0 | 3  | 3         | Nil |
| 2                          | 18ME51E2 | Convection and Two-Phase Flow           | PE-1 | 3 | 0 | 0  | 0 | 3  | 3         | Nil |
| 3                          | 18ME51E3 | Compact Heat Exchangers                 | PE-1 | 3 | 0 | 0  | 0 | 3  | 3         | Nil |
| <b>Elective – 2</b>        |          |   |      |   |   |    |   |    |           |     |
| 4                          | 18ME51F1 | Engine Systems and Performance          | PE-2 | 3 | 0 | 0  | 0 | 3  | 3         | Nil |
| 5                          | 18ME51F2 | IC Engine Combustion and Pollution      | PE-2 | 3 | 0 | 0  | 0 | 3  | 3         | Nil |
| 6                          | 18ME51F3 | Alternative Fuels                       | PE-2 | 3 | 0 | 0  | 0 | 3  | 3         | Nil |
| <b>Elective – 3</b>        |          |   |      |   |   |    |   |    |           |     |
| 7                          | 18ME52G1 | Principles of Turbo-machinery           | PE-3 | 3 | 0 | 0  | 0 | 3  | 3         | Nil |
| 8                          | 18ME52G2 | Gas Turbine Engineering                 | PE-3 | 3 | 0 | 0  | 0 | 3  | 3         | Nil |
| 9                          | 18ME52G3 | Turbo-Compressors                       | PE-3 | 3 | 0 | 0  | 0 | 3  | 3         | Nil |
| <b>Elective – 4</b>        |          |   |      |   |   |    |   |    |           |     |
| 10                         | 18ME52H1 | Energy Conservation, Management & Audit | PE-4 | 3 | 0 | 0  | 0 | 3  | 3         | Nil |
| 11                         | 18ME52H2 | Renewable Energy Technology             | PE-4 | 3 | 0 | 0  | 0 | 3  | 3         | Nil |
| 12                         | 18ME52H3 | Solar Energy and Wind Energy            | PE-4 | 3 | 0 | 0  | 0 | 3  | 3         | Nil |

### M.Tech - Machine Design

| Sl No | Course Code | Course Title                        | Category | L | T | P | S | Cr | CH | Pre-requisite |
|-------|-------------|-------------------------------------|----------|---|---|---|---|----|----|---------------|
| 1     | 18ME5117    | Design Methods                      | PC       | 4 | 0 | 0 | 0 | 4  | 4  | Nil           |
| 2     | 18ME5118    | Design with Advanced materials      | PC       | 3 | 0 | 0 | 0 | 3  | 3  | Nil           |
| 3     | 18ME5119    | Theory of Elasticity and Plasticity | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 4     | 18ME5120    | Modeling & Analysis-1 (CAD)         | PC       | 4 | 0 | 2 | 0 | 5  | 6  | Nil           |
| 5     | 18ME5221    | Mechanical Vibrations               | PC       | 3 | 0 | 0 | 0 | 3  | 3  | Nil           |
| 6     | 18ME5222    | Design for Optimization             | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 7     | 18ME5223    | Advanced strength of materials      | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 8     | 18ME5224    | Modeling & Analysis-2 (FEM)         | PC       | 4 | 0 | 2 | 0 | 5  | 6  | Nil           |
| 9     |             | Elective-1                          | PE       | 3 | 0 | 0 | 0 | 3  | 3  | Nil           |
| 10    |             | Elective-2                          | PE       | 3 | 0 | 0 | 0 | 3  | 3  | Nil           |

|                            |          |  |      |   |   |    |   |           |    |     |
|----------------------------|----------|--|------|---|---|----|---|-----------|----|-----|
| 11                         |          | Elective-3   | PE   | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 12                         |          | Elective-4   | PE   | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 13                         | 18IE5149 | Seminar  | PR   | 0 | 0 | 4  | 0 | 2         | 4  | Nil |
| 14                         | 18IE5250 | Term Paper   | PR   | 0 | 0 | 4  | 0 | 2         | 4  | Nil |
| 15                         | 21IE6150 | Dissertation                                       | PR   | 0 | 0 | 36 | 0 | 18        | 36 | Nil |
| 16                         | 21IE6250 | Dissertation                                       | PR   | 0 | 0 | 36 | 0 | 18        | 36 | Nil |
| <b>Grand Total Credits</b> |          |  |      |   |   |    |   | <b>84</b> |    |     |
| <b>Elective – 1</b>        |          |  |      |   |   |    |   |           |    |     |
| 1                          | 18ME5111 | Precision and Quality Engineering                  | PE-1 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 2                          | 18ME5112 | Advanced Mechanisms                                | PE-1 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 3                          | 18ME5113 | Concurrent Engineering                             | PE-1 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| <b>Elective – 2</b>        |          |  |      |   |   |    |   |           |    |     |
| 4                          | 18ME5111 | Design of Pressure Vessels and Plates              | PE-2 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 5                          | 18ME5112 | Tribological System Design                         | PE-2 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 6                          | 18ME5113 | Product Design and Development                     | PE-2 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| <b>Elective – 3</b>        |          |  |      |   |   |    |   |           |    |     |
| 7                          | 18ME52K1 | Mechanics of Composite Materials                   | PE-3 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 8                          | 18ME52K2 | Machine Tool Design                                | PE-3 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 9                          | 18ME52K3 | Fracture Mechanics                                 | PE-3 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| <b>Elective – 4</b>        |          |  |      |   |   |    |   |           |    |     |
| 10                         | 18ME52L1 | Engineering Noise & Control                        | PE-4 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 11                         | 18ME52L2 | Engineering Failure Analysis and prevention        | PE-4 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |
| 12                         | 18ME52L3 | Design for Manufacturing, Assembly and Environment | PE-4 | 3 | 0 | 0  | 0 | 3         | 3  | Nil |

| Name of the Program : B.Arch |             |  |          |   |    |   |   |    |    |               |
|------------------------------|-------------|--|----------|---|----|---|---|----|----|---------------|
| Sl No                        | Course Code | Course Title                                   | Category | L | T  | P | S | Cr | CH | Pre-requisite |
| 1                            | 21AR1101    | Theory of Architecture                         | PC       | 3 | 0  | 0 | 0 | 3  | 3  | Nil           |
| 2                            | 21AR1102    | History of Architecture - I                    | PC       | 3 | 0  | 0 | 0 | 3  | 3  | Nil           |
| 3                            | 21AR1152    | Architectural Drawing - I                      | PC       | 0 | 0  | 6 | 0 | 3  | 6  | Nil           |
| 4                            | 21AR1153    | Architectural Design Studio – 1 (Basic Design) | PC       | 0 | 8  | 0 | 0 | 12 | 8  | Nil           |
| 5                            | 21AR1205    | History of Architecture - II                   | PC       | 3 | 0  | 0 | 0 | 3  | 3  | Nil           |
| 6                            | 21AR1254    | Model Making Workshop                          | PC       | 0 | 0  | 4 | 0 | 2  | 4  | Nil           |
| 7                            | 21AR1256    | Architectural Drawing - II                     | PC       | 0 | 0  | 4 | 0 | 2  | 4  | Nil           |
| 8                            | 21AR1257    | Architectural Design Studio -II                | PC       | 0 | 8  | 0 | 0 | 12 | 8  | 21AR1153      |
| 9                            | 21AR2108    | History of Architecture - III                  | PC       | 3 | 0  | 0 | 0 | 3  | 3  | Nil           |
| 10                           | 21AR2138    | Architectural Design Studio -III               | PC       | 0 | 8  | 0 | 0 | 12 | 8  | 21AR1257      |
| 11                           | 21AR2212    | Site Analysis and Planning                     | PC       | 2 | 0  | 0 | 0 | 2  | 2  | Nil           |
| 12                           | 21AR2241    | Architectural Design Studio -IV                | PC       | 0 | 8  | 0 | 0 | 12 | 8  | 21AR2138      |
| 13                           | 21AR2213    | Contemporary Indian Architecture               | PC       | 2 | 0  | 0 | 0 | 2  | 2  | Nil           |
| 14                           | 21AR3144    | Architectural Design Studio -V                 | PC       | 0 | 8  | 0 | 0 | 12 | 8  | 21AR2241      |
| 15                           | 21AR3116    | Contemporary Western Architecture              | PC       | 2 | 0  | 0 | 0 | 2  | 2  | Nil           |
| 16                           | 21AR3218    | Specification, Estimation and Costing          | PC       | 3 | 0  | 0 | 0 | 3  | 3  | Nil           |
| 17                           | 21AR3220    | Human Settlements and Planning                 | PC       | 2 | 0  | 0 | 0 | 2  | 2  | Nil           |
| 18                           | 21AR3247    | Architectural Design Studio -VI                | PC       | 0 | 8  | 0 | 0 | 12 | 8  | 21AR3144      |
| 19                           | 21AR4150    | Architectural Design Studio -VII               | PC       | 0 | 10 | 0 | 0 | 15 | 10 | 21AR3247      |
| 20                           | 21AR4253    | Urban Design Studio                            | PC       | 0 | 8  | 0 | 0 | 12 | 8  | 21AR4150      |
| 21                           | 21AR5255    | Architectural Thesis                           | PC       | 0 | 12 | 0 | 0 | 18 | 12 | 21AR5154      |
| 22                           | 21UC0009    | Ecology & Environment                          | BS&AE    | 2 | 0  | 0 | 0 | 2  | 2  | Nil           |
| 23                           | 21AR1103    | Building Materials - I                         | BS&AE    | 2 | 0  | 0 | 0 | 2  | 2  | Nil           |
| 24                           | 21AR1204    | Mechanics of Structures - I                    | BS&AE    | 3 | 0  | 0 | 0 | 3  | 3  | Nil           |
| 25                           | 21AR1206    | Building Materials - II                        | BS&AE    | 2 | 0  | 0 | 0 | 2  | 2  | Nil           |
| 26                           | 21AR2107    | Mechanics of Structures - II                   | BS&AE    | 3 | 0  | 0 | 0 | 3  | 3  | Nil           |
| 27                           | 21AR2137    | Building Construction - I                      | BS&AE    | 0 | 4  | 0 | 0 | 6  | 4  | Nil           |
| 28                           | 21AR2135    | Surveying and Levelling                        | BS&AE    | 0 | 0  | 4 | 0 | 2  | 4  | Nil           |
| 29                           | 21AR2109    | Climate Responsive Architecture                | BS&AE    | 3 | 0  | 0 | 0 | 3  | 3  | Nil           |
| 30                           | 21AR2210    | Design of Structures - I                       | BS&AE    | 3 | 0  | 0 | 0 | 3  | 3  | Nil           |
| 31                           | 21AR2211    | Building Services - I                          | BS&AE    | 3 | 0  | 0 | 0 | 3  | 3  | Nil           |
| 32                           | 21AR2240    | Building Construction - II                     | BS&AE    | 0 | 4  | 0 | 0 | 6  | 4  | Nil           |
| 33                           | 21AR3114    | Design of Structures - II                      | BS&AE    | 3 | 0  | 0 | 0 | 3  | 3  | Nil           |
| 34                           | 21AR3115    | Building Services - II                         | BS&AE    | 3 | 0  | 0 | 0 | 3  | 3  | Nil           |
| 35                           | 21AR3143    | Building Construction - III                    | BS&AE    | 0 | 4  | 0 | 0 | 6  | 4  | Nil           |
| 36                           | 21AR3219    | Building Services - III                        | BS&AE    | 3 | 0  | 0 | 0 | 3  | 3  | Nil           |
| 37                           | 21AR3246    | Building Construction - IV                     | BS&AE    | 0 | 4  | 0 | 0 | 6  | 4  | Nil           |
| 38                           | 21AR4123    | Building Services - IV                         | BS&AE    | 3 | 0  | 0 | 0 | 3  | 3  | Nil           |
| 39                           | 21AR4148    | Working Drawing - I                            | BS&AE    | 0 | 0  | 4 | 0 | 2  | 4  | Nil           |
| 40                           | 21AR4251    | Working Drawing - II                           | BS&AE    | 0 | 0  | 4 | 0 | 2  | 4  | Nil           |
| 41                           | 21AR3118A   | Interior Design Studio                         | PE       | 0 | 0  | 4 | 0 | 2  | 4  | Nil           |
| 42                           | 21AR3118B   | Furniture Design Studio                        | PE       |   |    |   |   |    |    |               |
| 43                           | 21AR3117A   | Vernacular Architecture                        | PE       | 2 | 0  | 0 | 0 | 2  | 2  | Nil           |
| 44                           | 21AR3117B   | Sustainable Architecture - I                   | PE       |   |    |   |   |    |    |               |
| 45                           | 21AR3222A   | Landscape Design Studio                        | PE       | 0 | 0  | 4 | 0 | 2  | 4  | Nil           |
| 46                           | 21AR3222B   | Modular Construction Studio                    | PE       |   |    |   |   |    |    |               |

|                      |           |                                       |       |   |   |    |   |     |    |          |
|----------------------|-----------|---------------------------------------|-------|---|---|----|---|-----|----|----------|
| 47                   | 21AR3221A | Appropriate Construction Technologies | PE    | 2 | 0 | 0  | 0 | 2   | 2  | Nil      |
| 48                   | 21AR3221B | Sustainable Architecture - II         | PE    |   |   |    |   |     |    |          |
| 49                   | 21AR4125A | Advanced Building Techniques          | PE    | 0 | 0 | 4  | 0 | 2   | 4  | Nil      |
| 50                   | 21AR4125B | Architecture Photography              | PE    |   |   |    |   |     |    |          |
| 51                   | 21AR4126A | Housing                               | PE    | 2 | 0 | 0  | 0 | 2   | 2  | Nil      |
| 52                   | 21AR4126B | Intelligent Buildings                 | PE    |   |   |    |   |     |    |          |
| 53                   | 21AR4124A | Architectural Conservation            | PE    | 3 | 0 | 0  | 0 | 3   | 3  | Nil      |
| 54                   | 21AR4124B | Set Design                            | PE    |   |   |    |   |     |    |          |
| 55                   | 21AR4228A | Dissertation                          | PE    | 0 | 4 | 0  | 0 | 6   | 4  | Nil      |
| 56                   | 21AR4228B | Thesis Seminar                        | PE    |   |   |    |   |     |    |          |
| 57                   | 21AR4229A | Urban Design                          | PE    | 2 | 0 | 0  | 0 | 2   | 2  | Nil      |
| 58                   | 21AR4229B | Transportation Planning               | PE    |   |   |    |   |     |    |          |
| 59                   | 21AR4227A | Behavioral Architecture               | PE    | 3 | 0 | 0  | 0 | 3   | 3  | Nil      |
| 60                   | 21AR4227B | Disaster Mitigation and Management    | PE    |   |   |    |   |     |    |          |
| 61                   | 21AR4226  | Building Construction and Management  | PAECC | 3 | 0 | 0  | 0 | 3   | 3  | Nil      |
| 62                   | 21AR5228  | Architecture Professional Practice    | PAECC | 3 | 0 | 0  | 0 | 3   | 3  | Nil      |
| 63                   | 21AR5154  | Practical Training / Internship       | PAECC | 0 | 0 | 40 | 0 | 20  | 40 | 21AR4253 |
| 64                   | 21AR1151  | Art and Visual Graphic Studio         | SEC   | 0 | 0 | 6  | 0 | 3   | 6  | Nil      |
| 65                   | 21AR2136  | Computer Studio - I                   | SEC   | 0 | 0 | 4  | 0 | 2   | 4  | Nil      |
| 66                   | 21AR2239  | Computer Studio - II                  | SEC   | 0 | 0 | 4  | 0 | 2   | 4  | Nil      |
| 67                   | 21UC1101  | Integrated Professional English       | SEC   | 0 | 0 | 4  | 0 | 2   | 4  | Nil      |
| 68                   | 21UC1202  | English Proficiency                   | SEC   | 0 | 0 | 4  | 0 | 2   | 4  | Nil      |
| 69                   | 21UC2103  | Design Thinking and Innovation -      | OE    | 1 | 0 | 0  | 4 | 2   | 2  | Nil      |
| 70                   | 21MB52C3  | Human Resource Management             | OE    | 3 | 0 | 0  | 0 | 3   | 3  | Nil      |
| 71                   | 21BB32C3  | Innovation and Entrepreneurship       | OE    |   |   |    |   |     |    | Nil      |
| <b>Total Credits</b> |           |                                       |       |   |   |    |   | 278 |    |          |

