

2013-14

K L UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING
BOARD OF STUDIES MEETING

Meeting Particulars

Type of Meeting	COURSE CURRICULUM/BOS
Department Conducting the meeting	CIVIL ENGINEERING
Number of the Meeting	3
Date of Meeting	21.05.2013
Time of Meeting	9:30 A.M.
Venue of Meeting	HoD Chamber (Civil)

Agenda of the Meeting:

1. To consider the proposed 2013-14 admitted batch B. Tech Curriculum revision and make recommendations to the Academic Council KLU for approval of the same.
2. Any other points with permission of the Chair.

The following members were present:

S.No	Name of the Person	Institution	Department of the person	Designation of the Person	Position of the person in the meeting	Primary Responsibility if any
1	Dr.S. K. Gupta	KLU	CIVIL	Professor & HoD	BOS Chairman	Chair the meeting, Document the proceedings of the meeting and forward the same to Academic Council
2	Dr. D. S. R Murthy	Andhra University	CIVIL	Professor	External Academic BOS Member	Review the existing and proposed system and suggest suitable changes for the betterment of the courses
3	Dr. Ch. Hanumantha	KLU	CIVIL	Professor	BOS Member	Preparation of Geotechnical

Captin 2

	Rao					Engg. syllabuses
4	Dr. Y Eswar Rao	KLU	CIVIL	Professor	BOS Member	Water resources RS&GIS group
5	Mr. S. Kanakambara Rao	KLU	CIVIL	Associate Professor	BOS Member	Structural Engineering Research group head
6	Dr. B. Satyanarayana	KLU	CIVIL	Associate Professor	BOS Member	Geotechnical Engineering Research group head
7	Mr. P. Sundara Kumar	KLU	CIVIL	Associate Professor	BOS Member	Water resources And remote sensing and GIS Group head
8	Dr. K. Raja Sekhar Reddy	KLU	CIVIL	Associate Professor	BOS Member	Environmental Engineering Research group head
9	Mr. A. V. Rao	KLU	CIVIL	Associate Professor	BOS Member	Preparation of Structural Engg. syllabuses
10	Mr. K Shyam Chamberlin	KLU	CIVIL	Asst. Professor	BOS Member	Preparation of Geotechnical Engg. syllabuses
11	Mr. B.G. Rahul	KLU	CIVIL	Asst. Professor	Alumni BOS Member	Review the existing and proposed system and suggest suitable changes for the betterment of the courses
12	Mr. Uma Maheswar	KLU	CIVIL	Asst. Professor	BOS Member	Preparation of Transportation Engineering syllabuses
13	Ms. Anita Nag	KLU	CIVIL	Asst. Professor	BOS Member	Preparation of Water Resources syllabuses

Signature

RESOLUTION

The BOS Committee resolved to recommend the following recommendations to the Academic council for the curriculum structure and syllabus for B. Tech Civil Engineering and M. Tech Structural Engineering of 2013-14 admitted students.

1. Syllabus of Fluid Mechanics course is reviewed & revised.
2. List of professional electives are prepared domain wise considering needs of the industry.
3. Three new courses viz., Network Theory, Computer Programming and Object Oriented Programming are introduced in the curriculum considering the software industry requirements.
4. A new course- Language and Reasoning is introduced in view of improving the opportunities for placements.
5. Two new courses viz., employability skills and advanced employability skills to enhance the interpersonal skills and employability skills.
6. Three new courses viz., finite element analysis, structural dynamics and fracture mechanics are introduced in M. Tech Structural Engineering Specialisation.
7. A new course-human values is proposed to be introduced at 1st year level to cover ethics and moral values.
8. A new course- computer programming is proposed to be introduced to have exposure of basic programming skills.
9. A new course-construction materials and concrete technology is proposed to be introduced.
13. The Curriculum Structure for 2013-14 admitted batch of B. Tech in Civil Engineering and M. Tech in Structural Engineering was approved by all members present in the meeting. The detailed structure of 2013-14 is shown in Annexure-I & II respectively.
14. It was resolved to approve all the recommendations/points mentioned in DAC meeting conducted on 11th October 2012, except point no. 3 was partially approved.
15. It was resolved to approve all the recommendations/points mentioned in DAC meeting conducted on 14th March 2013, except point no. 3 and point no.2 was partially approved.

Signature

K L UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING
BOARD OF STUDIES MEETING

List of BOS Members:

S. No	Name	Designation of the Person	Institution	Signature
1	Dr.S. K. Gupta	Professor & HoD	KLU	<i>Gupta</i>
2	Dr. D. S. R Murthy	Professor	Andhra University	<i>DSM 21/05/2013</i>
3	Dr. Ch. Hanumantha Rao	Professor	KLU	<i>Ch. H</i>
4	Dr. Y Eswar Rao	Professor	KLU	<i>Eswar</i>
5	Mr. S. Kanakambara Rao	Associate Professor	KLU	<i>Kanakambara Rao</i>
6	Dr. B. Satyanarayana	Associate Professor	KLU	<i>B Satyanarayana</i>
7	Mr. P. Sundara Kumar	Associate Professor	KLU	<i>P Sundara Kumar</i>
8	Dr. K. Raja Sekhar Reddy	Associate Professor	KLU	<i>K Raja Sekhar Reddy</i>
9	Mr. A. V. Rao	Associate Professor	KLU	<i>A V Rao</i>
10	Mr. K Shyam Chamberlin	Asst. Professor	KLU	<i>K Shyam Chamberlin</i>
11	Mr. B.G. Rahul	Asst. Professor	KLU	<i>Rahul</i>
12	Mr. Uma Maheswar	Asst. Professor	KLU	<i>Uma Maheswar</i>
13	Ms. Anita Nag	Asst. Professor	KLU	<i>Anita</i>

ANNEXURE-I

K L UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING
MAPPING OF Courses & Cos vs. PEOs (Undergraduate)-2013-14 Admitted Batch