| Name of the Program : Bachelor of Computer Applications (BCA) |             |  |          |   |   |   |   |    |    |               |
|---|-------------|--|----------|---|---|---|---|----|----|---------------|
| Sl No   | Course Code | Course Title                                 | Category | L | T | P | S | Cr | CH | Pre-requisite |
| 1   | 20UC1101    | Integrated Professional English              | HSS      | 0 | 0 | 4 | 0 | 2  | 4  | Nil           |
| 2   | 20UC1202    | English Proficiency                          | HSS      | 0 | 0 | 4 | 0 | 2  | 4  | Nil           |
| 3   | 21UC1203    | Design Thinking & Innovation                 | HSS      | 0 | 0 | 4 | 0 | 2  | 4  | Nil           |
| 4   | 21UC2103    | Essential Skills for Employability           | HSS      | 0 | 0 | 4 | 0 | 2  | 4  | Nil           |
| 5   | 21UC0010    | Universal Human Values & Professional Ethics | HSS      | 2 | 0 | 0 | 0 | 2  | 2  | Nil           |
| 6   | 21FL3055    | Spanish Language                             | HSS      | 2 | 0 | 0 | 0 | 2  | 2  | Nil           |
| 7   | 21UC2204    | Corporate Readiness Skills                   | HSS      | 0 | 0 | 4 | 0 | 2  | 4  | Nil           |
| 8   | 21CA1104    | Mathematics for Computer Science             | BS       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 9   | 21UC0009    | Ecology & Environment                        | BS       | 2 | 0 | 0 | 0 | 2  | 2  | Nil           |
| 10  | 21CA1101    | Problem Solving through Programming          | PC       | 3 | 0 | 2 | 4 | 5  | 9  | Nil           |
| 11  | 21CA1102    | Computer Organization & Architecture         | PC       | 4 | 0 | 0 | 0 | 4  | 4  | Nil           |
| 12  | 21CA1103    | Essentials of Information Technology         | PC       | 3 | 0 | 2 | 0 | 4  | 5  | Nil           |
| 13  | 21CA1205    | Operating System                             | PC       | 4 | 0 | 0 | 0 | 4  | 4  | Nil           |

|                      |          |                                   |    |   |   |    |   |            |    |     |
|----------------------|----------|-----------------------------------|----|---|---|----|---|------------|----|-----|
| 14                   | 21CA1206 | Data Structures                   | PC | 3 | 0 | 2  | 0 | 4          | 5  | Nil |
| 15                   | 21CA1207 | Object Oriented Programming       | PC | 3 | 0 | 2  | 4 | 5          | 9  | Nil |
| 16                   | 21CA2110 | Database Management Systems       | PC | 3 | 0 | 2  | 4 | 5          | 9  | Nil |
| 17                   | 21CA1209 | Web and Social Media Technologies | PC | 0 | 0 | 4  | 0 | 2          | 4  | Nil |
| 18                   | 21CA2109 | Software Engineering              | PC | 2 | 1 | 0  | 0 | 3          | 3  | Nil |
| 19                   | 21CA1208 | Mobile Application Development    | PC | 3 | 0 | 2  | 4 | 5          | 9  | Nil |
| 20                   | 21CA2111 | Computer Networks                 | PC | 3 | 0 | 0  | 0 | 3          | 3  | Nil |
| 21                   | 21CA2112 | Web Development using Python      | PC | 3 | 0 | 2  | 4 | 5          | 9  | Nil |
| 22                   | 21CA2213 | Java Full Stack Development       | PC | 3 | 0 | 2  | 4 | 5          | 9  | Nil |
| 23                   | 21CA2214 | Object Oriented Analysis & Design | PC | 3 | 0 | 2  | 4 | 5          | 9  | Nil |
| 24                   |          | Professional Elective - 1         | PE | 2 | 0 | 2  | 0 | 3          | 4  | Nil |
| 25                   |          | Professional Elective - 2         | PE | 2 | 0 | 2  | 0 | 3          | 4  | Nil |
| 26                   |          | Professional Elective - 3         | PE | 2 | 0 | 2  | 0 | 3          | 4  | Nil |
| 27                   |          | Professional Elective - 4         | PE | 2 | 0 | 2  | 0 | 3          | 4  | Nil |
| 28                   |          | Professional Elective - 5         | PE | 2 | 0 | 2  | 4 | 4          | 8  | Nil |
| 29                   |          | Open Elective - 1                 | OE | 3 | 0 | 0  | 0 | 3          | 3  | Nil |
| 30                   |          | Open Elective - 2                 | OE | 3 | 0 | 0  | 0 | 3          | 3  | Nil |
| 31                   |          | Open Elective - 3                 | OE | 3 | 0 | 0  | 0 | 3          | 3  | Nil |
| 32                   | 21CA21N0 | Internship-1                      | PR | 0 | 0 | 4  | 0 | 2          | 4  | Nil |
| 33                   | 21CA22E1 | Term Paper                        | PR | 0 | 0 | 4  | 0 | 2          | 4  | Nil |
| 34                   | 21CA31N1 | Internship-2                      | PR | 0 | 0 | 4  | 0 | 2          | 4  | Nil |
| 35                   | 21CA32E2 | Major Project                     | PR | 0 | 0 | 20 | 0 | 10         | 20 | Nil |
| <b>Total Credits</b> |          |                                   |    |   |   |    |   | <b>120</b> |    |     |

#### LIST OF PROFESSIONAL ELECTIVES

| Sl No | Course Code | Course Title                                | Specialization                            | L | T | P | S | Cr | CH | Pre-requisite |
|-------|-------------|---|---|---|---|---|---|----|----|---------------|
| 1     | 21CA21C1    | Cloud Architecture                          | Cloud Technology and Information Security | 2 | 0 | 2 | 0 | 3  | 4  | Nil           |
| 2     | 21CA22C2    | Cloud Information Security                  |   | 2 | 0 | 2 | 0 | 3  | 4  | Nil           |
| 3     | 21CA31C3    | Ethical Hacking                             |   | 2 | 0 | 2 | 0 | 3  | 4  | Nil           |
| 4     | 21CA32C4    | Cloud Web Services                          |   | 2 | 0 | 2 | 0 | 3  | 4  | Nil           |
| 5     | 21CA32C5    | Design and Development of Cloud Application |   | 2 | 0 | 2 | 4 | 4  | 8  | Nil           |
| 6     | 21CA21D1    | Data Warehousing & Mining                   | Data Science                              | 2 | 0 | 2 | 0 | 3  | 4  | Nil           |
| 7     | 21CA22D2    | Statistics for Data Science                 |   | 2 | 0 | 2 | 0 | 3  | 4  | Nil           |
| 8     | 21CA31D3    | Machine Learning                            |   | 2 | 0 | 2 | 0 | 3  | 4  | Nil           |
| 9     | 21CA32D4    | Big Data Analytics                          |   | 2 | 0 | 2 | 0 | 3  | 4  | Nil           |
| 10    | 21CA32D5    | Data Visualization                          |   | 2 | 0 | 2 | 4 | 4  | 8  | Nil           |
| 11    | 21CA21A1    | Artificial Intelligence                     | Artificial Intelligence                   | 2 | 0 | 2 | 0 | 3  | 4  | Nil           |
| 12    | 21CA22A2    | Business Intelligence                       |   | 2 | 0 | 2 | 0 | 3  | 4  | Nil           |
| 13    | 21CA31D3    | Machine Learning                            |   | 2 | 0 | 2 | 0 | 3  | 4  | Nil           |
| 14    | 21CA32A4    | Robotic Process Automation                  |   | 2 | 0 | 2 | 0 | 3  | 4  | Nil           |
| 15    | 21CA32A5    | Deep Learning                               |   | 2 | 0 | 2 | 4 | 4  | 8  | Nil           |
| 16    | 21CA2111    | Essentials of IoT                           | Internet of Things                        | 2 | 0 | 2 | 0 | 3  | 4  | Nil           |
| 17    | 21CA22I2    | Microprocessor and Microcontroller          |   | 2 | 0 | 2 | 0 | 3  | 4  | Nil           |
| 18    | 21CA31I3    | Electronics and Sensor Technology           |   | 2 | 0 | 2 | 0 | 3  | 4  | Nil           |
| 19    | 21CA32I4    | IoT Design and Development                  |   | 2 | 0 | 2 | 0 | 3  | 4  | Nil           |
| 20    | 21CA32I5    | Advance Embedded System                     |   | 2 | 0 | 2 | 4 | 4  | 8  | Nil           |

| Name of the Program : B.Pharmacy |                  |   |          |   |   |   |   |    |    |               |
|----------------------------------|------------------|---|----------|---|---|---|---|----|----|---------------|
| Sl No                            | Course Code      | Course Title                                    | Category | L | T | P | S | Cr | CH | Pre-requisite |
| 1                                | 21PY1105T        | Communication skills (Theory)                   | HSS      | 2 | 0 | 0 | 0 | 2  | 2  | Nil           |
| 2                                | 21PY1105P        | Communication skills (Practical)                | HSS      | 0 | 0 | 2 | 0 | 1  | 2  | Nil           |
| 3                                | 20UC1101         | Integrated Professional English                 | HSS      | 0 | 0 | 4 | 0 | 2  | 4  | Nil           |
| 4                                | 20UC1202         | English Proficiency                             | HSS      | 0 | 0 | 4 | 0 | 2  | 4  | Nil           |
| 5                                | 20UC1203         | Design Thinking and Innovation                  | HSS      | 1 | 0 | 0 | 4 | 2  | 4  | Nil           |
| 6                                | 20UC0010         | Universal Human Values and Professional Ethics  | HSS      | 2 | 0 | 0 | 0 | 0  | 2  | Nil           |
| 7                                | 21PY1106RBT /RMT | Remedial Biology/Remedial Mathematics (Theory)  | BS       | 2 | 0 | 0 | 0 | 2  | 2  | Nil           |
| 8                                | 21PY1106RBP      | Remedial Biology (Practical)                    | BS       | 0 | 0 | 2 | 0 | 1  | 2  | Nil           |
| 9                                | 21PY1211T        | Computer Applications in Pharmacy (Theory)      | BS       | 3 | 0 | 0 | 0 | 3  | 3  | Nil           |
| 10                               | 21PY1211P        | Computer Applications in Pharmacy (Practical)   | BS       | 0 | 0 | 2 | 0 | 1  | 2  | Nil           |
| 11                               | 21PY1212T        | Environmental sciences (Theory)                 | BS       | 3 | 0 | 0 | 0 | 3  | 3  | Nil           |
| 12                               | 21PY1101T        | Human Anatomy and Physiology I (Theory)         | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 13                               | 21PY1101P        | Human Anatomy and Physiology I (Practical)      | PC       | 0 | 0 | 4 | 0 | 2  | 4  | Nil           |
| 14                               | 21PY1102T        | Pharmaceutical Analysis I (Theory)              | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 15                               | 21PY1102P        | Pharmaceutical Analysis I (Practical)           | PC       | 0 | 0 | 4 | 0 | 2  | 4  | Nil           |
| 16                               | 21PY1103T        | Pharmaceutics (Theory)                          | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 17                               | 21PY1103P        | Pharmaceutics (Practical)                       | PC       | 0 | 0 | 4 | 0 | 2  | 4  | Nil           |
| 18                               | 21PY1104T        | Pharmaceutical Inorganic Chemistry (Theory)     | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 19                               | 21PY1104P        | Pharmaceutical Inorganic Chemistry (Practical)  | PC       | 0 | 0 | 4 | 0 | 2  | 4  | Nil           |
| 20                               | 21PY1207T        | Human Anatomy and Physiology II (Theory)        | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 21                               | 21PY1207P        | Human Anatomy and Physiology II (Practical)     | PC       | 0 | 0 | 4 | 0 | 2  | 4  | Nil           |
| 22                               | 21PY1208T        | Pharmaceutical Organic Chemistry I (Theory)     | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 23                               | 21PY1208P        | Pharmaceutical Organic Chemistry I (Practical)  | PC       | 0 | 0 | 4 | 0 | 2  | 4  | Nil           |
| 24                               | 21PY1209T        | Biochemistry (Theory)                           | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 25                               | 21PY1209P        | Biochemistry (Practical)                        | PC       | 0 | 0 | 4 | 0 | 2  | 4  | Nil           |
| 26                               | 21PY1210T        | Pathophysiology (Theory)                        | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 27                               | 21PY2113T        | Pharmaceutical Organic Chemistry II (Theory)    | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 28                               | 21PY2113P        | Pharmaceutical Organic Chemistry II (Practical) | PC       | 0 | 0 | 4 | 0 | 2  | 4  | Nil           |
| 29                               | 21PY2114T        | Physical Pharmaceutics I (Theory)               | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 30                               | 21PY2114P        | Physical Pharmaceutics I (Practical)            | PC       | 0 | 0 | 4 | 0 | 2  | 4  | Nil           |
| 31                               | 21PY2115T        | Pharmaceutical Microbiology (Theory)            | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |

|    |            |   |    |   |   |    |   |   |    |     |
|----|------------|---|----|---|---|----|---|---|----|-----|
| 32 | 21PY2115P  | Pharmaceutical Microbiology (Practical)         | PC | 0 | 0 | 4  | 0 | 2 | 4  | Nil |
| 33 | 21PY2116T  | Pharmaceutical Engineering (Theory)             | PC | 3 | 1 | 0  | 0 | 4 | 4  | Nil |
| 34 | 21PY2116P  | Pharmaceutical Engineering (Practical)          | PC | 0 | 0 | 4  | 0 | 2 | 4  | Nil |
| 35 | 21PY2217T  | Pharmaceutical Organic Chemistry III (Theory)   | PC | 3 | 1 | 0  | 0 | 4 | 4  | Nil |
| 36 | 21PY2218T  | Medicinal Chemistry I (Theory)                  | PC | 3 | 1 | 0  | 0 | 4 | 4  | Nil |
| 37 | 21PY2218P  | Medicinal Chemistry I (Practical)               | PC | 0 | 0 | 4  | 0 | 2 | 4  | Nil |
| 38 | 21PY2219T  | Physical Pharmaceutics II (Theory)              | PC | 3 | 1 | 0  | 0 | 4 | 4  | Nil |
| 39 | 21PY2219P  | Physical Pharmaceutics II (Practical)           | PC | 0 | 0 | 4  | 0 | 2 | 4  | Nil |
| 40 | 21PY2220T  | Pharmacology I (Theory)                         | PC | 3 | 1 | 0  | 0 | 4 | 4  | Nil |
| 41 | 21PY2220P  | Pharmacology I (Practical)                      | PC | 0 | 0 | 4  | 0 | 2 | 4  | Nil |
| 42 | 21PY2221T  | Pharmacognosy and Phytochemistry I (Theory)     | PC | 3 | 1 | 0  | 0 | 4 | 4  | Nil |
| 43 | 21PY2221P  | Pharmacognosy and Phytochemistry I (Practical)  | PC | 0 | 0 | 4  | 0 | 2 | 4  | Nil |
| 44 | 21PY3122T  | Medicinal Chemistry II (Theory)                 | PC | 3 | 1 | 0  | 0 | 4 | 4  | Nil |
| 45 | 21PY3123T  | Industrial Pharmacy I (Theory)                  | PC | 3 | 1 | 0  | 0 | 4 | 4  | Nil |
| 46 | 21PY3123P  | Industrial Pharmacy I (Practical)               | PC | 0 | 0 | 4  | 0 | 2 | 4  | Nil |
| 47 | 21PY3124T  | Pharmacology II (Theory)                        | PC | 3 | 1 | 0  | 0 | 4 | 4  | Nil |
| 48 | 21PY3124P  | Pharmacology II (Practical)                     | PC | 0 | 0 | 4  | 0 | 2 | 4  | Nil |
| 49 | 21PY3125T  | Pharmacognosy and Phytochemistry II (Theory)    | PC | 3 | 1 | 0  | 0 | 4 | 4  | Nil |
| 50 | 21PY3125P  | Pharmacognosy and Phytochemistry II (Practical) | PC | 0 | 0 | 4  | 0 | 2 | 4  | Nil |
| 51 | 21PY3126T  | Pharmaceutical Jurisprudence (Theory)           | PC | 3 | 1 | 0  | 0 | 4 | 4  | Nil |
| 52 | 21PY3227T  | Medicinal Chemistry III (Theory)                | PC | 3 | 1 | 0  | 0 | 4 | 4  | Nil |
| 53 | 21PY3227P  | Medicinal chemistry III (Practical)             | PC | 0 | 0 | 4  | 0 | 2 | 4  | Nil |
| 54 | 21PY3228T  | Pharmacology III (Theory)                       | PC | 3 | 1 | 0  | 0 | 4 | 4  | Nil |
| 55 | 21PY3228P  | Pharmacology III (Practical)                    | PC | 0 | 0 | 4  | 0 | 2 | 4  | Nil |
| 56 | 21PY3229T  | Herbal Drug Technology (Theory)                 | PC | 3 | 1 | 0  | 0 | 4 | 4  | Nil |
| 57 | 21PY3229P  | Herbal Drug Technology (Practical)              | PC | 0 | 0 | 4  | 0 | 2 | 4  | Nil |
| 58 | 21PY3230T  | Biopharmaceutics and Pharmacokinetics (Theory)  | PC | 3 | 1 | 0  | 0 | 4 | 4  | Nil |
| 59 | 21PY3231T  | Pharmaceutical Biotechnology (Theory)           | PC | 3 | 1 | 0  | 0 | 4 | 4  | Nil |
| 60 | 21PY3232T  | Quality Assurance (Theory)                      | PC | 3 | 1 | 0  | 0 | 4 | 4  | Nil |
| 61 | 21PY4133T  | Instrumental Methods of Analysis (Theory)       | PC | 3 | 1 | 0  | 0 | 4 | 4  | Nil |
| 62 | 21PY4133P  | Instrumental Methods of Analysis (Practical)    | PC | 0 | 0 | 4  | 0 | 2 | 4  | Nil |
| 63 | 21PY4134T  | Industrial Pharmacy II (Theory)                 | PC | 3 | 1 | 0  | 0 | 4 | 4  | Nil |
| 64 | 21PY4135T  | Pharmacy Practice (Theory)                      | PC | 3 | 1 | 0  | 0 | 4 | 4  | Nil |
| 65 | 21PY4136T  | Novel Drug Delivery System (Theory)             | PC | 3 | 1 | 0  | 0 | 4 | 4  | Nil |
| 66 | 21PY4137PS | Practice School                                 | PC | 0 | 0 | 12 | 0 | 6 | 12 | Nil |

|                      |                    |   |       |   |   |    |   |            |    |     |
|----------------------|--------------------|---|-------|---|---|----|---|------------|----|-----|
| 67                   | 21PY4238T          | Biostatistics and Research Methodology (Theory)         | PC    | 3 | 1 | 0  | 0 | 4          | 4  | Nil |
| 68                   | 21PY4239T          | Social and Preventive Pharmacy (Theory)                 | PC    | 3 | 1 | 0  | 0 | 4          | 4  | Nil |
| 69                   | 21PY4240ET         | Pharma Marketing Management                             | PE    | 3 | 1 | 0  | 0 | 4          | 4  | Nil |
| 70                   | 21PY4241ET         | Pharmaceutical Regulatory Science (Theory)              | PE    |   |   |    |   |            |    | Nil |
| 71                   | 21PY4242ET         | Pharmacovigilance (Theory)                              | PE    |   |   |    |   |            |    | Nil |
| 72                   | 21PY4243ET         | Quality Control and Standardization of Herbals (Theory) | PE    |   |   |    |   |            |    | Nil |
| 73                   | 21PY4244ET         | Computer Aided Drug Design (Theory)                     | PE    |   |   |    |   |            |    | Nil |
| 74                   | 21PY4245ET         | Cell and Molecular Biology (Theory)                     | PE    | 3 | 1 | 0  | 0 | 4          | 4  | Nil |
| 75                   | 21PY4246ET         | Cosmetic Science (Theory)                               | PE    |   |   |    |   |            |    | Nil |
| 76                   | 21PY4247ET         | Experimental Pharmacology (Theory)                      | PE    |   |   |    |   |            |    | Nil |
| 77                   | 21PY4248ET         | Advanced Instrumentation Techniques (Theory)            | PE    |   |   |    |   |            |    | Nil |
| 78                   | 21PY 4249ET        | Dietary Supplements and Nutraceuticals                  | PE    |   |   |    |   |            |    | Nil |
| 79                   | 21GN40D1/21 GN40D4 | National Caded Cops(NCC)-1/National Service Scheme-1    | OE    | 2 | 0 | 2  | 0 | 3          | 4  | Nil |
| 80                   | 21GN40D2/21 GN40D5 | National Caded Cops(NCC)-2/National Service Scheme-2    | OE    | 2 | 0 | 2  | 0 | 3          | 4  | Nil |
| 81                   | 21GN40D3/21 GN40D6 | National Caded Cops(NCC)-3/National Service Scheme-3    | OE    | 2 | 0 | 2  | 0 | 3          | 4  | Nil |
| 82                   | 21PY4250PW         | Project Work  | PR    | 0 | 0 | 12 | 0 | 6          | 12 | Nil |
| 83                   | 21PY3123S          | Production process for API/Bulk drug/Intermediates      | Skill | 0 | 0 | 0  | 4 | 1          | 4  |     |
| 84                   | 21PY4133S          | Operation of Analytical Instruments                     | Skill | 0 | 0 | 0  | 4 | 1          | 4  |     |
| <b>Total Credits</b> |                    |   |       |   |   |    |   | <b>221</b> |    |     |

| Name of the Program : B.Com |             |                                    |          |   |   |   |   |    |    |               |
|-----------------------------|-------------|------------------------------------|----------|---|---|---|---|----|----|---------------|
| Sl No                       | Course Code | Course Title                       | Category | L | T | P | S | Cr | CH | Pre-requisite |
| 1                           | 20UC1101    | Integrated Professional English    | HSS      | 0 | 0 | 4 | 0 | 2  | 4  | Nil           |
| 2                           | 21UC0007    | Indian Heritage & Culture          | HSS      | 2 | 0 | 0 | 0 | 2  | 2  | Nil           |
| 3                           | 20UC1202    | English Proficiency                | HSS      | 0 | 0 | 4 | 0 | 2  | 4  | Nil           |
| 4                           | 21UC0009    | Ecology & Environment              | HSS      | 2 | 0 | 0 | 0 | 2  | 2  | Nil           |
| 5                           | 21UC2103    | Essential Skills for Employability | HSS      | 0 | 0 | 4 | 0 | 2  | 4  | Nil           |
| 6                           | 21FL1203    | Foreign Language(German)           | HSS      | 2 | 0 | 0 | 0 | 2  | 2  | Nil           |
| 7                           | 21UC3005    | Aptitude Builder                   | HSS      | 0 | 0 | 4 | 0 | 2  | 4  | Nil           |
| 8                           | 21CM1209    | Business Mathematics & Statistics  | BS       | 3 | 2 | 0 | 0 | 5  | 5  | Nil           |
| 9                           | 21CM1101    | Accountant in Business             | PC       | 3 | 2 | 0 | 0 | 5  | 5  | Nil           |
| 10                          | 21CM1102    | Principles of Accounting           | PC       | 3 | 2 | 0 | 0 | 5  | 5  | Nil           |
| 11                          | 21CM1104    | Fundamentals of Cost Accounting    | PC       | 3 | 2 | 0 | 0 | 5  | 5  | Nil           |
| 12                          | 21CM1105    | Corporate Accounting               | PC       | 3 | 2 | 0 | 0 | 5  | 5  | Nil           |
| 13                          | 21CM1207    | Advanced Cost Accounting           | PC       | 3 | 2 | 0 | 0 | 5  | 5  | Nil           |
| 14                          | 21CM1208    | Introduction to Income Tax         | PC       | 3 | 2 | 0 | 0 | 5  | 5  | Nil           |
| 15                          | 21CM1210    | Corporate and Business Law         | PC       | 4 | 0 | 0 | 0 | 4  | 4  | Nil           |



|                      |                   |  |      |   |   |   |   |            |   |     |
|----------------------|-------------------|--|------|---|---|---|---|------------|---|-----|
| 16                   | 21ACCAF7          | Financial Reporting                                  | PC   | 3 | 2 | 0 | 0 | 5          | 5 | Nil |
| 17                   | 21CM2113          | Performance Management – I                           | PC   | 3 | 2 | 0 | 0 | 5          | 5 | Nil |
| 18                   | 21CM2116          | Assessment of Direct Taxes                           | PC   | 3 | 2 | 0 | 0 | 5          | 5 | Nil |
| 19                   | 21CM2117          | Management Accounting                                | PC   | 3 | 2 | 0 | 0 | 5          | 5 | Nil |
| 20                   | 21ACCAF8          | Audit and Assurance Standards                        | PC   | 4 | 0 | 0 | 0 | 4          | 4 | Nil |
| 21                   | 21ACCAF9          | Financial Management                                 | PC   | 3 | 2 | 0 | 0 | 5          | 5 | Nil |
| 22                   | 21CM2219          | Advanced Corporate Accounting                        | PC   | 3 | 2 | 0 | 0 | 5          | 5 | Nil |
| 23                   | 21CM2220          | Performance Management-II                            | PC   | 3 | 2 | 0 | 0 | 5          | 5 | Nil |
| 24                   | 21CM2222          | Banking Law and Practice                             | PC   | 3 | 0 | 0 | 0 | 3          | 3 | Nil |
| 25                   | 21CM2223          | Corporate Report Writing                             | PC   | 3 | 0 | 0 | 0 | 3          | 3 | Nil |
| 26                   | 21ACCAP1          | Strategic Business Leader                            | PC   | 3 | 2 | 0 | 0 | 5          | 5 | Nil |
| 27                   | 21CM3124          | Goods and Service Tax                                | PC   | 3 | 2 | 0 | 0 | 5          | 5 | Nil |
| 28                   | 21CM3125          | Business Strategy                                    | PC   | 3 | 0 | 0 | 0 | 3          | 3 | Nil |
| 29                   | 21CM3126          | Accounting & Reporting Standards                     | PC   | 3 | 2 | 0 | 0 | 5          | 5 | Nil |
| 30                   | 21ACCAP2          | Strategic Business Reporting                         | PC   | 3 | 2 | 0 | 0 | 5          | 5 | Nil |
| 31                   | 21ACCAP4          | Advanced Financial Management                        | PC   | 3 | 2 | 0 | 0 | 5          | 5 | Nil |
| 32                   | 21ACCAP7          | Advanced Audit and Assurance                         | PC   | 3 | 2 | 0 | 0 | 5          | 5 | Nil |
| 33                   | 21CM3127          | Corporate Tax Planning & Management                  | PE 1 | 3 | 2 | 0 | 0 | 5          | 5 | Nil |
| 34                   | 21CM3128          | Advanced Cost & Management Accounting                | PE 1 | 3 | 2 | 0 | 0 | 5          | 5 | Nil |
| 35                   | 21CM3129          | Corporate Restructure                                | PE 1 | 3 | 2 | 0 | 0 | 5          | 5 | Nil |
| 36                   | 21CM3130          | Entrepreneurship Development                         | PE 1 | 3 | 2 | 0 | 0 | 5          | 5 | Nil |
| 37                   | 21CM3131          | Financial Derivatives                                | PE 2 | 3 | 2 | 0 | 0 | 5          | 5 | Nil |
| 38                   | 21CM3132          | Strategic Financial Management                       | PE 2 | 3 | 2 | 0 | 0 | 5          | 5 | Nil |
| 39                   | 21CM3133          | Export and Import Documentation                      | PE 2 | 3 | 2 | 0 | 0 | 5          | 5 | Nil |
| 40                   | 21CM3134          | Security Analysis & Portfolio Management             | PE 2 | 3 | 2 | 0 | 0 | 5          | 5 | Nil |
| 41                   | 21GN40D1/21GN40D4 | National Caded Cops(NCC)-1/National Service Scheme-1 | OE 1 | 2 | 0 | 2 | 0 | 3          | 4 | Nil |
| 42                   | 21GN40D2/21GN40D5 | National Caded Cops(NCC)-2/National Service Scheme-2 | OE2  | 2 | 0 | 2 | 0 | 3          | 4 | Nil |
| 43                   | 21GN40D3/21GN40D6 | National Caded Cops(NCC)-3/National Service Scheme-3 | OE 3 | 2 | 0 | 2 | 0 | 3          | 4 | Nil |
| <b>Total Credits</b> |                   |  |      |   |   |   |   | <b>156</b> |   |     |

| Name of the Program : Bachelor of Business Administration |             |                                    |          |   |   |   |   |    |    |               |
|---|-------------|------------------------------------|----------|---|---|---|---|----|----|---------------|
| Sl No   | Course Code | Course Title                       | Category | L | T | P | S | Cr | CH | Pre-requisite |
| 1   | 20UC1101    | Integrated Professional English    | HSS      | 0 | 0 | 4 | 0 | 2  | 4  | NIL           |
| 2   | 21UC0009    | Ecology & Environment              | HSS      | 2 | 0 | 0 | 0 | 2  | 2  | NIL           |
| 3   | 20UC1202    | English Proficiency                | HSS      | 0 | 0 | 4 | 0 | 2  | 4  | NIL           |
| 4   | 21BB11K1    | Foreign Language                   | HSS      | 2 | 0 | 2 | 0 | 3  | 4  | NIL           |
| 5   | 21UC2103    | Essential Skills for Employability | HSS      | 0 | 0 | 4 | 0 | 2  | 4  | NIL           |
| 6   | 21UC2104    | Corporate Readiness Skills         | HSS      | 0 | 0 | 4 | 0 | 2  | 4  | NIL           |
| 7   | 21HS115     | Soft Skills for Managers           | HSS      | 2 | 0 | 2 | 0 | 3  | 4  | NIL           |
| 8   | 21BS114     | Business Mathematics               | BS       | 3 | 1 | 0 | 0 | 4  | 4  | NIL           |
| 9   | 21BS115     | Business Statistics                | BS       | 3 | 1 | 0 | 0 | 4  | 4  | NIL           |
| 10  | 21BB11C2    | Business Environment               | PC       | 3 | 0 | 0 | 0 | 3  | 3  | NIL           |
| 11  | 21BB11C3    | Business Economics                 | PC       | 3 | 0 | 0 | 0 | 3  | 3  | NIL           |