Course Code	Course Title	CO NO	Description of the Course Outcome	a	b	c	d	e	f	g	h	i	j	k	Course Type	Rationale/Objective
13HS101	ENGLISH	C01	Kinesics To enable the students with the study of body language as it is an essential component of soft skills	1											Retained	To bring about a consistent accent and intelligibility in students' pronunciation of English by providing an opportunity for practice in speaking
		C02	Levics Vocabulary building	1												
		C03	English usage and mechanics Grammar and verbal reasoning		2											
		C04	Office communication to improve learning skills				2									
13HS102	LANGUAGE AND REASONING SKILLS	C01	Understand the method of identifying the meaning of words and apply them in contexts							2						To train students to use language appropriately for public speaking, group discussions and interviews
		C02	Understand and analyze different cultures and the importance of empathy in cross-cultural communication						2							
		C03	Understand and analyze seven techniques of reading and improve reading speed								2					
		C04	Understand and apply writing strategies in office formal communication									2				
11BS105	ECOLOGY AND ENVIRONMENT	C01	Understand the importance of Environmental education and conservation of natural resources								1					To understand the relation between biotic and abiotic components of the environment, impact of human activities on the environment and possible remedial measures to restore the environment.
		C02	Understand the importance of ecosystems and biodiversity									1				
		C03	Understand the knowledge on solid waste management											1		
		C04	Understand the knowledge on disaster management and EIA process												1	
13HS104	HUMAN VALUES	C01	realize and understand the basic aspiration, harmony in the human being						1							to understand the relations to be maintained with the co citizens to become a good citizen of the society.
		C02	embrace the roadmap to fulfill the basic aspiration of human beings		2											
		C03	Analyze the profession and his role in this existence.												2	

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Retained

Explain how engineering skills are produced and

science

Determine laws present inside a material using NDT

techniques

CO1	CO2	CO3	CO4	CO1	CO2	CO3	CO4	CO5	CO1	CO2	CO3
1BS105 ENGINEERING PHYSICS	Compute the magnetic induction produced by current carrying conductors by using Biot-Savart law & Ampere's law. Compute the Lorentz force experienced by a charged particle	Understand different aberrations in lenses and their corrections, phenomenon of interferences in thin films of uniform thickness	Explain the working of optoelectronic devices like LED, photodiode, photo transistor and solar cells. Explain the phenomenon of superconductivity and its applications	Examine water quality and select appropriate purification technique for intended problem	Predict potential complications from combining various chemicals or metals in an engineering setting	Discuss fundamental aspects of electrochemistry and materials science relevant to corrosion phenomena	Apply phase rule, polymers, conducting polymers and nano chemistry to engineering processes	An ability to analyze & generate experimental skills	Identify different mathematical problems and reformulate them to facilitate numerical treatment using an appropriate technique	Apply Fourier series, Fourier transforms and Z-transforms to analyze various signals	Construct the probability distribution of a random variable based on a real-world situation, and use it to compute expectation and variance and to estimate unknown parameters of populations and apply the tests of hypothesis
	1	1	1	2	2	2	2	2	2	2	2
1BS104 ENGINEERING CHEMISTRY				2	2	2	2	2			
1BS201 MATHEMATICAL METHODS											

To understand the Engineering Physics which are essential to know the behaviour of materials and structural elements and to come up with solutions

To understand the Engineering Chemistry which are essential to know the behaviour of materials and structural elements and to come up with solutions

To understand the Engineering Mathematics which are essential to know the behaviour of materials and structural elements and to come up with solutions

Retained

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Java's programming tools, software and systems available in solving of various complex problems related to Civil engineering

COURSE		COURSE OBJECTIVES		COURSE CONTENTS		COURSE OUTCOMES		COURSE EVALUATION																																																	
Sl. No.	Course Code	Course Title	Course Objectives	Course Contents	Course Outcomes	Course Evaluation	Course Evaluation	Course Evaluation	Course Evaluation																																																
13ES106	13ES106	CIVIL ENGINE PROGRAMMING	Implement Linear Data Structures and compare them	Implement Binary Trees	Implement & illustrate list, linked list, functions and different operations on list of data	2	2	2	2																																																
										ENGINEERING MECHANICS	Understand the concept of forces and apply the static equilibrium equations	2	2	2	2																																										
																THERMODYNAMICS	Apply the concept of centroid & centre of gravity to determine moment of inertia	2	2	2	2																																				
																						OBJECT ORIENTED PROGRAMMING	Analyze co-planar and non-co-planar system of forces	2	2	2	2																														
																												THERMODYNAMICS	Analyze the rigid bodies under translation and rotation with and without considering forces	2	2	2	2																								
																																		OBJECT ORIENTED PROGRAMMING	Apply first law of thermodynamics to non-flow systems	2	2	2	2																		
																																								THERMODYNAMICS	Apply steady flow energy equation and second law of thermodynamics to various processes and engineering devices	2	2	2	2												
																																														OBJECT ORIENTED PROGRAMMING	Apply principle of entropy and thermodynamic relations to thermodynamic system and process	2	2	2	2						
																																																				THERMODYNAMICS	Evaluate the performance of Otto, Diesel, Dual cycles and Refrigeration cycles	2	2	2	2
THERMODYNAMICS	Apply the concepts of constructors, Overloading, parameter passing, access control, Inheritance	2	2	2	2																																																				
						OBJECT ORIENTED PROGRAMMING	Apply Packages, Interfaces, Exception Handling	2	2	2	2																																														

Signature

Continuation

CO3	Understand the relationship between material properties and structural form	2	1	1	1	1	1
CO4	Understand the importance of experimental verification of material properties	1	1	1	1	1	1
CO1	Understand various geological processes operate on the surface of the earth, impact of the processes on the construction materials	2	2	2	2	2	2
CO2	Understand the formation of different types of rocks and their identification and properties and use in sourcing suitable geological materials for construction	2	2	2	2	2	2
CO3	Equip with factors leading to various geological hazards and able to identify areas vulnerable to sliding, come out measures to stabilize slopes and seismic vulnerability	2	2	2	2	2	2
CO4	Equip with basic knowledge required for identification of suitable site for the proposed construction project, equip with basic knowledge of hydro geological properties of rocks, identification of potential pockets for tapping groundwater and geological settings that are in favorable / unsafe for construction of dams and driving the tunnels	2	2	2	2	2	2
CO1	Design various geometric elements and significance of Transportation Engineering and its development in world and in India.	2	2	2	2	2	2
CO2	Analyze and Design of Flexible Pavements and rigid pavements	2	2	2	2	2	2
CO3	Understand Highway Construction equipment & Necessary Highway Drainage and Maintenance	1	1	1	1	1	1
CO4	Analyze and Design Traffic Infrastructure Facilities	2	2	2	2	2	2
CO5	Testing and Specification of Pavement Materials	2	2	2	2	2	2
CO1	Carry out geotechnical field investigation and can prepare field reports and Thoroughly understand different geotechnical investigation methodologies and can handle individually	2	2	2	2	2	2
CO2	Can compute stress distribution using different techniques and can carry settlement analysis in different soil types	2	2	2	2	2	2
CO3	Compute bearing capacity of shallow and deep foundations in laboratory and field using different methods	2	2	2	2	2	2
CO4	Can analyze stability of slopes for finite and infinite in different soil conditions and methods. Carry earth pressure analysis and can design retaining walls	2	2	2	2	2	2
CO1	Design singly reinforced beam using LSD	2	2	2	2	2	2
CO2	Design concepts of shear, development length and torsion for beams	2	2	2	2	2	2
CO3	Design reinforced concrete slabs and columns	2	2	2	2	2	2

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		1		2		3		4		5				
		1		2		3		4		5				
		1		2		3		4		5				
		1		2		3		4		5				
		1		2		3		4		5				
11-CE-439	Urban Transportation Systems Planning	C01	Understand the role, purpose of urban transportation planning and to know the characteristics of components involved in planning of urban transportation systems	1							Retained	To become familiar with various systems involved in urban transportation		
		C02	Understand the Four stage modelling approach, Trip generation and distribution concepts and their application		2									
		C03	Understand the concepts of Modal split and traffic assignments and their applications		2									
		C04	Gain knowledge about the concepts of public transport planning, Intermediate para transit and Intelligent Transportation Systems	1										
13AC201	ENERGY AND SOCIETY	C01	Understand the various forms of available energy, and energy related aspects					1	1				To understand the various forms of available energy and impact of usage of energy on the society, and environment	
		C02	Apply energy auditing methodology to estimate energy conservation of different case studies					2	2					
		C03	Understand the environmental and geological impacts on the energy vice versa						1	1				
		C04	Apply the planning and controlling aspects for economical energy usage						2	2				
13AC301	ADVANCED EMPLOYABILITY SKILLS	C01	Understand and adopt appropriate behavior patterns					1					To acquire the communication skills required for securing employment	
		C02	Understand, remember and apply lexical, syntactic skills related to grammar, usage and composition							2				
		C03	Analyze and apply various interpersonal skills in day-to-day communication								2			
		C04	Understand, learn and apply the principles of various types of GDs and Personal Interviews								2			

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11-01-43	11-01-42	11-01-424	1101432	1201445	13-01-475	1301			
RADAR SYSTEMS	C01	Understand the Basic concepts of operation and design of radar systems	1				Retained	To Understand the Basic concepts of operation and design of radar systems	
	C02	Apply the mathematical models relevant to radar systems to calculate system performance and apply the principles of tracking Radars	2						
	C03	Understand essential elements of Transmitters, Receivers and Design of simple Radar Receiver	1						
	C04	Understand the concepts of different elements that protect the Radar Receivers and Principles of various Synthetic Aperture Radars	1						
OPTICAL ENGINEERING	C01	Understand the basics of Light signals and different types of Optical Engineering methodologies	1						
	C02	Analyze the concepts of transmission characteristics of optical fibers and optical transmitters	2					To Familiar with basic concepts of Light signals and different types of Optical Engineering methodologies	
	C03	Understand the concepts of optical Detectors, optical Sensors and their applications	1						
	C04	Analyze the concept of optical fiber systems and instruments	2						
MOBILE COMMUNICATIONS	C01	Describe various 2G,3G,4G,5G wireless network models	2						
	C02	Explain three basic propagation mechanisms	2						
	C03	Discuss wireless system standard GSM services	2						
	C04	Discuss OFDM wireless communication	2						
DATA WAREHOUSING AND MINING	C01	Understand basic concepts of Databases and issues related to Data mining	1						
	C02	Analyze Data Warehouse Architecture and Data Pre-processing techniques	2						
	C03	Analyze Association rules in large data bases, Classification and Prediction techniques	2						
	C04	Analyze Clustering techniques on large data bases	2						
FUNDAMENTALS OF DATABASE MANAGEMENT SYSTEMS	C01	Understand the fundamentals of database management systems	1						
	C02	Construct database tables using SQL	2						
	C03	Analyze various normalization techniques and develop procedures and functions in PL,SQL	2						
	C04	Understand the file storage structures in the Database Management and transaction processing	1						
MEASUREMENTS AND INSTRUMENTATION	C01	Understand the basic principles of Measurement Systems	1						
	C02	Explore the Transducers and their classification	1						
	C03	Elucidate the basic principles of Signal conditioning & signal analysis	1						
	C04	Understand Digital systems & Recording systems	1						
1301	INTEGRATION FOR								To Understand about 3D

Reports

K L UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING
MINUTES OF DEPARTMENT ACADEMIC COMMITTEE MEETING

Meeting Particulars

Type of Meeting	INTERNAL ACADEMIC DISCUSSIONS
Department conducting the meeting	CIVIL ENGINEERING
Date of the meeting	14-03-13
Time of the meeting	9.30 A.M
Venue of the meeting	HoD Chamber (Civil)

The following members were present:

S.No.	Name	Designation of the person	Position of the person in the meeting
1	Dr. S. K. Gupta	Professor & HoD	Chairman
2	Mr. B. G. Rahul	Assistant Professor	Convener
3	Mr. S. Kanakambara Rao	Associate Professor	Member
4	Mr. P. Sundara Kumar	Associate Professor	Member
5	Dr. A. Siva Sankar	Associate Professor	Member
6	Dr. K. Rajasekhara Reddy	Associate Professor	Member
7	Mr. K. Shyam Chamberlin	Assistant Professor	Member
8	Ms. K. Prasanthi	Assistant Professor	Member
9	Mr. N. Lekaz (09100133)	IV/IV B. Tech Student	Member
10	Mr. G. Rama Lingeswara Rao (09100185)	IV/IV B. Tech Student	Member

Agenda:

1. To discuss the feedbacks received from stake holders on curriculum
2. To propose the curriculum for B. Tech 2013-14 admitting batch
3. Any other points with the permission of the DAC chairman

The following points were discussed and resolved:

1. Upon discussing the feedback from faculty, the committee resolved to recommend the following to BOS.



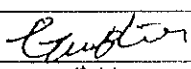

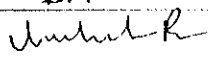

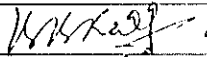
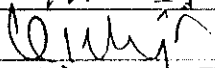
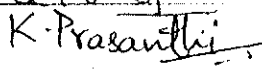
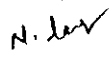
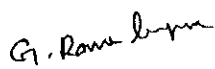
- a. A new course-human values is introduced at 1st year level to cover ethics and moral values and same is presented in Annexure-I.
 - b. A new course- computer programming is introduced to have exposure of basic programming skills and same is given in Annexure-I.
2. Upon discussing the feedback from academic peers, the committee resolved to recommend the following to BOS.
- a. A new course-construction materials and concrete technology is proposed to introduced and same is given in Annexure-I.
 - b. Syllabus of all professional core courses are reviewed and revised by considering various competitive examinations of state and central governments etc. The professional core courses in which syllabus revision took place is presented in Annexure-I.
3. The DAC members reviewed the various certificate courses being imparted to the student and resolved to cover the following list of certificate courses which enhance the placement opportunities.
- a. AUTOCAD
 - b. 3DS MAX
 - c. STAAD PRO.
 - d. SAP 2000
 - e. TOTAL STATION