|    |  |   |    |   |   |   |    |   |   |             |
|----|--|---|----|---|---|---|----|---|---|-------------|
| 12 | 21BB11C4                                     | Perspectives of Management  | PC | 3 | 0 | 0 | 0  | 3 | 3 | NIL         |
| 13 | 21BB11C5                                     | IT for Business Managers  | PC | 2 | 0 | 2 | 0  | 3 | 3 | NIL         |
| 14 | 21BB12C1                                     | Introduction to Financial Accounting  | PC | 3 | 1 | 0 | 0  | 4 | 4 | NIL         |
| 15 | 21BB12C3                                     | Organizational Behaviour  | PC | 3 | 0 | 0 | 0  | 3 | 3 | NIL         |
| 16 | 21BB21C2                                     | Management Information Systems  | PC | 3 | 0 | 0 | 0  | 3 | 3 | NIL         |
| 17 | 21BB21C2                                     | Marketing Management  | PC | 3 | 0 | 0 | 0  | 3 | 3 | NIL         |
| 18 | 21BB10P0                                     | SIP1  | PC | 0 | 0 | 0 | 24 | 6 | 0 | NIL         |
| 19 | 21BB21C1                                     | Management Accountancy  | PC | 3 | 1 | 0 | 0  | 4 | 4 | NIL         |
| 20 | 21BB21C3                                     | Human Resource Management   | PC | 3 | 0 | 0 | 0  | 3 | 3 | NIL         |
| 21 | 21BB21C4                                     | Business Research Methods   | PC | 3 | 0 | 0 | 0  | 3 | 3 | NIL         |
| 22 | 21BB21C5                                     | Macro Economics   | PC | 3 | 0 | 0 | 0  | 3 | 3 | NIL         |
| 23 | 21BB21C6                                     | Fundamentals of LSCM  | PC | 3 | 0 | 0 | 0  | 3 | 3 | NIL         |
| 24 | 21BB21C0                                     | Cost Accountancy  | PC | 3 | 1 | 0 | 0  | 4 | 4 | NIL         |
| 25 | 21BB21C1                                     | Production and Operations Management  | PC | 3 | 1 | 0 | 0  | 4 | 4 | NIL         |
| 26 | 21BB21C3                                     | Business Law  | PC | 3 | 0 | 0 | 0  | 3 | 3 | NIL         |
| 27 | 21BB21C4                                     | Financial Management  | PC | 3 | 1 | 0 | 0  | 4 | 4 | NIL         |
| 28 | 21BB21C5                                     | Business Model Generation   | PC | 3 | 0 | 0 | 0  | 3 | 3 | NIL         |
| 29 | 21BB21C7                                     | Dynamics of Capital Markets   | PC | 3 | 0 | 0 | 0  | 3 | 3 | NIL         |
| 30 | 212BB20P1                                    | SIP2  | PC | 0 | 0 | 0 | 24 | 6 | 0 | NIL         |
| 31 | 21BB31C0                                     | Business analytics  | PC | 2 | 0 | 2 | 0  | 3 | 4 | NIL         |
| 32 | 21BB31C2                                     | Fundamentals of Digital Marketing   | PC | 3 | 0 | 0 | 0  | 3 | 3 | NIL         |
| 33 | 21BB31C7                                     | Research Paper Writing  | PC | 1 | 0 | 0 | 8  | 3 | 9 | MM, FM, BRM |
| 34 | 21BB32C0                                     | Entrepreneurship  | PC | 3 | 0 | 0 | 0  | 3 | 3 | NIL         |
| 35 | 21BB32C4                                     | Strategic Management  | PC | 3 | 0 | 0 | 0  | 3 | 3 | NIL         |
| 36 | 21BB32C2                                     | Enterprise Resource Planning  | PC | 3 | 0 | 0 | 0  | 3 | 3 | NIL         |
| 37 | 21BB32C3                                     | Income Tax & GST  | PC | 3 | 0 | 0 | 0  | 3 | 3 | NIL         |
| 38 | 21BB30P2                                     | SIP3  | PC | 0 | 0 | 0 | 24 | 6 | 0 | NIL         |
| 39 | 21BB31M0/21BB31F0/21BB31H0/21BB31E0/21BB31D0 | Consumer Behaviour/Banking & Insurance Management/Personal Effectiveness and Self-Leadership/E-Commerce and Strategy/Introduction to Software Engineering | PE | 3 | 0 | 0 | 0  | 3 | 3 | NIL         |
| 40 | 21BB31M1/21BB31F1/21BB31H1/21BB31E1/21BB31D1 | Product and Brand Management/Investment Management/Dynamics of industrial relations/Search Engine Optimisation/ERP Systems Design and Implementation      | PE | 3 | 0 | 0 | 0  | 3 | 3 | NIL         |
| 41 | 21BB31M2/21BB31F2/21BB31H2/21BB31E2/21BB31D2 | Advertising and Sales Promotion/Financial Services/Human Resource Development/Social Media Management/ERP System Administration                           | PE | 3 | 0 | 0 | 0  | 3 | 3 | NIL         |

|                      |  |  |    |   |   |   |   |            |   |     |
|----------------------|--|--|----|---|---|---|---|------------|---|-----|
| 42                   | 21BB31M3/21BB31F3/21BB31H3/21BB31E3/21BB31D3 | Customer Relationship Management/Financial Mkts/Performance Mgt & Reward System/Digital Branding and Planning/CRM in ERP Environment | PE | 3 | 0 | 0 | 0 | 3          | 3 | NIL |
| 43                   | 21BB31M4/21BB31F4/21BB31H4/21BB31E4/21BB31D4 | Services Marketing/Managing personal finance/Labour Legislation/Web Analytics and Affiliate Marketing/ERP in MSMEs                   | PE | 3 | 0 | 0 | 0 | 3          | 3 | NIL |
| 44                   | 21BB31M4/21BB31F4/21BB31H4/21BB31E4/21BB31D4 | Rural Marketing/Financial Derivatives/training& development/Digital Marketing Strategy/Information Systems                           | PE | 3 | 0 | 0 | 0 | 3          | 3 | NIL |
| <b>TOTAL CREDITS</b> |  |  |    |   |   |   |   | <b>143</b> |   |     |

| Name of the Program : Bachelor of Arts |             |   |          |   |   |   |   |     |    |               |  |
|--|-------------|---|----------|---|---|---|---|-----|----|---------------|--|
| Sl No                                  | Course Code | Course Title                                    | Category | L | T | P | S | Cr  | CH | Pre-requisite |  |
| 1                                      | 21UC1101    | Integrated Professional English                 | HSS      | 0 | 0 | 4 | 0 | 2   | 4  | NIL           |  |
| 2                                      | 20UC0010    | Universal Human Values and Professional Ethics  | HSS      | 2 | 0 | 0 | 0 | 2   | 2  | NIL           |  |
| 3                                      | 21UC1212    | English Proficiency                             | HSS      | 0 | 0 | 4 | 0 | 2   | 4  | NIL           |  |
| 4                                      | 20UC0008    | Indian Constitution                             | HSS      | 2 | 0 | 0 | 0 | 0   | 2  | NIL           |  |
| 5                                      | 21UC2103    | Essential Skills for Employability              | HSS      | 0 | 0 | 4 | 0 | 2   | 4  | NIL           |  |
| 6                                      | 20UC2214    | Problem Solving Skills I                        | HSS      | 0 | 0 | 2 | 2 | 1.5 | 4  | NIL           |  |
| 7                                      | 21GN2101    | Design thinking and Innovation                  | HSS      | 3 | 0 | 0 | 0 | 3   | 3  | NIL           |  |
| 8                                      | 20UC1203    | Corporate Readiness Skills                      | HSS      | 1 | 0 | 0 | 4 | 2   | 2  | NIL           |  |
| 9                                      | 21GN2203    | Problem Solving Skills II                       | HSS      | 0 | 0 | 2 | 2 | 1.5 | 4  | NIL           |  |
| 10                                     | 21UC0009    | Ecology and Environment                         | BS       | 2 | 0 | 0 | 0 | 2   | 2  | NIL           |  |
| 11                                     | 21BA1101    | Ancient Indian History                          | PC       | 4 | 0 | 0 | 0 | 4   | 4  | NIL           |  |
| 12                                     | 21BA1103    | Introduction to Public Administration           | PC       | 4 | 0 | 0 | 0 | 4   | 4  | NIL           |  |
| 13                                     | 21BA1201    | Medieval Indian History                         | PC       | 4 | 0 | 0 | 0 | 4   | 4  | NIL           |  |
| 14                                     | 21BA1203    | Administrative Theory                           | PC       | 4 | 0 | 0 | 0 | 4   | 4  | NIL           |  |
| 15                                     | 21BA2101    | Indian History & Culture 1526 - 1857            | PC       | 4 | 0 | 0 | 0 | 4   | 4  | NIL           |  |
| 16                                     | 21BA2103    | Union Administration                            | PC       | 4 | 0 | 0 | 0 | 4   | 4  | NIL           |  |
| 17                                     | 21GN2204    | Internal Security                               | PC       | 2 | 0 | 0 | 0 | 2   | 2  | NIL           |  |
| 18                                     | 21BA2201    | History of Modern India (1858-1947)             | PC       | 4 | 0 | 0 | 0 | 4   | 4  | NIL           |  |
| 19                                     | 21BA2203    | State and Local Administration                  | PC       | 4 | 0 | 0 | 0 | 4   | 4  | NIL           |  |
| 20                                     | 21GN2205    | Social Problems and Programmes of India         | PC       | 3 | 0 | 0 | 0 | 3   | 3  | NIL           |  |
| 21                                     | 21GN2202    | Science and Technology                          | PC       | 3 | 0 | 0 | 0 | 3   | 3  | NIL           |  |
| 22                                     | 21GN3102    | International Relations                         | PC       | 3 | 0 | 0 | 0 | 3   | 3  | NIL           |  |
| 23                                     | 21GN3202    | Disaster Management                             | PC       | 3 | 0 | 0 | 0 | 3   | 3  | NIL           |  |
| 24                                     | 21GN11T1    | Telugu – 1                                      | PE       | 4 | 0 | 0 | 0 | 4   | 4  | NIL           |  |
| 25                                     | 21GN11H1    | Hindi – 1                                       | PE       |   |   |   |   |     |    | NIL           |  |
| 26                                     | 21BA1102    | Physical Geography                              | PE       |   |   |   |   |     |    | NIL           |  |
| 27                                     | 21BA1104    | Introduction to Microeconomics                  | PE       |   |   |   |   |     |    | NIL           |  |
| 28                                     | 21BA1106    | Telugu Classical Poetry                         | PE       |   |   |   |   |     |    | NIL           |  |
| 29                                     | 21BA1105    | Introduction to English Language and Literature | PE       |   |   |   |   |     |    | NIL           |  |

|    |          |  |    |   |   |   |   |   |   |     |
|----|----------|--|----|---|---|---|---|---|---|-----|
| 30 | 21GN12T2 | Telugu - 2   | PE | 3 | 0 | 0 | 0 | 3 | 3 | NIL |
| 31 | 21GN12H2 | Hindi -2   | PE |   |   |   |   |   |   | NIL |
| 32 | 21BA1202 | Human Geography  | PE |   |   |   |   |   |   | NIL |
| 33 | 21BA1204 | Introduction to Macroeconomics   | PE |   |   |   |   |   |   | NIL |
| 34 | 21BA1206 | Modern Telugu Poetry   | PE | 4 | 0 | 0 | 0 | 4 | 4 | NIL |
| 35 | 21BA1205 | English Literature in Context-I (1500-1621)                            | PE |   |   |   |   |   |   | NIL |
| 36 | 21GN21T3 | Telugu - 3   | PE | 3 | 0 | 0 | 0 | 3 | 3 | NIL |
| 37 | 21GN21H3 | Hindi -3   | PE |   |   |   |   |   |   | NIL |
| 38 | 21BA2102 | Physical & Industrial Geography of India                               | PE |   |   |   |   |   |   | NIL |
| 39 | 21BA2104 | Indian Economy-Problems and Policies                                   | PE | 4 | 0 | 0 | 0 | 4 | 4 | NIL |
| 40 | 21BA2106 | Kavyamu, Prabandha and Sataka Litt.                                    | PE |   |   |   |   |   |   | NIL |
| 41 | 21BA2105 | English Literature in Context-II (1621-1821)                           | PE |   |   |   |   |   |   | NIL |
| 42 | 21BA2202 | Social Geography of India  | PE |   |   |   |   |   |   | NIL |
| 43 | 21BA2204 | Economic Development & Planning  | PE |   |   |   |   |   |   | NIL |
| 44 | 21BA2206 | Telugu Novel, Drama & Letters  | PE | 4 | 0 | 0 | 0 | 4 | 4 | NIL |
| 45 | 21BA2205 | English Literature in Context-III (1821-1950)                          | PE |   |   |   |   |   |   | NIL |
| 46 | 21BA3101 | History of Modern World  | PE | 4 | 0 | 0 | 0 | 4 | 4 | NIL |
| 47 | 21BA3102 | History of East Asia (From 19 <sup>th</sup> Century A.D. to 1950 A.D.) | PE |   |   |   |   |   |   | NIL |
| 48 | 21BA3103 | Contemporary Issues in Geography                                       | PE |   |   |   |   |   |   | NIL |
| 49 | 21BA3104 | Remote Sensing and Geographic Information System                       | PE |   |   |   |   |   |   | NIL |
| 50 | 21BA3108 | International Economic Order   | PE |   |   |   |   |   |   | NIL |
| 51 | 21BA3109 | Environmental Economics  | PE | 4 | 0 | 0 | 0 | 4 | 4 | NIL |
| 52 | 21BA3107 | History of Telugu Language   | PE |   |   |   |   |   |   | NIL |
| 53 | 21BA3110 | History of Traditional Literature                                      | PE |   |   |   |   |   |   | NIL |
| 54 | 21BA3111 | English Literature in Context(Post-Modern Age)                         | PE |   |   |   |   |   |   | NIL |
| 55 | 21BA3112 | Modern European Drama  | PE |   |   |   |   |   |   | NIL |
| 56 | 21BA3105 | Management of Resources  | PE | 4 | 0 | 0 | 0 | 4 | 4 | NIL |
| 57 | 21BA3106 | E-Governance   | PE |   |   |   |   |   |   | NIL |
| 58 | 21BA3201 | History and Culture of Andhra Pradesh                                  | PE | 4 | 0 | 0 | 0 | 4 | 4 | NIL |
| 59 | 21BA3202 | Archeology   | PE |   |   |   |   |   |   | NIL |
| 60 | 21BA3203 | Regional Geography of India  | PE |   |   |   |   |   |   | NIL |
| 61 | 21BA3204 | Environmental Geography  | PE |   |   |   |   |   |   | NIL |
| 62 | 21BA3208 | Economics of Health and Education                                      | PE |   |   |   |   |   |   | NIL |
| 63 | 21BA3209 | Public Finance   | PE |   |   |   |   |   |   | NIL |
| 64 | 21BA3211 | Academic Research-Dissertation   | PE | 4 | 0 | 0 | 0 | 4 | 4 | NIL |
| 65 | 21BA3212 | Academic Research-Publications & Book Review                           | PE |   |   |   |   |   |   | NIL |
| 66 | 21BA3210 | History of Modern Literature   | PE |   |   |   |   |   |   | NIL |
| 67 | 21BA3213 | Dialectology, Syntax and Translation                                   | PE |   |   |   |   |   |   | NIL |
| 68 | 21BA3205 | Indian Polity and Governance   | PE | 4 | 0 | 0 | 0 | 4 | 4 | NIL |
| 69 | 21BA3206 | Public Policy  | PE |   |   |   |   |   |   | NIL |

|                      |          |                               |    |   |   |    |   |            |    |     |
|----------------------|----------|-------------------------------|----|---|---|----|---|------------|----|-----|
| 70                   | 21GN3201 | Project Work                  | PR | 0 | 0 | 12 | 0 | 6          | 12 | NIL |
| 71                   | 21GN3101 | Computer Skills               | SK | 2 | 0 | 2  | 0 | 3          | 4  | NIL |
| 72                   | 21GN2207 | Statistics with R Programming | SK | 2 | 0 | 2  | 0 | 3          | 4  | NIL |
| <b>Total Credits</b> |          |                               |    |   |   |    |   | <b>122</b> |    |     |