Dr. S.K. Gupta
(Head of the Department)

K L University
Department of Civil Engineering
Department Academic Committee (DAC)

The following members attended the meeting on 14th March 2013 at 9:30 A.M.:

S.No.	Name	Designation of the person	Signature
1	Dr. S. K. Gupta	Professor & HoD	
2	Mr. B. G. Rahul	Assistant Professor	
3	Mr. S. Kanakambara Rao	Associate Professor	
4	Mr. P. Sundara Kumar	Associate Professor	
5	Dr. A. Siva Sankar	Associate Professor	
6	Dr. K. Rajasekhara Reddy	Associate Professor	
7	Mr. K. Shyam Chamberlin	Assistant Professor	
8	Ms. K. Prasanthi	Assistant Professor	
9	Mr. N. Lekaz (09100133)	IV/IV B. Tech Student	
10	Mr. G. Rama Lingeswara Rao (09100185)	IV/IV B. Tech Student	

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Department of Civil Engineering

Department Academic Committee Meeting (11/10/2012 & 14/03/2013)

Annexure 1: Proposed B.Tech 2013-14 Course Structure

S.No	Course Name	L-T-P	Cr	Pre-Req.	Remarks
I	English	2-0-2	3	NIL	NIL
	Language and Reasoning Skills	2-0-2	3	NIL	New Course
	Ecology & Environment	2-0-0	2	NIL	NIL
	Human Values	2-0-0	2	NIL	NIL
	Employability Skills	0-0-2	0	NIL	New Course
	Advanced Employability Skills	0-0-2	0	NIL	New Course
II	Linear Algebra and Multi variate calculus	3-0-2	4	NIL	NIL
	Differential Equations	3-0-2	4	NIL	NIL
	Engineering Physics	3-0-2	4	NIL	NIL
	Engineering Chemistry	3-0-2	4	NIL	NIL
	Mathematical Methods	3-0-0	3	Linear Algebra and Multi variate calculus & Differential Equations	NIL
	Complex variables and Finite differential Methods	3-0-0	3	calculus & Differential Equations	NIL
III	Engineering Materials	3-0-0	3	NIL	NIL
	Measurements	3-0-2	4	NIL	NIL
	Engineering Graphics with CAD	0-0-4	2	NIL	NIL
	Workshop Practice	0-0-4	2	NIL	NIL
	Problem Solving through Programming	3-0-2	4	NIL	New Course
	Engineering Mechanics	3-0-2	4	NIL	NIL
	Thermodynamics	3-0-0	3	Engineering Physics	NIL
	Object Oriented Programming	3-0-2	4	Engineering Materials	New Course
	Network Theory	3-1-2	4	Linear Algebra and Multi variate calculus	New Course
	Data Structures	3-0-2	4	Linear Algebra and Multi variate calculus	NIL
	Signal Processing	3-0-2	4	Differential Equations	NIL
IV	Mechanics of Materials	3-0-2	4	Engineering Mechanics	NIL
	Fluid Mechanics	3-0-2	4	NIL	NIL
	Structural Analysis	3-0-2	2	Engineering Mechanics	NIL
	Hydraulics & Hydraulic Machines	3-0-2	4	Fluid Mechanics	Topics Removed: Force exerted by a jet on a hinged plate, on moving plates, force exerted by jet on flat plates and series of vanes.
	Surveying	3-0-2	4	NIL	Topics Removed: Determination of the capacity of reservoir, volume of borrow pits.
	Building Planning and Construction	3-0-2	4	NIL	NIL
	Engineering Geology	3-0-2	3	NIL	NIL
	Soil Mechanics	3-0-2	4	NIL	Topics Added: Skempton pore water pressure parameters.
Environmental Engineering	3-0-2	4	NIL	Topics removed: Sludge digestion and sludge dewatering beds.	

Signature

Transportation Engineering	3-0-2	4	NIL	Topics Added: Pavement Drainage - Necessity, Analysis and Design of Surface and sub surface drainage system.
Design of Concrete Structures	3-0-2	4	Structural Analysis	NIL
Water Resources Engineering	3-1-2	4	NIL	Contents Added
Foundation Engineering	3-2-0	4	NIL	Topics Removed: Meyerhof's analysis, Hansen's bearing capacity theory, Vesic's bearing capacity theory
Design of Steel Structures	3-0-2	3	NIL	Topics Added: Roof Trusses - Roof trusses - Roof and side coverings - Design loads, design of purlin, Sheetings - Loads on trusses - Analysis of trusses and elements of truss - Grouping of members - end bearing
Quantity Surveying and Estimation	3-0-2	4	NIL	NIL
STRUCTURAL ENGINEERING SPECIALIZATION STREAM				
Green Buildings	3-0-0	3	NIL	NIL
Advanced Design of Steel Structure	3-0-0	3	Design of Steel Structures	NIL
Earthquake Resistant Design of Structures	3-0-0	3	NIL	NIL
Prestressed Concrete	3-0-0	3	NIL	NIL
Bridge Engineering	3-0-0	3	NIL	NIL
GEO TECHNICAL ENGINEERING SPECIALIZATION STREAM				
Ground Improvement Techniques	3-0-0	3	NIL	NIL
Advanced Foundation Engineering	3-0-0	3	NIL	NIL
Geotechnical Earthquake Engineering	3-0-0	3	NIL	NIL
Design of Earth Retaining Structures	3-0-0	3	NIL	NIL
Rock Mechanics	3-0-0	3	NIL	NIL
ENVIRONMENTAL & WATER RESOURCE ENGINEERING SPECIALIZATION STREAM				
Advanced Open Channel Hydraulics	3-0-0	3	NIL	NIL
Design of Hydraulic Structures	3-0-0	3	NIL	NIL
Environmental Impact Assessment	3-0-0	3	NIL	NIL
Solid Waste Management and Landfills	3-0-0	3	NIL	NIL
Rural Water Supply & Sanitation	3-0-0	3	NIL	NIL
TRANSPORTATION ENGINEERING SPECIALIZATION STREAM				
Railway, Airport and Dock & Harbour Engineering	3-0-0	3	NIL	NIL
Advanced Highway Engineering	3-0-0	3	NIL	NIL
Traffic Engineering	3-0-0	3	NIL	NIL
Advanced Pavement Design Engineering	3-0-0	3	NIL	NIL
Urban Transportation Systems Planning	3-0-0	3	NIL	NIL
MANAGEMENT ELECTIVE, Credits: 3				
Emotional Intelligence	3-0-0	3	NIL	NIL
Paradigm in Management thought	3-0-0	3	NIL	NIL
Indian Economy	3-0-0	3	NIL	NIL
Professional Ethics & Values	3-0-0	3	NIL	NIL
Behavioral Sciences	3-0-0	3	NIL	NIL
Managing Personal Finances	3-0-0	3	NIL	NIL
Basics of Marketing for Engineers	3-0-0	3	NIL	NIL
Self Management	3-0-0	3	NIL	NIL
Organization Management	3-0-0	3	NIL	NIL
Resources Safety and quality management	3-0-0	3	NIL	NIL
Construction Project Management	3-0-0	3	NIL	NIL
Disaster Management	3-0-0	3	NIL	NIL
PROJECT				

Signature

Industrial Training	0-0-4	2	NIL	NIL
Mini Project	0-0-4	2	NIL	NIL
Term Paper	0-0-4	2	NIL	NIL
Minor Project	0-0-4	2	NIL	NIL
Practice School/PROH CI	0-0-24	10	NIL	NIL

Chapter

1.1.2 Percentage of programmes where syllabus revision was carried out during the last five years

2013-14				
Program Code of revised syllabus	Program name of revised syllabus	No. of Courses offered during this academic year	Number of Courses Revised	Percentage of syllabus content added or replaced
002	B. Tech (Civil Engineering)	41	8	18

List of Syllabus Revised Courses for A.Y. 2013-14

S. No	Course Code	Course Name	L-T-P	Cr.	Removed	Added
1	13CE204	Hydraulics & Hydraulic Machines	3-0-2	4	Force exerted by a jet on a hinged plate, on moving plates, force exerted by jet on flat plates and series of vanes.	--
2	13CE205	Surveying	3-0-2	4	Determination of the capacity of reservoir, volume of barrow pits.	--
3	13CE206	Soil Mechanics	3-0-2	4	--	Skempton pore water pressure parameters.
4	13CE207	Environmental Engineering	3-0-2	4	Sludge digestion and sludge dewatering beds.	--
5	13CE303	Transportation Engineering	3-0-2	4	--	Pavement Drainage - Necessity, Analysis and Design of Surface and sub surface drainage system.
6	13CE304	Foundation Engineering	3-0-2	4	Meyerhof's analysis, Hansen's bearing capacity theory, Vesic's bearing capacity theory	--
7	13CE306	Design of Steel Structures	3-2-0	4	--	Roof Trusses: Roof trusses - Roof and side coverings - Design loads, design of purlin, Sheetings-Loads on trusses-Analysis of trusses and elements of truss-Grouping of members- end bearing
8	13CE307	Water Resources Engineering	3-2-0	4	--	Syllabus Added

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L	T	P	Cr
3	0	2	4

K L UNIVERSITY
HYDRAULICS AND HYDRAULIC MACHINES (11CE205)

SYLLABUS:

Open Channel Flow

Definition, classification, and Comparison between open channel flow and pipe flow, Types of channels, Chezy's and Manning's equation, Flow through rectangular, Trapezoidal and Circular channels, Most efficient channel section -Rectangular, Trapezoidal.

Open Channel Flow: Specific energy, Specific energy diagram, Critical flow, critical flow in rectangular channel, critical slope, Froude's number, Channel transitions.

Gradually Varied Flow

Gradually varied flow in rectangular channels – equation for GVF, Water surface slope w.r.t. channel bed and horizontal, Classification of channel slopes, classification of surface profiles, Backwater and draw down curves.

Rapidly Varied Flow: Hydraulic jump, elements and characteristics of hydraulic jump, Types of hydraulic jump, Location and applications of hydraulic jump, Energy loss in a hydraulic jump

Impact of Jets

Force exerted by the jet on a stationary plate – vertical, inclined and curved, Force exerted by a jet on a hinged plate, on moving plates, force exerted by jet on flat plates and series of vanes.

Turbines: Introduction, classification of turbines, Pelton wheel, velocity triangles and work done on Pelton wheel, Design of Pelton wheel.

Turbines

Radial flow reaction turbine, Velocity triangles and work done by water on runner, Francis turbine, Design of Francis turbine, Axial flow reaction turbine – Kaplan turbine, head and efficiency, Draft tube – types, draft tube theory, efficiency of draft tube, Specific speed, Unit quantities, Selection of turbines, Cavitation,

Centrifugal Pumps

Manometric head; losses and efficiencies; work done; working principle; priming; velocity triangles; performance and characteristics curves; multistage and double suction pumps, Cavitation effects.

Reciprocating Pumps: Classification of reciprocating pump, working principle, Discharge through reciprocating pump, negative slip Discharge, work done, and power required to drive double acting pump.

TEXT BOOKS:

1. Hydraulics & Fluid Mechanics by P. N. Modi & S. N. Seth; Standard Book house, New Delhi
2. Fluid Mechanics by A. K. Jain; Khanna Publishers, Delhi

REFERENCE BOOKS:

1. Open Channel flow by V.T. Chow, McGraw Hill book company
2. Flow in Open channels by K. Subramanya, Tata McGraw-Hill Publishing Company, 1994.
3. Introduction to Fluid Mechanics by Robert W. Fox and Alan T. Mc Donald, Fourth Edition, John Willey & sons, New York, 1995
4. Hydraulic Machines by Jagadhisilal; Metropolitan Company, Delhi

Signature

L	T	P	Cr
3	0	2	4

K L UNIVERSITY

HYDRAULICS AND HYDRAULIC MACHINES (13CE204)

SYLLABUS:

Open Channel Flow: classification, and Comparison between open channel flow and pipe flow. Types of channels, Chezy's and Manning's equation, Flow through rectangular, Trapezoidal and Circular channels. Most efficient channel section -Rectangular, Trapezoidal, Specific energy, Specific energy diagram, Critical flow, critical flow in rectangular channel, critical slope, Froude's number, Channel transitions.

Gradually Varied Flow: Gradually varied flow in rectangular channels – equation for GVF. Water surface slope w.r.t. channel bed and horizontal, Classification of channel slopes, classification of surface profiles, Backwater and draw down curves.