| Name of the Program : B.Sc. (Hons) Agriculture |             |   |          |   |   |   |   |    |    |               |
|--|-------------|---|----------|---|---|---|---|----|----|---------------|
| Sl No  | Course Code | Course Title  | Category | L | T | P | S | Cr | CH | Pre-requisite |
| 1  | 21ENGL101   | Comprehension and Communication Skills in English                     | HSS      | 1 | 0 | 3 | 0 | 2  | 4  | Nil           |
| 2  | 21AEXT190   | Human Values and Ethics (non gradial)                                 | HSS      | 1 | 0 | 0 | 0 | 1  | 1  | Nil           |
| 3  | 21COCA100   | NSS/NCC/Physical Education and Yoga Practices                         | HSS      | 0 | 0 | 6 | 0 | 2  | 6  | Nil           |
| 4  | 21UC1102J   | Design Thinking & Innovation  | HSS      | 0 | 0 | 0 | 2 | 2  | 6  | Nil           |
| 5  | 21UC1102    | Design Thinking & Innovation  | HSS      | 0 | 0 | 0 | 2 | 2  | 6  | Nil           |
| 6  | 21AEXT391   | Communication Skills and Personality Development                      | HSS      | 1 | 0 | 3 | 0 | 2  | 4  | Nil           |
| 7  | 21AGRO101   | Agriculture Heritage  | PC       | 1 | 0 | 0 | 0 | 1  | 1  | Nil           |
| 8  | 21AGRO102   | Fundamentals of Agronomy  | PC       | 2 | 0 | 3 | 0 | 3  | 5  | Nil           |
| 9  | 21BICM101   | Fundamentals of Plant Biochemistry and Biotechnology                  | PC       | 2 | 0 | 3 | 0 | 3  | 5  | Nil           |
| 10   | 21SSAC121   | Fundamentals of Soil Science  | PC       | 2 | 0 | 3 | 0 | 3  | 5  | Nil           |
| 11   | 21AECO141   | Fundamentals of Economics   | PC       | 3 | 0 | 0 | 0 | 3  | 3  | Nil           |
| 12   | 21HORT181   | Fundamentals of Horticulture  | PC       | 1 | 0 | 3 | 0 | 2  | 4  | Nil           |
| 13   | 21AEXT191   | Rural Sociology and Educational Psychology                            | PC       | 1 | 0 | 3 | 0 | 2  | 4  | Nil           |
| 14   | 21AGIC101   | INTRODUCTION TO COMPUTERS   | PC       | 0 | 0 | 3 | 0 | 1  | 3  | Nil           |
| 15   | 21AMBE101   | Agricultural Microbiology   | PC       | 1 | 0 | 3 | 0 | 2  | 4  | Nil           |
| 16   | 21AGRO103   | Introductory Agrometeorology and Climate Change                       | PC       | 1 | 0 | 3 | 0 | 2  | 4  | Nil           |
| 17   | 21AGRO104   | Introduction to Forestry  | PC       | 1 | 0 | 3 | 0 | 2  | 4  | Nil           |
| 18   | 21GPBR111   | Fundamentals of Genetics  | PC       | 2 | 0 | 3 | 0 | 3  | 5  | Nil           |
| 19   | 21ENTO131   | Fundamentals of Entomology I(Insect Morphology and Taxonomy)          | PC       | 2 | 0 | 3 | 0 | 3  | 5  | Nil           |
| 20   | 21AENG151   | Soil and Water Conservation Engineering                               | PC       | 1 | 0 | 3 | 0 | 2  | 4  | Nil           |
| 21   | 21CPHY162   | Fundamentals of Crop Physiology                                       | PC       | 2 | 0 | 3 | 0 | 3  | 5  | Nil           |
| 22   | 21PATH171   | Fundamentals of Plant Pathology I (Plant Pathogens - An Introduction) | PC       | 2 | 0 | 3 | 0 | 3  | 5  | Nil           |
| 23   | 21HORT182   | Production Technology of Fruits and Plantation Crops                  | PC       | 1 | 0 | 3 | 0 | 2  | 4  | Nil           |
| 24   | 21AGRO201   | Crop Production Technology - I (Cereals, Millets and Pulses)          | PC       | 2 | 0 | 3 | 0 | 3  | 5  | Nil           |
| 25   | 21GPBR 211  | Fundamentals of Plant Breeding  | PC       | 2 | 0 | 3 | 0 | 3  | 5  | Nil           |
| 26   | 21ENTO231   | Fundamentals of Entomology II (Insect Ecology and Concepts of IPM)    | PC       | 1 | 0 | 3 | 0 | 2  | 4  | Nil           |

|    |           |   |    |   |   |   |   |   |   |     |
|----|-----------|---|----|---|---|---|---|---|---|-----|
| 27 | 21AECO241 | Agricultural Finance and Co-operation   | PC | 1 | 0 | 3 | 0 | 2 | 4 | Nil |
| 28 | 21AENG251 | Farm Machinery and Power  | PC | 1 | 0 | 3 | 0 | 2 | 4 | Nil |
| 29 | 21CPHY261 | Eco-physiology  | PC | 1 | 0 | 3 | 0 | 2 | 4 | Nil |
| 30 | 21PATH271 | Fundamentals of Plant PathologyII(PlantPathologyPrinciples)                               | PC | 1 | 0 | 3 | 0 | 2 | 4 | Nil |
| 31 | 21HORT281 | Production Technology for Vegetables and Spices   | PC | 1 | 0 | 3 | 0 | 2 | 4 | Nil |
| 32 | 21AEXT291 | Fundamentals of Agricultural Extension  | PC | 2 | 0 | 3 | 0 | 3 | 5 | Nil |
| 33 | 21COCA200 | Education Tour**  | PC | 0 | 0 | 6 | 0 | 2 | 6 | Nil |
| 34 | 21AGRO202 | Crop Production Technology - II(Oilseeds, Fibre, Sugar, Tobacco and Fodder crops)         | PC | 2 | 0 | 3 | 0 | 3 | 5 | Nil |
| 35 | 21AGRO203 | Farming Systems and Sustainable Agriculture   | PC | 1 | 0 | 0 | 0 | 1 | 1 | Nil |
| 36 | 21AGRO204 | Irrigation Water Management   | PC | 1 | 0 | 3 | 0 | 2 | 4 | Nil |
| 37 | 21SMCA201 | Statistical Methods   | PC | 1 | 0 | 3 | 0 | 2 | 4 | Nil |
| 38 | 21LSPM201 | Live-stock and Poultry Management   | PC | 2 | 0 | 3 | 0 | 3 | 5 | Nil |
| 39 | 21SSAC221 | Manures, Fertilizers and Soil Fertility Management  | PC | 2 | 0 | 3 | 0 | 3 | 5 | Nil |
| 40 | 21AECO242 | Agricultural Marketing, Trade and Prices  | PC | 2 | 0 | 3 | 0 | 3 | 5 | Nil |
| 41 | 21AENG252 | Renewable Energy and Green Technology   | PC | 1 | 0 | 3 | 0 | 2 | 4 | Nil |
| 42 | 21HORT282 | Production Technology for Ornamental Crops, Medicinal and Aromatic Plants and Landscaping | PC | 1 | 0 | 3 | 0 | 2 | 4 | Nil |
| 43 | 21AEXT292 | Entrepreneurship Development and Business Communication                                   | PC | 1 | 0 | 3 | 0 | 2 | 4 | Nil |
| 44 | 21AGRO301 | Geoinformatics and Nanotechnology for Precision Farming                                   | PC | 2 | 0 | 3 | 0 | 2 | 5 | Nil |
| 45 | 21AGRO302 | Practical Crop Production   | PC | 1 | 0 | 3 | 0 | 1 | 4 | Nil |
| 46 | 21BICM300 | Principles of Food Science and Nutrition  | PC | 2 | 0 | 0 | 0 | 2 | 2 | Nil |
| 47 | 21GPBR311 | Crop Improvement - I ( <i>Cereals, Millets, Pulses and Oilseeds</i> )                     | PC | 2 | 0 | 3 | 0 | 2 | 5 | Nil |
| 48 | 21GPBR313 | Intellectual Property Rights  | PC | 1 | 0 | 0 | 0 | 1 | 1 | Nil |
| 49 | 21SSAC321 | Problematic Soils and their Management  | PC | 2 | 0 | 3 | 0 | 2 | 5 | Nil |
| 50 | 21ENTO331 | Pests of Field crops and Stored Grain and their Management                                | PC | 3 | 0 | 3 | 0 | 3 | 6 | Nil |
| 51 | 21AENG351 | Protected Cultivation and Post-harvest technologies                                       | PC | 2 | 0 | 3 | 0 | 2 | 5 | Nil |
| 52 | 21CPHY361 | Environmental Studies and Disaster Management   | PC | 2 | 0 | 3 | 0 | 2 | 5 | Nil |

|                      |           |  |    |   |   |   |   |            |   |     |
|----------------------|-----------|--|----|---|---|---|---|------------|---|-----|
| 53                   | 21PATH371 | Diseases of Field and Horticultural Crops and their Management - I (Field Crops)                 | PC | 3 | 0 | 3 | 0 | 3          | 6 | Nil |
| 54                   | 21PATH373 | Principles of Integrated Pest and Disease Management   | PC | 2 | 0 | 3 | 0 | 2          | 5 | Nil |
| 55                   | 21AGRO303 | Rainfed Agriculture and Watershed Management   | PC | 1 | 0 | 3 | 0 | 2          | 4 | Nil |
| 56                   | 21AGRO304 | Principles of Organic Farming  | PC | 1 | 0 | 3 | 0 | 2          | 4 | Nil |
| 57                   | 21SMCA301 | Agriculture Informatics  | PC | 1 | 0 | 3 | 0 | 2          | 4 | Nil |
| 58                   | 21GPBR312 | Crop Improvement-II ( <i>Fibre, Sugar, Starches, Narcotics, Vegetables, Fruits and Flowers</i> ) | PC | 1 | 0 | 3 | 0 | 2          | 4 | Nil |
| 59                   | 21GPBR314 | Principles of Seed Technology  | PC | 2 | 0 | 3 | 0 | 3          | 5 | Nil |
| 60                   | 21ENTO332 | Pest of Horticultural Crops and their Management and Beneficial insects                          | PC | 2 | 0 | 3 | 0 | 3          | 5 | Nil |
| 61                   | 21AECO341 | Farm Management, Production and Resource Economics   | PC | 1 | 0 | 3 | 0 | 2          | 4 | Nil |
| 62                   | 21PATH372 | Diseases of Field and Horticultural Crops and their Management -II (Horticultural Crops)         | PC | 1 | 0 | 3 | 0 | 2          | 4 | Nil |
| 63                   | 21HORT381 | Post-harvest Management and Value Addition of Fruits and Vegetables                              | PC | 1 | 0 | 3 | 0 | 2          | 4 | Nil |
| 64                   | 21RAWE    | Crop Production  | PC |   |   |   |   | 5 (0+5)    |   | Nil |
| 65                   | 21RAWE    | Crop Protection  | PC |   |   |   |   | 4 (0+4)    |   | Nil |
| 66                   | 21RAWE    | Rural Economics  | PC |   |   |   |   | 3 (0+3)    |   | Nil |
| 67                   | 21RAWE    | Extension Programme  | PC |   |   |   |   | 4 (0+4)    |   | Nil |
| 68                   | 21RAWE    | Research Station / KVK /DAATT Centre activities and attachment to Agro based industries          | PC |   |   |   |   | 4 (0+4)    |   | Nil |
| 69                   | 21ELP     | Experiential Learning Programme (ELP)  | PC |   |   |   |   | 0+20       |   | Nil |
| 70                   | 21ELCT222 | Soil, Plant, Water and Seed Testing  | PE | 1 | 0 | 6 | 0 | 3          | 7 | Nil |
| 71                   | 21ELCT272 | Food Safety Issues   | PE | 2 | 0 | 3 | 0 | 3          | 5 | Nil |
| 72                   | 21ELCT283 | Hi-tech. Horticulture  | PE | 2 | 0 | 3 | 0 | 3          | 5 | Nil |
| 73                   | 21ELCT305 | Agricultural Waste Management  | PE | 2 | 0 | 3 | 0 | 3          | 5 | Nil |
| 74                   | 21ELCT306 | Weed Management  | PE | 2 | 0 | 3 | 0 | 3          | 5 | Nil |
| 75                   | 21ELCT315 | Commercial Plant Breeding  | PE | 1 | 0 | 6 | 0 | 3          | 7 | Nil |
| 76                   | 21ELCT333 | Biopesticides and Biofertilizers   | PE | 2 | 0 | 3 | 0 | 3          | 5 | Nil |
| 77                   | 21ELCT334 | Agrochemicals  | PE | 2 | 0 | 3 | 0 | 3          | 5 | Nil |
| 78                   | 21ELCT342 | Agribusiness Management  | PE | 2 | 0 | 3 | 0 | 3          | 5 | Nil |
| 79                   | 21ELCT362 | Micro propagation Technologies   | PE | 1 | 0 | 6 | 0 | 3          | 7 | Nil |
| 80                   | 21ELCT382 | Landscaping  | PE | 2 | 0 | 3 | 0 | 3          | 5 | Nil |
| 81                   | 21ELCT383 | Protected Cultivation  | PE | 2 | 0 | 3 | 0 | 3          | 5 | Nil |
| <b>Total Credits</b> |           |  |    |   |   |   |   | <b>206</b> |   |     |

| Name of the Program : LLB |             |  |          |   |   |   |   |            |    |               |
|---------------------------|-------------|--|----------|---|---|---|---|------------|----|---------------|
| Sl No                     | Course Code | Course Title   | Category | L | T | P | S | Cr         | CH | Pre-requisite |
| 1                         | 20LL11C1    | Law of Contract-I                                    | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 2                         | 20LL11C2    | Constitutional Law-I                                 | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 3                         | 20LL11C3    | Family Law -I  | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 4                         | 20LL11C4    | Law of Crimes – I                                    | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 5                         | 20LL11C5    | Law of Tort, MVA & CP Act                            | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 6                         | 20LL12C1    | Special Contract                                     | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 7                         | 20LL12C2    | Constitutional Law- II                               | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 8                         | 20LL12C3    | Family Law -II                                       | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 9                         | 20LL12C4    | Administrative Law                                   | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 10                        | 20LL12C5    | Law of banking and N.I Act                           | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 11                        | 20LL21C1    | Labour law-I   | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 12                        | 20LL21C2    | Civil Procedure Code and Limitation Act              | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 13                        | 20LL21C3    | Law of Crimes-II: Cr.P.C                             | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 14                        | 20LL21C4    | Law of Evidence                                      | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 15                        | 20LL21C5    | Jurisprudence & Interpretation of Statutes           | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 16                        | 20LL21C6    | Women and Law  | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 17                        | 20LL22C1    | Labour law-II  | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 18                        | 20LL22C2    | Company Law  | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 19                        | 20LL22C3    | Environmental Law                                    | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 20                        | 20LL22C4    | Property Law   | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 21                        | 20LL22C5    | Cyber Law & IPR                                      | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 22                        | 20LL22C6    | Juvenile Justice                                     | PC       | 2 | 1 | 0 | 0 | 3          | 4  | NIL           |
| 23                        | 20LL21C1    | Public International Law                             | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 24                        | 20LL31C2    | Principles of Taxation Law                           | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 25                        | 20LL31C3    | Media Laws & RTI Act                                 | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 26                        | 20LL31C4    | Law of insurance                                     | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 27                        | 20LL32C1    | Criminology, Penology and Victimology                | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 28                        | 20LL32C2    | Mediation and Conciliation and Arbitration           | PC       | 3 | 1 | 0 | 0 | 4          | 4  | NIL           |
| 29                        | 20LL32C3    | Professional Ethics & Professional Accounting system | PC       | 2 | 0 | 4 | 0 | 4          | 4  | NIL           |
| 30                        | 20LL32C4    | Drafting, Pleading and Conveyance                    | PC       | 2 | 0 | 4 | 0 | 4          | 4  | NIL           |
| 31                        | 20UC1101LL  | Soft Skills-I  | Skill    | 2 | 0 | 2 | 0 | 3          | 5  | NIL           |
| 32                        | 20UCLL02LL  | SOFT SKILLS-II                                       | Skill    | 1 | 0 | 4 | 0 | 3          | 5  | NIL           |
| 33                        | 20LL12SIP1  | SIP(Advocate Chambers, District Level Courts)        | skill    | 0 | 0 | 4 | 0 | 2          | 2  | NIL           |
| 34                        | 20LL22C7    | Moot Court Training-I                                | skill    | 0 | 0 | 2 | 0 | 1          | 0  | NIL           |
| 35                        | 20LL22SIP2  | SIP to High Court                                    | skill    | 0 | 0 | 4 | 0 | 2          | 0  | NIL           |
| 36                        | 20LL31C5    | Moot Court Training – II                             | Skill    | 3 | 1 | 0 | 0 | 4          | 3  | NIL           |
| 37                        | 20LL32C5    | Moot court exercise and Internship                   | Skill    | 0 | 0 | 8 | 0 | 4          | 4  | NIL           |
| 38                        | 20LL32C6    | Higher Judiciary (Theory and Practice)               | skill    | 2 | 0 | 4 | 0 | 4          | 4  | NIL           |
| 39                        | 20LL32C7    | Seminar  | PR       | 0 | 0 | 4 | 0 | 2          | 2  | NIL           |
| <b>TOTAL CREDITS</b>      |             |  |          |   |   |   |   | <b>144</b> |    |               |