Rapidly Varied Flow: Hydraulic jump, elements and characteristics of hydraulic jump, Types of hydraulic jump, Location and applications of hydraulic jump, Energy loss in a hydraulic jump.

Impact of Jets: Force exerted by the jet on a stationary plate – vertical, inclined and curved. Force exerted by a jet on a hinged plate, on moving plates, force exerted by jet on flat plates and series of vanes.

Turbines: classification of turbines, Pelton wheel, velocity triangles and work done on Pelton wheel, Design of Pelton wheel, Radial flow reaction turbine, Velocity triangles and work done by water on runner, Francis turbine, Design of Francis turbine, Axial flow reaction turbine -- Kaplan turbine, head and efficiency, Draft tube – types, draft tube theory, efficiency of draft tube, Specific speed, Unit quantities, Selection of turbines, Cavitation.

Centrifugal Pumps: Manometric head; losses and efficiencies; work done; working principle; priming; velocity triangles; performance and characteristics curves; multistage and double suction pumps, Cavitation effects.

Reciprocating Pumps: Classification of reciprocating pump, working principle, Discharge through reciprocating pump, negative slip Discharge, work done, and power required to drive double acting pump.

TEXT BOOKS:

1. Hydraulics & Fluid Mechanics by P. N. Modi & S. N. Seth; Standard Book house, New Delhi
2. Introduction to Fluid Mechanics by Robert W. Fox and Alan T. Mc Donald, Fourth Edition, John Willey & sons, New York, 1995

REFERENCE BOOKS:

1. Open Channel flow by V.T. Chow, McGraw Hill book company
2. Flow in Open channels by K. Subramanya, Tata McGraw-Hill Publishing Company, 1994.
3. Fluid Mechanics by A. K. Jain; Khanna Publishers, Delhi
4. Hydraulic Machines by Jagadhishlal; Metropolitan Company, Delhi.

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K L UNIVERSITY
SURVEYING (11CE203)

SYLLABUS

Surveying Introduction - Overview of plane surveying (chain, compass and plane table), Objectives, Principles and classifications.

Distances and Direction - Distance measurement conventions and methods; use of chain and tape, Electronic distance measurements, Meridians, Azimuths and Bearings, declination, computation of angle.

Leveling and Contouring - Concept and Terminology, Temporary and permanent adjustments- method of leveling, Characteristics and Uses of contours- methods of conducting contour surveys and their plotting.

Computation of Areas and Volumes - Area from field notes, computation of areas along irregular boundaries and area consisting of regular boundaries, Embankments and cutting for a level section and two level sections with and without transverse slopes.

Theodolite - Theodolite, description, uses and adjustments - temporary and permanent, measurement of horizontal and vertical angles, Principles of Electronic Theodolite, Trigonometrical leveling, Traversing.

Tachometric Surveying - Stadia and tangential methods of Tacheometry, Distance and Elevation formulae for Staff vertical position.

Curves - Types of curves, design and setting out - simple and compound curves, Introduction to geodetic surveying.

Total Station: Introduction - Accessories with description - Features of total station - Onboard software electronic data reading - Summary of total stations characteristics - Field procedure of total stations in topographic survey, Global positioning system, Introduction to Geographic information system (GIS).

Text Books:

1. Basak N.N. "Surveying and Leveling", Tata McGraw Hill Publishing Company Ltd., New Delhi, 1994

Reference Books:

1. Kanetkar, T.P. & S.V. Kulkarni, "Surveying and levelling part I & II", Puna vidyarthi girha, Prakashan, 23rd edition, 1993.
2. Subramanian, R. "Surveying and Levelling", Oxford Higher Education.
3. Arora K. R. "Surveying Vol-I", Rajsons Publications Pvt. Ltd, 10th Edition, 2008
4. Punmia B. C. "Surveying Vol-I", Laxmi Publications, 16th Edition, 2005.
5. Punmia B.C. "Surveying Vol-II", Laxmi Publications, 15th Edition, 2007.

C. Gupta

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K L UNIVERSITY

SURVEYING (13CE205)

SYLLABUS

Surveying, Overview of plane surveying (chain, compass and plane table), Objectives, Principles and classifications.

Distances and Direction - Distance measurement conventions and methods; use of chain and tape, Electronic distance measurements, Meridians, Azimuths and Bearings, declination, computation of angle.

Leveling and Contouring - Concept and Terminology, Temporary and permanent adjustments- method of leveling, Characteristics and Uses of contours- methods of conducting contour surveys and their plotting.

Computation of Areas and Volumes - Area from field notes, computation of areas along irregular boundaries and area consisting of regular boundaries. Embankments and cutting for a level section and two level sections with and without transverse slopes, ~~Determination of the capacity of reservoir, volume of the~~

Theodolite - Theodolite, description, uses and adjustments - temporary and permanent, measurement of horizontal and vertical angles. Principles of Electronic Theodolite, Trigonometrical leveling, Traversing.

Tachometric Surveying - Stadia and tangential methods of Tacheometry, Distance and Elevation formulae for Staff vertical position.

Curves - Types of curves, design and setting out – simple and compound curves. Introduction to geodetic surveying.

Total Station: Introduction – Accessories with description - Features of total station – Onboard software electronic data reading - Summary of total stations characteristics - Field procedure of total stations in topographic survey, Global positioning system, Introduction to Geographic information system (GIS).

Text Books:

1. Surveying and Levelling by R. Subramanian, Oxford University Press, 2nd edition, 2012.
2. Surveying Vol - I, II, III - Dr. B.C. Punmia Laxmi publications, Delhi-6

Reference Books:

1. Surveying and levelling part. I & II by Kanetkar.T.P. & S.V. Kulkarni, Puna vidyarthi girha, Prakashan, 23rd edition, 1993.
2. Arora K. R. "Surveying Vol-I", Rajsons Publications Pvt. Ltd, 10th Edition, 2008.

Er. P. S. Srinivasan

K L UNIVERSITY
SOIL MECHANICS (11CE206)

L	T	P	Cr
3	0	2	4

SYLLABUS

Origin of Soils: Soil Origin, rock cycle.

Phase Relations: Weight Relationships, Volume Relationships, Density and Unit Weight Relationships, Inter-relationships.

Laboratory tests on index properties of soils.

Soil Classification: coarse grained soils, fine grained soils., IS soil classification

Compaction: variables in compaction, laboratory tests, field compaction, specification and control.

Effective Stress: Effective stress Principle, effective stress, pore water pressure, and total stress variation with depth, vertical normal stress due to overburden, capillary effects in soils.

Permeability: Bernoulli's Equation, Darcy's law, Laboratory and field measurement of permeability, factors affecting permeability. Stress in soils due to flow, Seepage Force, Downward Flow, Upward Flow, Quick Condition.

Vertical stresses beneath the loaded areas: stresses due to point load, stresses due to line load, stresses under the corner of rectangular load, 2:1 distribution method.

Compressibility: Compressibility as a function of effective stress, soil type, stress history; normally consolidated and over consolidated clay.

Consolidation: Terzaghi's One-Dimensional Consolidation theory, consolidation test, Consolidation Settlement, Determining Coefficients of compressibility and consolidation, limitations in predicting consolidation behavior, amount of consolidation, time for consolidation, secondary compression.

Shear Strength: Mohr's Circle, Mohr Coulomb failure criterion, Mohr circles and failure envelopes in terms of effective and total stresses. Drained and undrained loading tests, direct shear test, triaxial test, skempton pore water pressure parameters. Field vane shear test

Site Investigations: Various geotechnical field investigations, geotechnical field report.

TEXT BOOK:

1. Geotechnical Engineering: A practical problem solving approach by N Sivakugan, and Braja M Das, Eureka series, J. Ross publishing, 2009.

REFERENCE BOOK:

1. Geotechnical Engineering by Shashi K Gulhati and Manoj Datta, TATA McGraw Hill, Publishing Company Limited, New Delhi, 2008.
2. Soil Mechanics and Foundation Engineering by V. N. S. Murthy, CBS Publishers & Distributors, New Delhi.

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K L UNIVERSITY

SOIL MECHANICS (13CE301)

SYLLABUS:

Origin of Soils: Soil Origin, rock cycle. **Phase Relations:** Weight Relationships, Volume Relationships, Density and Unit Weight Relationships, Inter-relationships. **Soil Classification:** coarse grained soils, fine grained soils., IS soil classification. **Compaction:** variables in compaction, laboratory tests, field compaction, specification and control. **Effective Stress:** Effective stress Principle, effective stress, pore water pressure, and total stress variation with depth, vertical normal stress due to overburden, capillary effects in soils. **Permeability:** Bernoulli's Equation, Darcy's law, Laboratory and field measurement of permeability, factors affecting permeability. Stress in soils due to flow, Seepage Force, Downward Flow, Upward Flow, Quick Condition. **Vertical stresses beneath the loaded areas:** stresses due to point load, stresses due to line load, stresses under the corner of rectangular load, 2:1 distribution method. **Compressibility:** Compressibility as a function of effective stress, soil type, stress history: normally consolidated and over consolidated clay. **Consolidation:** Terzaghi's One-Dimensional Consolidation theory, consolidation test, Consolidation Settlement, Determining Coefficients of compressibility and consolidation, limitations in predicting consolidation behavior, amount of consolidation, time for consolidation, secondary compression. **Shear Strength:** Mohr's Circle, Mohr Coulomb failure criterion, Mohr circles and failure envelopes in terms of effective and total stresses. Drained and undrained loading tests, direct shear test, triaxial test, **skempton pore water pressure parameters** Field vane shear test **Site Investigations:** Various geotechnical field investigations, geotechnical field report.

TEXT BOOK:

1. Geotechnical Engineering: A practical problem solving approach by N Sivakugan, and Braja M Das, Eureka series, J. Ross publishing, 2009.

REFERENCE BOOKS:

1. Basic and Applied Soil Mechanics by Gopal Ranjan and ASR Rao, New Age International Publishers, Second Edition, 2007.
2. Soil Mechanics and Foundation Engineering by V. N. S. Murthy, CBS Publishers & Distributors, New Delhi.
3. Geotechnical Engineering Principles and Practices by Donald P. Coduto, Man-Chu Ronald Yeung and William A. Kitch, PHI Learning Pvt. Ltd., Second Edition.

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K L UNIVERSITY
ENVIRONMENTAL ENGINEERING (11CE207)

SYLLABUS

Water Supply

Public Health Engineering – necessity of protected water supply and sanitation role of civil Engineer. Water demand and per capita consumption, factors affecting – population forecasts. Water supply – sources of water and quality parameters, Standards of potable water, Intake structures, Pipes, joints, valves and pumps

Treatment of Water

Clarification, sedimentation- Principles, Design of sedimentation tanks, Coagulation and flocculation, Design of a Clariflocculation. Filtration – Types of filters and filter media. Design principles of a slow and rapid sand filters. Backwash mechanisms. Pressure filters. Disinfection – Necessity and methods, Chlorination of water supplies, break point chlorination, Ozone and U-V radiation, Removal of hardness, tastes and odor, adsorption methods

Sewage & Sewerage Systems

Sewerage systems, Quantity estimation, Velocity in sewers, Storm water sewers- Storm water estimation by rational method. Sewerage system design, Sewage conveyance- Sewer types and appurtenances

Waste Water Treatment

Quality parameters- Physical, Chemical and Bacteriological Preliminary treatment. Screens, grit chambers, Primary treatment- Sedimentation – rectangular and circular sedimentation tanks Secondary treatment- Mechanisms, activated sludge process & Trickling filter, Designs aspects, Secondary clarifier

Sludge Handling & Sanitation & Environmental Pollution

Sludge digestion and disposal methods Septic tanks- design parameters and working principles.

Air Pollution-Types, Impacts on environment, and Principles of control techniques

Solid Wastes-Types, sources and composition of solid wastes, Methods of collection, Transportation and disposal methods; Landfills, composting, incineration, pyrolysis, gasification

Text Books:

1. Environmental Engineering by Howard S. Peavy, Donald R. Rowe and George Tchobanoglous, Mc Graw-Hill International Editions, New York
2. Wastewater Engineering Treatment, Disposal & Reuse by Met Calf & Eddy, Tata McGraw -Hill publishing Co. Ltd., New Delhi.

Reference Books:

1. Water and Waste water Technology, Mark. J Hammer and Mark. J Hammer, Eastern Economy Edition, PHI-Learning, New Delhi (2008)
2. Environmental Engineering by Davis Cornvel, McGraw Hill Book Co., New York. (2000)
3. Water and waste water Engineering by G.M. Fair, J.C. Geyer, and Okum, John Wiley & Sons, New York (1998)
4. Waste water Engineering by M.N Rao and A.K Dutta, Oxford & IBH Publishing Co.Ltd. (2000)

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K L UNIVERSITY

ENVIRONMENTAL ENGINEERING (13CE304)

L	T	P	Cr
3	0	2	4

SYLLABUS

Necessity of protected water supply, Role of Civil Engineer, Water demand, per capita consumption and factors affecting, Effect of variations of water demand on design of different components of water supply schemes, Design period – population forecasting, Sources of water - quality parameters and their significance, Drinking water quality standards in India, Intake structures – definition and site selection, Pipes, joints and valves.