| Name of the Program : BBA-LLB. |             |  |          |   |   |   |   |    |    |               |
|--------------------------------|-------------|--|----------|---|---|---|---|----|----|---------------|
| S.No.                          | Course Code | Course Title   | Category | L | T | P | S | Cr | CH | Pre-requisite |
| 1                              | 22UC1101L   | General English and Legal Language                     | HSS      | 1 | 0 | 4 | 0 | 3  | 3  | Nil           |
| 2                              | 22UC2203L   | Legal Professional Communication Skills (English – II) | HSS      | 1 | 0 | 4 | 0 | 3  | 4  | Nil           |
| 3                              | 22BL12C3    | Sociology  | HSS      | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 4                              | 22BL11C1    | Principles of Management                               | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 5                              | 22BL11C2    | Business Environment                                   | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 6                              | 22BL12C1    | Human Resource Management                              | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 7                              | 22BL12C2    | Principles of Economics and Managerial Economics       | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 8                              | 22BL22C1    | Marketing Management                                   | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 9                              | 22BL22C2    | Macro Economics  | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 10                             | 22BL22C3    | Financial and Cost Accountancy                         | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 11                             | 22BL22C1    | Management Accounting                                  | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 12                             | 22BL22C2    | Management Information Systems                         | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 13                             | 22BL31C1    | Organisational Behaviour                               | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 14                             | 22BL31C2    | Financial Management                                   | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 15                             | 22BL32C1    | Quantitative Methods                                   | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 16                             | 22BL11C3    | Law of Contracts - I                                   | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 17                             | 22BL11C4    | Introduction to Law and Legal system                   | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 18                             | 22BL12C4    | Law of Contracts – II                                  | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 19                             | 22BL12C5    | Law of Torts   | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 20                             | 22BL22C4    | Constitutional Law - I                                 | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 21                             | 22BL22C5    | Law of Crimes – I                                      | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 22                             | 22BL22C6    | Family Law - I   | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 23                             | 22BL22C3    | Company Law  | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 24                             | 22BL22C4    | Constitutional Law – II                                | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 25                             | 22BL22C5    | Jurisprudence  | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 26                             | 22BL22C6    | Family Law - II  | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 27                             | 22BL31C3    | Code of Civil Procedure and Law of Limitation          | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 28                             | 22BL31C4    | Law of crimes-II                                       | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 29                             | 22BL31C5    | Law of Evidence  | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 30                             | 22BL31C6    | Law of Property  | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 31                             | 22BL32C2    | Administrative Law                                     | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 32                             | 22BL32C3    | Labour Law - I   | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 33                             | 22BL32C4    | Law of Banking and N.I. Act                            | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 34                             | 22BL41C1    | Intellectual Property Rights                           | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 35                             | 22BL41C2    | Law of Insurance                                       | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 36                             | 22BL41C3    | Public International Law                               | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 37                             | 22BL41C4    | Labour Laws-II   | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 38                             | 22BL42C1    | Corporate Law & Governance                             | PC       | 3 | 1 | 0 | S | 4  | 4  | Nil           |
| 39                             | 22BL42C2    | Law of Taxation  | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 40                             | 22BL42C3    | Environmental Law                                      | PC       | 3 | 1 | 0 | 0 | 4  | 4  | Nil           |
| 41                             | 22BL51C1    | Mediation and Conciliation and Arbitration             | PC       | 3 | 0 | 2 | 0 | 4  | 4  | Nil           |

|                      |            |   |       |   |   |   |   |            |   |     |
|----------------------|------------|---|-------|---|---|---|---|------------|---|-----|
| 42                   | 22BL51C2   | Drafting, Pleading and Conveyance   | PC    | 2 | 0 | 4 | 0 | 4          | 4 | Nil |
| 43                   | 22BL51C3   | I.T. Offences & Cyber Law   | PC    | 3 | 1 | 0 | 0 | 4          | 4 | Nil |
| 44                   | 22BL52C1   | Professional Ethics and Professional Accountancy system   | PC    | 2 | 0 | 4 | 0 | 4          | 4 | Nil |
| 45                   | 22BL32C5   | Elective - 1 (Women and Law)  | PE    | 3 | 1 | 0 | 0 | 4          | 4 | Nil |
| 46                   | 22BL32C6   | Current Affairs and GS-1 (India History)  | PE    | 3 | 1 | 0 | 0 | 4          | 4 | Nil |
| 47                   | 22BL41C5   | Elective-2 (Juvenile Justice)   | PE    | 3 | 1 | 0 | 0 | 4          | 4 | Nil |
| 48                   | 22BL41C6   | Current Affairs and GS-2 (Political Science and Public Administration) (Old one Anthropology, Science and Civilization) | PE    | 3 | 1 | 0 | 0 | 4          | 4 | Nil |
| 49                   | 22BL42C4   | Law Elective-3 (Media Law and Right to Information Act)   | PE    | 3 | 1 | 0 | 0 | 4          | 4 | Nil |
| 50                   | 22BL42C5   | Current Affairs and GS-3 (Geography and International Relations)  | PE    | 3 | 1 | 0 | 0 | 4          | 4 | Nil |
| 51                   | 22BL51C5   | Law Elective - 4 (Criminology, Penology, and Victimology)   | PE    | 3 | 1 | 0 | 0 | 4          | 4 | Nil |
| 52                   | 22BL51C6   | Current Affairs and General Studies -4  | PE    | 3 | 1 | 0 | 0 | 4          | 4 | Nil |
| 53                   | 22BL51C4   | Aptitude for Advocacy - I   | SKILL | 2 | 0 | 2 | 0 | 3          | 3 | Nil |
| 54                   | 22BL52C2   | Aptitude for Advocacy - II  | SKILL | 2 | 0 | 2 | 0 | 3          | 4 | Nil |
| 55                   | 22BL52C3   | Higher Judiciary (Theory)   | SKILL | 2 | 1 | 0 | 0 | 3          | 3 | Nil |
| 56                   | 22BL11C5   | Introduction to I.T.  | SKILL | 2 | 0 | 2 | 0 | 3          | 4 | Nil |
| 57                   | 22BL22C7   | Moot Court Training – I   | SKILL | 1 | 0 | 2 | 0 | 2          | 0 | Nil |
| 58                   | 22BL32C7   | Moot Court Training - II  | SKILL | 1 | 0 | 2 | 0 | 2          | 2 | Nil |
| 59                   | 22BL41C7   | Soft Skills-1   | SKILL | 1 | 0 | 4 | 0 | 3          | 4 | Nil |
| 60                   | 22BL42C6   | Moot Court-III  | SKILL | 1 | 0 | 2 | 0 | 2          | 4 | Nil |
| 61                   | 22BL42C7   | Soft Skills-2   | SKILL | 1 | 0 | 4 | 0 | 3          | 4 | Nil |
| 62                   | 22BL51C7   | Moot Court - IV   | SKILL | 0 | 0 | 0 | 4 | 1          | 4 | Nil |
| 63                   | 22BL52C4   | Higher Judiciary (Internship)   | SKILL | 0 | 0 | 4 | 0 | 2          | 0 | Nil |
| 64                   | 22BL52C5   | Moot Court Exercises  | SKILL | 0 | 0 | 8 | 0 | 4          | 0 | Nil |
| 65                   | 22BL12SIP1 | Industry  | SKILL | 0 | 0 | 0 | 0 | 0          | 0 | Nil |
| 66                   | 22BL22SIP2 | Industry  | SKILL | 0 | 0 | 4 | 0 | 2          | 0 | Nil |
| 67                   | 22BL23SIP3 | Advocate/District   | SKILL | 0 | 0 | 0 | 2 | 2          | 0 | Nil |
| 68                   | 22BL42SIP4 | Advocate District   | SKILL | 0 | 0 | 4 | 0 | 2          | 0 | Nil |
| 69                   | 22BL52C6   | Commercial Contract Management  | SKILL | 0 | 0 | 4 | 0 | 2          | 2 | Nil |
| 70                   | 22BL52C7   | Seminar   | PR    | 0 | 0 | 4 | 0 | 2          | 2 | Nil |
| 71                   | 22BL51C8   | Seminar   | PR    | 0 | 0 | 4 | 0 | 2          | 2 | Nil |
| <b>TOTAL CREDITS</b> |            |   |       |   |   |   |   | <b>231</b> |   |     |

| Name of the Program : Pharm.D |                           |                                       |          |   |   |   |   |    |               |  |
|-------------------------------|---------------------------|---------------------------------------|----------|---|---|---|---|----|---------------|--|
| Sl No                         | Course Code               | Course Title                          | Category | L | T | P | S | CH | Pre-requisite |  |
| 1                             | 22PY610B6T/<br>22PY610M6T | Remedial Biology/Remedial Mathematics | BS       | 3 | 1 | 0 | 0 | 4  | Nil           |  |
| 2                             | 22PY610B6P                | Remedial Biology                      | BS       | 0 | 0 | 3 | 0 | 3  | Nil           |  |
| 3                             | 22PY6101T                 | Human Anatomy and Physiology          | PC       | 3 | 1 | 0 | 0 | 4  | Nil           |  |
| 4                             | 22PY6101P                 | Human Anatomy and Physiology          | PC       | 0 | 0 | 3 | 0 | 3  | Nil           |  |
| 5                             | 22PY6102T                 | Pharmaceutics                         | PC       | 2 | 1 | 0 | 0 | 3  | Nil           |  |
| 6                             | 22PY6102P                 | Pharmaceutics                         | PC       | 0 | 0 | 3 | 0 | 3  | Nil           |  |
| 7                             | 22PY6103T                 | Medicinal Biochemistry                | PC       | 3 | 1 | 0 | 0 | 4  | Nil           |  |
| 8                             | 22PY6103P                 | Medicinal Biochemistry                | PC       | 0 | 0 | 3 | 0 | 3  | Nil           |  |
| 9                             | 22PY6104T                 | Pharmaceutical Organic Chemistry      | PC       | 3 | 1 | 0 | 0 | 4  | Nil           |  |

|               |            |   |    |    |   |    |   |    |     |
|---------------|------------|---|----|----|---|----|---|----|-----|
| 10            | 22PY6104P  | Pharmaceutical Organic chemistry                                      | PC | 0  | 0 | 3  | 0 | 3  | Nil |
| 11            | 22PY6105T  | Pharmaceutical Inorganic Chemistry                                    | PC | 2  | 1 | 0  | 0 | 3  | Nil |
| 12            | 22PY6105P  | Pharmaceutical Inorganic Chemistry                                    | PC | 0  | 0 | 3  | 0 | 3  | Nil |
| 13            | 22PY6201T  | Pathophysiology   | PC | 3  | 1 | 0  | 0 | 4  | Nil |
| 14            | 22PY6202T  | Pharmaceutical Microbiology   | PC | 3  | 1 | 0  | 0 | 4  | Nil |
| 15            | 22PY6202P  | Pharmaceutical Microbiology   | PC | 0  | 0 | 3  | 0 | 3  | Nil |
| 16            | 22PY6203T  | Pharmacognosy&Phytopharmaceutica<br>ls                                | PC | 3  | 1 | 0  | 0 | 4  | Nil |
| 17            | 22PY6203P  | Pharmacognosy&Phytopharmaceutica<br>ls                                | PC | 0  | 0 | 3  | 0 | 3  | Nil |
| 18            | 22PY6204T  | Pharmacology-I  | PC | 3  | 1 | 0  | 0 | 4  | Nil |
| 19            | 22PY6205T  | Community Pharmacy  | PC | 2  | 1 | 0  | 0 | 3  | Nil |
| 20            | 22PY6206T  | Pharmacotherapeutics-I  | PC | 3  | 1 | 0  | 0 | 4  | Nil |
| 21            | 22PY6206P  | Pharmacotherapeutics-I  | PC | 0  | 0 | 3  | 0 | 3  | Nil |
| 22            | 22PY6301T  | Pharmacology-II   | PC | 3  | 1 | 0  | 0 | 4  | Nil |
| 23            | 22PY6301P  | Pharmacology-II   | PC | 0  | 0 | 3  | 0 | 3  | Nil |
| 24            | 22PY6302T  | Pharmaceutical Analysis   | PC | 3  | 1 | 0  | 0 | 4  | Nil |
| 25            | 22PY6302P  | Pharmaceutical Analysis   | PC | 0  | 0 | 3  | 0 | 3  | Nil |
| 26            | 22PY6303T  | Pharmacotherapeutics-II   | PC | 3  | 1 | 0  | 0 | 4  | Nil |
| 27            | 22PY6303P  | Pharmacotherapeutics-II   | PC | 0  | 0 | 3  | 0 | 3  | Nil |
| 28            | 22PY6304T  | Pharmaceutical Jurisprudence  | PC | 2  | 0 | 0  | 0 | 2  | Nil |
| 29            | 22PY6305T  | Medicinal Chemistry   | PC | 3  | 1 | 0  | 0 | 4  | Nil |
| 30            | 22PY6305P  | Medicinal Chemistry   | PC | 0  | 0 | 3  | 0 | 3  | Nil |
| 31            | 22PY6306T  | Pharmaceutical Formulations   | PC | 2  | 1 | 0  | 0 | 3  | Nil |
| 32            | 22PY6306P  | Pharmaceutical Formulations   | PC | 0  | 0 | 3  | 0 | 3  | Nil |
| 33            | 22PY6401T  | Pharmacotherapeutics-III  | PC | 3  | 1 | 0  | 0 | 4  | Nil |
| 34            | 22PY6401P  | Pharmacotherapeutics-III  | PC | 0  | 0 | 3  | 0 | 3  | Nil |
| 35            | 22PY6402T  | Hospital Pharmacy   | PC | 2  | 1 | 0  | 0 | 3  | Nil |
| 36            | 22PY6402P  | Hospital Pharmacy   | PC | 0  | 0 | 3  | 0 | 3  | Nil |
| 37            | 22PY6403T  | Clinical Pharmacy   | PC | 3  | 1 | 0  | 0 | 4  | Nil |
| 38            | 22PY6403P  | Clinical Pharmacy   | PC | 0  | 0 | 3  | 0 | 3  | Nil |
| 39            | 22PY6404T  | Biostatistics & Research Methodology                                  | PC | 2  | 1 | 0  | 0 | 3  | Nil |
| 40            | 22PY6405T  | Biopharmaceutics & Pharmacokinetics                                   | PC | 3  | 1 | 0  | 0 | 4  | Nil |
| 41            | 22PY6405P  | Biopharmaceutics & Pharmacokinetics                                   | PC | 0  | 0 | 3  | 0 | 3  | Nil |
| 42            | 22PY6406T  | Clinical Toxicology   | PC | 2  | 1 | 0  | 0 | 3  | Nil |
| 43            | 22PY6501T  | Clinical Research   | PC | 3  | 1 | 0  | 0 | 4  | Nil |
| 44            | 22PY6502T  | Pharmacoepidemiology and<br>Pharmacoeconomics                         | PC | 3  | 1 | 0  | 0 | 4  | Nil |
| 45            | 22PY6503T  | Clinical Pharmacokinetics &<br>Pharmacotherapeutic Drug<br>Monitoring | PC | 2  | 1 | 0  | 0 | 3  | Nil |
| 46            | 22PY650N4  | Clerkship   | PC | 0  | 1 | 0  | 0 | 1  | Nil |
| 47            | 22PY660N1  | Internship  | PC | 0  | 0 | 40 | 0 | 40 | Nil |
| 48            | 22PH4250PW | Project Work  | PR | 0  | 0 | 20 | 0 | 20 | Nil |
| Total Courses |            |   |    | 48 |   |    |   |    |     |

| Name of the Program : M.Pharmacy |             |  |          |   |   |    |   |           |    |               |
|----------------------------------|-------------|--|----------|---|---|----|---|-----------|----|---------------|
| Sl No                            | Course Code | Course Title   | Category | L | T | P  | S | Cr        | CH | Pre-requisite |
| 1                                | 21PY5101    | Modern Pharmaceutical Analytical Techniques  | PC       | 4 | 0 | 0  | 0 | 4         | 4  | Nil           |
| 2                                | 21PY5102    | Drug Delivery Systems  | PC       | 4 | 0 | 0  | 0 | 4         | 4  | Nil           |
| 3                                | 21PY5103    | Modern Pharmaceutics   | PC       | 4 | 0 | 0  | 0 | 4         | 4  | Nil           |
| 4                                | 21PY5104    | Regulatory Affairs   | PC       | 4 | 0 | 0  | 0 | 4         | 4  | Nil           |
| 5                                | 21PY5105    | Pharmaceutics Practical I  | PC       | 0 | 0 | 12 | 0 | 6         | 12 | Nil           |
| 6                                | 21PY5107    | Molecular Pharmaceutics (Nano Tech and Targeted DDS)   | PC       | 4 | 0 | 0  | 0 | 4         | 4  | Nil           |
| 7                                | 21PY5108    | Advanced Biopharmaceutics & Pharmacokinetics   | PC       | 4 | 0 | 0  | 0 | 4         | 4  | Nil           |
| 8                                | 21PY5109    | Computer Aided Drug Delivery System  | PC       | 4 | 0 | 0  | 0 | 4         | 4  | Nil           |
| 9                                | 21PY5110    | Cosmetic and Cosmeceuticals  | PC       | 4 | 0 | 0  | 0 | 4         | 4  | Nil           |
| 10                               | 21PY5111    | Pharmaceutics Practical II   | PC       | 0 | 0 | 12 | 0 | 6         | 12 | Nil           |
| 11                               | 21PY5113    | Research Methodology and Biostatistics   | PC       | 4 | 0 | 0  | 0 | 4         | 4  | Nil           |
| 12                               | 21PY5106    | Seminar/Assignment   | Skill    | 0 | 0 | 8  | 0 | 4         | 8  | Nil           |
| 13                               | 21PY5112    | Seminar/Assignment   | Skill    | 0 | 0 | 8  | 0 | 4         | 8  | Nil           |
| 14                               | 21PY5114    | Journal club   | Skill    | 0 | 0 | 2  | 0 | 1         | 2  | Nil           |
| 15                               | 21PY5115    | Discussion / Presentation (Proposal Presentation)  | Skill    | 0 | 0 | 4  | 0 | 2         | 4  | Nil           |
| 16                               | 21PY5117    | Journal Club   | Skill    | 0 | 0 | 2  | 0 | 1         | 2  | Nil           |
| 17                               | 21PY5119    | Discussion/Final Presentation  | Skill    | 0 | 0 | 6  | 0 | 3         | 6  | Nil           |
| 18                               | 21PY5120    | Co-curricular Activities (Attending Conference, Scientific Presentations and Other Scholarly Activities) | Skill    | 0 | 0 | 8  | 0 | 4         | 8  | Nil           |
| 19                               | 21PY5116    | Research Work  | PR       | 0 | 0 | 28 | 0 | 14        | 28 | Nil           |
| 20                               | 21PY5118    | Research Work  | PR       | 0 | 0 | 33 | 0 | 16        | 33 | Nil           |
| <b>Total Credits</b>             |             |  |          |   |   |    |   | <b>97</b> |    |               |

| Name of the Program : M.Sc.(Applied Mathematics) |             |                                      |          |   |   |   |   |    |    |               |
|--|-------------|--------------------------------------|----------|---|---|---|---|----|----|---------------|
| Sl No  | Course Code | Course Title                         | Category | L | T | P | S | Cr | CH | Pre-requisite |
| 1  | 20UC1101    | Integrated Professional English      | HSS      | 0 | 0 | 4 | 0 | 4  | 2  | NIL           |
| 2  | 21UC1103    | Design Thinking and Innovation       | HSS      | 1 | 0 | 0 | 4 | 5  | 2  | NIL           |
| 3  | 21AM1101    | Real Analysis                        | PC       | 4 | 0 | 0 | 0 | 4  | 4  | NIL           |
| 4  | 21AM1102    | Ordinary Differential Equations      | PC       | 3 | 0 | 2 | 0 | 3  | 4  | NIL           |
| 5  | 21AM1103    | Discrete Mathematics                 | PC       | 3 | 1 | 0 | 0 | 4  | 4  | NIL           |
| 6  | 21AM1104    | Introduction to Computer Programming | PC       | 3 | 0 | 2 | 0 | 5  | 4  | NIL           |
| 7  | 21AM1105    | Mathematical Statistics              | PC       | 3 | 1 | 0 | 0 | 4  | 4  | NIL           |
| 8  | 21AM1106    | Seminar-1                            | PC       | 0 | 0 | 2 | 0 | 1  | 1  | NIL           |
| 9  | 21AM1201    | Abstract Algebra                     | PC       | 3 | 0 | 0 | 0 | 3  | 3  | NIL           |
| 10   | 21AM1202    | Data Structures                      | PC       | 3 | 0 | 2 | 0 | 5  | 4  | NIL           |
| 11   | 21AM1203    | Statistical Inference                | PC       | 3 | 1 | 0 | 0 | 4  | 4  | NIL           |
| 12   | 21AM1204    | Numerical Analysis                   | PC       | 3 | 0 | 2 | 0 | 5  | 4  | NIL           |
| 13   | 21AM1205    | Complex Analysis                     | PC       | 3 | 1 | 0 | 0 | 4  | 4  | NIL           |
| 14   | 21AM1206    | Technical Skills                     | Skill    | 0 | 0 | 0 | 4 | 4  | 1  | NIL           |
| 15   | 21AM1207    | Seminar-2                            | PC       | 0 | 0 | 2 | 0 | 2  | 1  | NIL           |
| 16   | 21AM2101    | Topology                             | PC       | 3 | 0 | 0 | 0 | 3  | 3  | NIL           |

|    |          |  |    |   |   |    |   |    |           |     |
|----|----------|--|----|---|---|----|---|----|-----------|-----|
| 17 | 21AM2102 | Partial Differential Equations         | PC | 3 | 1 | 0  | 0 | 4  | 4         | NIL |
| 18 | 21AM2103 | Continuum Mechanics                    | PC | 3 | 1 | 0  | 0 | 4  | 4         | NIL |
| 19 | 21AM2104 | Statistics with R Programming          | PC | 3 | 0 | 2  | 0 | 5  | 4         | NIL |
| 20 | 21AM2105 | Seminar-3                              | PC | 0 | 0 | 2  | 0 | 2  | 1         | NIL |
| 21 | 21AM2201 | Fluid Dynamics                         | PC | 3 | 0 | 2  | 0 | 5  | 4         | NIL |
| 22 | 21AM2202 | Transform Techniques                   | PC | 3 | 0 | 2  | 0 | 5  | 4         | NIL |
| 23 | 21AM2203 | Dissertation with Research Publication | PC | 0 | 0 | 24 | 0 | 24 | 12        | NIL |
|    |          | Elective-I                             |    |   |   |    |   |    |           |     |
| 24 | 21AM2106 | Operations Research                    | PE | 3 | 1 | 0  | 0 | 4  | 4         | NIL |
| 25 | 21AM2107 | Functional Analysis                    | PE | 3 | 1 | 0  | 0 | 4  | 4         | NIL |
| 26 | 21AM2108 | Fuzzy mathematics and applications     | PE | 3 | 1 | 0  | 0 | 4  | 4         | NIL |
|    |          | Elective-II                            |    |   |   |    |   |    |           |     |
| 27 | 21AM2204 | Mathematical Modelling                 | PE | 3 | 1 | 0  | 0 | 4  | 4         | NIL |
| 28 | 21AM2205 | Mathematical Control Theory            | PE | 3 | 1 | 0  | 0 | 4  | 4         | NIL |
| 29 | 21AM2206 | Dynamical Systems                      | PE | 3 | 1 | 0  | 0 | 4  | 4         | NIL |
|    |          | Elective-III                           |    |   |   |    |   |    |           |     |
| 30 | 21AM2207 | Advanced Numerical Analysis            | PE | 3 | 0 | 2  | 0 | 5  | 4         | NIL |
| 31 | 21AM2208 | Number Theory                          | PE | 3 | 1 | 0  | 0 | 4  | 4         | NIL |
| 32 | 21AM2209 | Applied Stochastic Processes           | PE | 3 | 1 | 0  | 0 | 4  | 4         | NIL |
|    |          | <b>Total No. of Credits</b>            |    |   |   |    |   |    | <b>94</b> |     |

| Name of the Program : M.Sc. Physics |             |                                    |          |   |   |   |   |    |    |               |
|-------------------------------------|-------------|------------------------------------|----------|---|---|---|---|----|----|---------------|
| Sl No                               | Course Code | Course Title                       | Category | L | T | P | S | Cr | CH | Pre-requisite |
| 1                                   | 21UC1203    | Design Thinking and Innovation     | HSS      | 0 | 0 | 4 | 0 | 2  | 4  | NIL           |
| 2                                   | 21PH5101    | Mathematical Physics               | PC       | 4 | 0 | 0 | 4 | 4  | 4  | NIL           |
| 3                                   | 21PH5102    | Classical Mechanics                | PC       | 4 | 0 | 0 | 4 | 4  | 4  | NIL           |
| 4                                   | 21PH5103    | Electrodynamics                    | PC       | 4 | 0 | 0 | 4 | 4  | 4  | NIL           |
| 5                                   | 21PH5104    | Analog Electronics                 | PC       | 4 | 0 | 0 | 4 | 4  | 4  | NIL           |
| 6                                   | 21PH5105    | Computational Physics              | PC       | 4 | 0 | 0 | 4 | 4  | 4  | NIL           |
| 7                                   | 21PH5106    | Analog Electronics Lab             | PC       | 0 | 0 | 6 | 6 | 3  | 6  | NIL           |
| 8                                   | 21PH5107    | Computational Physics lab          | PC       | 0 | 0 | 4 | 4 | 2  | 4  | NIL           |
| 9                                   | 21PH5201    | Statistical Mechanics              | PC       | 4 | 0 | 0 | 4 | 4  | 4  | NIL           |
| 10                                  | 21PH5202    | Quantum Mechanics – 1              | PC       | 4 | 0 | 0 | 4 | 4  | 4  | NIL           |
| 11                                  | 21PH5203    | Fiber Optics and Non-linear optics | PC       | 4 | 0 | 0 | 4 | 4  | 4  | NIL           |
| 12                                  | 21PH5204    | Solid State Physics-1              | PC       | 4 | 0 | 0 | 4 | 4  | 4  | NIL           |
| 13                                  | 21PH5205    | Digital Electronics                | PC       | 4 | 0 | 0 | 4 | 4  | 4  | NIL           |
| 14                                  | 21PH5206    | Solid State Physics-1 Lab          | PC       | 0 | 0 | 6 | 6 | 3  | 6  | NIL           |
| 15                                  | 21PH5207    | Digital Electronics Lab            | PC       | 0 | 0 | 6 | 6 | 3  | 6  | NIL           |
| 16                                  | 21PH5208    | Seminar                            | PC       | 0 | 0 | 2 | 2 | 1  | 2  | NIL           |
| 17                                  | 21PH5301    | Quantum Mechanics-2                | PC       | 4 | 0 | 0 | 4 | 4  | 4  | QM-1          |
| 18                                  | 21PH5302    | Atomic and Molecular Spectroscopy  | PC       | 4 | 0 | 0 | 4 | 4  | 4  | NIL           |
| 19                                  | 21PH5303    | Nuclear Physics                    | PC       | 2 | 0 | 0 | 2 | 2  | 2  | NIL           |
| 20                                  | 21PH5304    | Particle Physics                   | PC       | 2 | 0 | 0 | 2 | 2  | 2  | NIL           |
| 21                                  | 21PH5305    | Solid State Physics -2             | PC       | 4 | 0 | 0 | 4 | 4  | 4  | NIL           |
| 22                                  | 21PH5306    | Lasers and Photonics               | PC       | 4 | 0 | 0 | 4 | 4  | 4  | NIL           |
| 23                                  | 21PH5308    | Solid State Physics-2 Lab          | PC       | 0 | 0 | 6 | 0 | 3  | 6  | NIL           |
| 24                                  | 21PH54E1    | Experimental Techniques            | PE       | 3 | 0 | 0 | 0 | 3  | 3  | NIL           |
| 25                                  | 21PH54E2    | Basic Communication Theory         | PE       | 3 | 0 | 0 | 0 | 3  | 3  | NIL           |

|                      |          |   |    |   |   |    |   |           |    |     |
|----------------------|----------|---|----|---|---|----|---|-----------|----|-----|
| 26                   | 21PH54E3 | Physics of Nanomaterials                  | PE | 3 | 0 | 0  | 0 | 3         | 3  | NIL |
| 27                   | 21PH54E4 | Radar Systems and Satellite communication | PE | 3 | 0 | 0  | 0 | 3         | 3  | NIL |
| 28                   | 21PH54E5 | Thin-film Technology                      | PE | 3 | 0 | 0  | 0 | 3         | 3  | NIL |
| 29                   | 21PH54E6 | Antenna theory and Radio wave Propagation | PE | 3 | 0 | 0  | 0 | 3         | 3  | NIL |
| 30                   | 21PH5401 | Dissertation with Research Publication    | PR | 0 | 0 | 16 | 0 | 8         | 16 | NIL |
| 31                   | 21PH5307 | Term Paper                                | PR | 0 | 0 | 4  | 0 | 2         | 4  | NIL |
| <b>Total Credits</b> |          |   |    |   |   |    |   | <b>96</b> |    |     |

| Name of the Program : M.Sc. Chemistry |             |   |          |   |   |   |   |    |    |               |
|---------------------------------------|-------------|---|----------|---|---|---|---|----|----|---------------|
| Sl No                                 | Course Code | Course Title                                      | Category | L | T | P | S | Cr | CH | Pre-requisite |
| 1                                     | 21UC1203    | Design Thinking and Innovation                    | HSS      | 0 | 0 | 4 | 0 | 2  | 4  | NIL           |
| 2                                     | 20CY5101    | Theoretical Chemistry-I                           | PC       | 4 | 0 | 0 | 0 | 4  | 4  | NIL           |
| 3                                     | 20CY5102    | Inorganic Chemistry- I                            | PC       | 4 | 0 | 6 | 0 | 7  | 10 | NIL           |
| 4                                     | 20CY5103    | Organic Chemistry-I                               | PC       | 4 | 0 | 6 | 0 | 7  | 10 | NIL           |
| 5                                     | 20CY5104    | Physical Chemistry-I                              | PC       | 4 | 0 | 6 | 0 | 7  | 10 | NIL           |
| 6                                     | 20CY5201    | Theoretical Chemistry-II                          | PC       | 4 | 0 | 0 | 0 | 4  | 4  | NIL           |
| 7                                     | 20CY5202    | Inorganic Chemistry- II                           | PC       | 4 | 0 | 6 | 0 | 7  | 4  | NIL           |
| 8                                     | 20CY5203    | Organic Chemistry-II                              | PC       | 4 | 0 | 6 | 0 | 7  | 10 | NIL           |
| 9                                     | 20CY5204    | Physical Chemistry-II                             | PC       | 4 | 0 | 6 | 0 | 7  | 10 | NIL           |
| 10                                    | 20CY5301    | Instrumental Methods of Analysis-I                | PC       | 4 | 0 | 6 | 0 | 7  | 10 | NIL           |
| 11                                    | 20CY5302    | Quality Control and Classical Methods of Analysis | PC       | 4 | 0 | 0 | 0 | 4  | 4  | NIL           |
| 12                                    | 20CY5303    | Applied Chemical Analysis                         | PC       | 4 | 0 | 6 | 0 | 7  | 10 | NIL           |
| 13                                    | 20CY5310    | Organic Synthesis-I                               | PC       | 4 | 0 | 6 | 0 | 7  | 10 | NIL           |
| 14                                    | 20CY5311    | Natural Products and Bio-molecules                | PC       | 4 | 0 | 6 | 0 | 7  | 10 | NIL           |
| 15                                    | 20CY5312    | Organic Spectroscopy                              | PC       | 4 | 0 | 0 | 0 | 4  | 4  | NIL           |
| 16                                    | 20CY5401    | Instrumental Methods of Analysis-II               | PC       | 4 | 0 | 6 | 0 | 7  | 10 | NIL           |
| 17                                    | 20CY5402    | Advance Applied Chemical Analysis                 | PC       | 4 | 0 | 6 | 0 | 7  | 10 | NIL           |
| 18                                    | 20CY5407    | Organic Synthesis-II                              | PC       | 4 | 0 | 6 | 0 | 7  | 10 | NIL           |
| 19                                    | 20CY5408    | Advance Heterocyclic chemistry                    | PC       | 4 | 0 | 6 | 0 | 7  | 10 | NIL           |
| 20                                    | 20CY5304    | Separation Techniques                             | PE       | 3 | 0 | 0 | 0 | 3  | 3  | NIL           |
| 21                                    | 20CY5305    | Applications of Chemical Spectroscopy             | PE       | 3 | 0 | 0 | 0 | 3  | 3  | NIL           |
| 22                                    | 20CY5306    | Bio analytical Chemistry                          | PE       | 3 | 0 | 0 | 0 | 3  | 3  | NIL           |
| 23                                    | 20CY5307    | Environmental Chemistry                           | PE       | 3 | 0 | 0 | 0 | 3  | 3  | NIL           |
| 24                                    | 20CY5308    | Surface Analytical Techniques                     | PE       | 3 | 0 | 0 | 0 | 3  | 3  | NIL           |
| 25                                    | 20CY5309    | Analysis of Food and Drugs                        | PE       | 3 | 0 | 0 | 0 | 3  | 3  | NIL           |
| 26                                    | 20CY5313    | Photo Chemistry and Pericyclic reactions          | PE       | 3 | 0 | 0 | 0 | 3  | 3  | NIL           |
| 27                                    | 20CY5314    | Organometallic Chemistry                          | PE       | 3 | 0 | 0 | 0 | 3  | 3  | NIL           |
| 28                                    | 20CY5315    | Bio Organic Chemistry                             | PE       | 3 | 0 | 0 | 0 | 3  | 3  | NIL           |
| 29                                    | 20CY5316    | Green & Sustainable Chemistry                     | PE       | 3 | 0 | 0 | 0 | 3  | 3  | NIL           |
| 30                                    | 20CY5317    | Supra molecular Chemistry                         | PE       | 3 | 0 | 0 | 0 | 3  | 3  | NIL           |
| 31                                    | 20CY5318    | Medicinal chemistry                               | PE       | 3 | 0 | 0 | 0 | 3  | 3  | NIL           |
| 32                                    | 20CY5404    | Chromatographic Techniques & Method Validation    | PE       | 3 | 0 | 0 | 0 | 3  | 3  | NIL           |

|                      |          |  |    |   |   |    |   |           |    |     |
|----------------------|----------|--|----|---|---|----|---|-----------|----|-----|
| 33                   | 20CY5405 | Classical Methods of Analysis          | PE | 3 | 0 | 0  | 0 | 3         | 3  | NIL |
| 34                   | 20CY5406 | Chemo Sensors and body fluid analysis  | PE | 3 | 0 | 0  | 0 | 3         | 3  | NIL |
| 35                   | 20CY5410 | Drug Design & Development              | PE | 3 | 0 | 0  | 0 | 3         | 3  | NIL |
| 36                   | 20CY5411 | Chemistry of Drugs and Pharmaceuticals | PE | 3 | 0 | 0  | 0 | 3         | 3  | NIL |
| 37                   | 20CY5412 | Nano Chemistry                         | PE | 3 | 0 | 0  | 0 | 3         | 3  | NIL |
| 38                   | 20CY5403 | Dissertation with Research Publication | PR | 0 | 0 | 12 | 0 | 6         | 12 | NIL |
| 39                   | 20CY5409 | Dissertation with Research Publication | PR | 0 | 0 | 12 | 0 | 6         | 12 | NIL |
| <b>Total Credits</b> |          |  |    |   |   |    |   | <b>99</b> |    |     |

| Name of the Program : Master of Business Administration |             |   |          |   |   |    |   |            |    |               |
|---|-------------|---|----------|---|---|----|---|------------|----|---------------|
| Sl No   | Course Code | Course Title  | Category | L | T | P  | S | Cr         | CH | Pre-requisite |
| 1   | 21MB51K7    | Business Communication                              | HSS      | 1 | 0 | 2  | 0 | 2          | 3  | Nil           |
| 2   | 20HS114     | Soft Skills for Managers                            | HSS      | 2 | 0 | 2  | 0 | 3          | 4  | Nil           |
| 3   | 21UC1203    | Design Thinking and Innovation                      | HSS      | 0 | 0 | 4  | 0 | 2          | 4  | Nil           |
| 4   | 21MB51C0    | Quantitative Methods                                | BS       | 3 | 0 | 0  | 0 | 3          | 3  | Nil           |
| 5   | 21MB52C2    | Business Research Methodology                       | BS       | 4 | 0 | 0  | 0 | 4          | 4  | Nil           |
| 6   | 21MB51C1    | Principles of Management & Organizational Behaviour | PC       | 3 | 0 | 0  | 0 | 3          | 3  | Nil           |
| 7   | 21MB51C2    | Business Economics                                  | PC       | 3 | 0 | 0  | 0 | 3          | 3  | Nil           |
| 8   | 21MB51C3    | Financial and Management Accounting                 | PC       | 2 | 1 | 0  | 0 | 3          | 3  | Nil           |
| 9   | 21MB51C4    | Marketing Management                                | PC       | 3 | 0 | 0  | 0 | 3          | 3  | Nil           |
| 10  | 21MB51C5    | Business Environment                                | PC       | 3 | 0 | 0  | 0 | 3          | 3  | Nil           |
| 11  | 21MB51C6    | Business Legislation                                | PC       | 3 | 0 | 0  | 0 | 3          | 3  | Nil           |
| 12  | 21MB52C1    | Introduction to Business Analytics & R Programming  | PC       | 3 | 0 | 2  | 0 | 4          | 5  | Nil           |
| 13  | 21MB52C3    | Human Resource Management                           | PC       | 3 | 0 | 0  | 0 | 3          | 3  | Nil           |
| 14  | 21MB52C4    | Financial Management                                | PC       | 2 | 1 | 0  | 0 | 3          | 3  | Nil           |
| 15  | 21MB52C5    | Operations Management                               | PC       | 3 | 0 | 0  | 0 | 3          | 3  | Nil           |
| 16  | 21MB52C6    | Information Systems& ERP                            | PC       | 3 | 0 | 0  | 0 | 3          | 3  | Nil           |
| 17  | 21MB61C0    | Strategic Management                                | PC       | 3 | 0 | 0  | 0 | 3          | 3  | Nil           |
| 18  | 21MB61C1    | Entrepreneurship & Family Business                  | PC       | 3 | 0 | 0  | 0 | 3          | 3  | Nil           |
| 20  | 21MB62C1    | Business Ethics & Corporate Governance              | PC       | 3 | 0 | 0  | 0 | 3          | 3  | Nil           |
| 21  | 21MB61XX    | FM/HR/MM/BA/SCM                                     | PE       | 3 | 0 | 0  | 0 | 3          | 3  | Nil           |
| 22  | 21MB61XX    | FM/HR/MM/BA/SCM                                     | PE       | 3 | 0 | 0  | 0 | 3          | 3  | Nil           |
| 23  | 21MB61XX    | FM/HR/MM/BA/SCM                                     | PE       | 3 | 0 | 0  | 0 | 3          | 3  | Nil           |
| 24  | 21MB61XX    | FM/HR/MM/BA/SCM                                     | PE       | 3 | 0 | 0  | 0 | 3          | 3  | Nil           |
| 25  | 21MB61XX    | Sectoral Specialization I                           | PE       | 3 | 0 | 0  | 0 | 3          | 3  | Nil           |
| 26  | 21MB62XX    | FM/HR/MM/BA/SCM                                     | PE       | 3 | 0 | 0  | 0 | 3          | 3  | Nil           |
| 27  | 21MB62XX    | FM/HR/MM/BA/SCM                                     | PE       | 3 | 0 | 0  | 0 | 3          | 3  | Nil           |
| 28  | 21MB62XX    | FM/HR/MM/BA/SCM                                     | PE       | 3 | 0 | 0  | 0 | 3          | 3  | Nil           |
| 29  | 21MB62XX    | FM/HR/MM/BA/SCM                                     | PE       | 3 | 0 | 0  | 0 | 3          | 3  | Nil           |
| 30  | 21MB62XX    | Sectoral Specialization II                          | PE       | 3 | 0 | 0  | 0 | 3          | 3  | Nil           |
| 31  | 21MB50N0    | Summer Internship Program                           | INT      | 0 | 0 | 18 | 0 | 9          | 18 | Nil           |
| 32  | 21MB62E8    | Management Research Project                         | PR       | 0 | 0 | 12 | 0 | 6          | 12 | Nil           |
| <b>Total Credits</b>                                    |             |   |          |   |   |    |   | <b>102</b> |    |               |


| Name of the Program : Master of Computer Applications |             |  |                         |   |   |    |   |    |    |               |
|---|-------------|--|-------------------------|---|---|----|---|----|----|---------------|
| Sl No   | Course Code | Course Title                               | Category                | L | T | P  | S | Cr | CH | Pre-requisite |
| 1   | 21UC2103    | ESSENTIAL SKILLS FOR EMPLOYABILITY         | HSS                     | 0 | 0 | 4  | 0 | 2  | 4  | Nil           |
| 2   | 21CA4101    | COMPUTATIONAL THINKING AND DATA STRUCTURES | PC                      | 4 | 0 | 2  | 4 | 6  | 10 | Nil           |
| 3   | 21CA4102    | RESEARCH EXPLORATION                       | PC                      | 3 | 0 | 0  | 0 | 3  | 3  | Nil           |
| 4   | 21CA4103    | OPERATING SYSTEMS                          | PC                      | 4 | 0 | 0  | 0 | 4  | 4  | Nil           |
| 5   | 21CA4104    | DATABASE MANAGEMENT SYSTEM                 | PC                      | 3 | 0 | 2  | 4 | 5  | 9  | Nil           |
| 6   | 21CA4205    | DATA ANALYTICS                             | PC                      | 3 | 0 | 2  | 4 | 5  | 9  | Nil           |
| 7   | 21CA4206    | OBJECT ORIENTED PROGRAMMING                | PC                      | 3 | 0 | 2  | 4 | 5  | 9  | Nil           |
| 8   | 21CA4207    | SOFTWARE ENGINEERING                       | PC                      | 3 | 0 | 0  | 0 | 3  | 3  | Nil           |
| 9   | 21CA4208    | COMPUTER NETWORKS                          | PC                      | 4 | 0 | 0  | 0 | 4  | 4  | Nil           |
| 10  | 21CA4209    | IOT TECHNOLOGY AND APPLICATIONS            | PC                      | 3 | 0 | 0  | 0 | 3  | 3  | Nil           |
| 11  | 21CA5110    | WEB TECHNOLOGIES                           | PC                      | 3 | 0 | 2  | 4 | 5  | 9  | Nil           |
| 12  | 21CA5111    | AUTOMATION AND INTELLIGENCE                | PC                      | 3 | 0 | 0  | 0 | 3  | 3  | Nil           |
| 13  | 21CA5213    | INTELLECTUAL PROPERTY RIGHTS               | PC                      | 3 | 0 | 0  | 0 | 3  | 3  | Nil           |
| 14  |             | PROFESSIONAL ELECTIVE - 1                  | PE1                     | 3 | 0 | 2  | 0 | 4  | 5  | Nil           |
| 15  |             | PROFESSIONAL ELECTIVE - 2                  | PE1                     | 3 | 0 | 2  | 0 | 4  | 5  | Nil           |
| 16  |             | PROFESSIONAL ELECTIVE - 3                  | PE2                     | 3 | 0 | 2  | 0 | 4  | 5  | Nil           |
| 17  |             | PROFESSIONAL ELECTIVE - 4                  | PE2                     | 3 | 0 | 2  | 4 | 5  | 9  | Nil           |
| 26  | 21CA5112    | INTERNSHIP/RESEARCH WORK                   | PR                      | 0 | 0 | 4  | 0 | 2  | 4  | Nil           |
| 27  | 21CA5214    | PROJECT /DISSERTATION WORK                 | PR                      | 0 | 0 | 20 | 0 | 10 | 20 | Nil           |
| Total Credits   |             |  |                         |   |   |    |   | 80 |    |               |
| LIST OF PROFESSIONAL ELECTIVES                        |             |  |                         |   |   |    |   |    |    |               |
| Sl No   | Course Code | Course Title                               | Specialization          | L | T | P  | S | Cr | CH | Pre-requisite |
| 1   | 21CA5115    | MACHINE LEARNING                           | ARTIFICIAL INTELLIGENCE | 3 | 0 | 2  | 0 | 4  | 5  | Nil           |
| 2   | 21CA5116    | SOFT COMPUTING                             |                         | 3 | 0 | 2  | 0 | 4  | 5  | Nil           |
| 3   | 21CA5217    | PATTERN RECOGNITION                        |                         | 3 | 0 | 2  | 0 | 4  | 5  | Nil           |
| 4   | 21CA5218    | DEEP LEARNING                              |                         | 3 | 0 | 2  | 4 | 5  | 9  | Nil           |
| 6   | 21CA5115    | MACHINE LEARNING                           | DATA SCIENCE            | 3 | 0 | 2  | 0 | 4  | 5  | Nil           |
| 7   | 21CA5120    | BIGDATA ANALYTICS                          |                         | 3 | 0 | 2  | 0 | 4  | 5  | Nil           |
| 8   | 21CA5221    | DATA VISUALISATION                         |                         | 3 | 0 | 2  | 0 | 4  | 5  | Nil           |
| 9   | 21CA5222    | COGNITIVE COMPUTING                        |                         | 3 | 0 | 2  | 4 | 5  | 9  | Nil           |
| 11  | 21CA5123    | CLOUD COMPUTING                            | CLOUD TECHNOLOGY        | 3 | 0 | 2  | 0 | 4  | 5  | Nil           |
| 12  | 21CA5124    | CLOUD INFORMATION SECURITY                 |                         | 3 | 0 | 2  | 0 | 4  | 5  | Nil           |
| 13  | 21CA5225    | CLOUD ARCHITECTURES                        |                         | 3 | 0 | 2  | 0 | 4  | 5  | Nil           |
| 14  | 21CA5226    | CLOUD WEB SERVICES                         |                         | 3 | 0 | 2  | 4 | 5  | 9  | Nil           |






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