Types and origin of impurities Need for water treatment, Purpose, principles of operation and design considerations of plain sedimentation, sedimentation with coagulation, slow, rapid sand and pressure filters, Chlorination, Ozonization, and UV radiation.

Special treatment processes for color, odor, taste and hardness removal from water.

Sewerage systems, Quantity estimation, Velocity in sewers, Storm water sewers- Storm water estimation by rational method, Sewerage system design, Sewage conveyance- Sewer types and appurtenances

Objectives and extent of wastewater treatment, Quality parameters – physical, chemical and microbial, Standards of discharge of effluents on surface waters, sewers and for agricultural use.

Purpose, principle and design considerations of Preliminary treatment - Screens, grit chambers; Primary treatment- Sedimentation – rectangular and circular tanks; Secondary treatment- Activated sludge process & Trickling filter and Secondary clarifiers, Septic tanks - design parameters and working principles, Sludge digestion and sludge dewatering beds.

Air Pollution-Types, Impacts on environment, and Principles of control techniques

Solid Wastes-Types, sources and composition of solid wastes, Methods of collection, Transportation and disposal methods; Landfills, composting, incineration, pyrolysis, gasification

Text Books:

1. Environmental Engineering (Vol. I), Water Supply Engineering, S. K. Garg, Khanna Publishers, New Delhi, Twelfth Revised Edition, 2010.
2. Environmental Engineering (Vol II), Sewage Disposal and Air Pollution Engineering, S. K. Garg, Khanna Publishers, New Delhi, Twenty-second Revised Edition, 2010.

Reference Books:

1. Environmental Engineering by Howard S. Peavy, Donald R. Rowe and George Tchobanoglous, Mc Graw-Hill International Editions, New York
2. Wastewater Engineering Treatment, Disposal & Reuse by Met Calf & Eddy, Tata McGraw Hill publishing Co. Ltd., New Delhi.
3. Water and Waste water Technology, Mark. J Hammer and Mark. J Hammer, Eastern Economy Edition, PHI-Learning, New Delhi (2008).
4. Environmental Engineering by Davis Cornvel, McGraw Hill Book Co., New York, (2000).
5. Water and waste water Engineering by G.M. Fair, J.C. Geyer, and Okun, John Wiley & Sons, New York (1998).
6. Waste water Engineering by M.N Rao and A.K Dutta, Oxford & IBH Publishing Co. Ltd. (2000).



L	T	P	Cr
3	0	2	4

K L UNIVERSITY

TRANSPORTATION ENGINEERING (11CE303)

SYLLABUS

Transportation Development and Planning: Importance of Transportation Engineering, Classification of Transportation Studies – Modal, Elemental & Functional Classification, Historical Development of Road Construction, Highway Development in India. **Highway Alignment** -Factors governing alignment; Engineering surveys. **Highway Geometric Design:** Introduction, Highway cross-section elements; Sight distance – SSD, ISD, OSD; Design of horizontal alignment; Design of vertical alignment – summit curves and valley curves. **Pavement Design Engineering:** Pavement types, components of flexible & rigid pavements, Pavement Design Factors, Flexible Pavement Design - Design strategies, CBR Method, Burmister's Layered Theory, IRC 37-2001 Guidelines, Rigid Pavement Design - General Design Considerations, Stresses in concrete pavements, Joints, Design of Rigid Pavements as per IRC:58-2002 Guidelines. **Highway Construction:** Equipment, Stages of Pavement Construction, Earthwork, Stabilization, of Soil, Bituminous Pavement Construction and Cement Concrete Pavement Construction. **Highway Maintenance:** Pavement Distress – causes and remedial measures. **Traffic Infrastructure Design:** Properties of Traffic Engineering Elements – Introduction, Vehicle Characteristics, Human Factors and Driver Characteristics, Road Characteristics, Control Mechanisms and Terminal Facilities, Traffic Studies, Traffic Operations - Traffic Regulations, Traffic Control Devices - Traffic Signs, Traffic signals, Road Markings and Islands, Traffic Stream Parameters and their Relations; Design of Traffic Signals, Design of Intersections – Intersection at Grade and grade separated Intersections.

TEXT BOOKS:

1. Principles of Transportation Engineering by Partha Chakraborty and Animesh Das. Prentice Hall of India, New Delhi
2. Highway Engineering by S.K.Khanna & C.J.Justo, Nemchand & Bros., Latest Edition.

REFERENCE BOOKS:

1. Principles of pavement design – Yoder & Wit Zorac – Jhonwilley & Sons
2. Principles and practices of highway Engineering by Dr. L. R. Kadiyali & Dr. N. B. Lal Khanna publishers, Latest Edition.
3. Transportation Engineering by C. Jotin Khisty, B.Kent Lall, Prentice Hall of India, New Delhi
4. Traffic Engineering and Transportation Planning by L.R.Kadiyali, Khanna Publishers.

Er. P. S. S. S.

L	T	P	Cr
3	0	2	4

K L UNIVERSITY

TRANSPORTATION ENGINEERING (13-CE302)

SYLLABUS

Transportation Development and Planning: Importance of Transportation Engineering, Classification of Transportation Studies – Modal, Elemental & Functional Classification. Historical Development of Road Construction, Highway Development in India. **Highway Alignment** -Factors governing alignment; Engineering surveys. **Highway Geometric Design:** Introduction, Highway cross-section elements; Sight distance – SSD, ISD, OSD; Design of horizontal alignment; Design of vertical alignment – summit curves and valley curves. **Pavement Design Engineering:** Pavement types, components of flexible & rigid pavements, Pavement Design Factors, Flexible Pavement Design - Design strategies, CBR Method, Burmister's Layered Theory, IRC 37-2001 Guidelines. Rigid Pavement Design - General Design Considerations, Stresses in concrete pavements, Joints, Design of Rigid Pavements as per IRC:58-2002 Guidelines. **Pavement Drainage: Necessity, Analysis and Design of Surface and Sub-grade drainage system** **Highway Construction:** Equipment, Stages of Pavement Construction, Earthwork, Stabilization of Soil, Bituminous Pavement Construction and Cement Concrete Pavement Construction. **Highway Maintenance:** Pavement Distress – causes and remedial measures. **Traffic Infrastructure Design:** Properties of Traffic Engineering Elements – Introduction, Vehicle Characteristics, Human Factors and Driver Characteristics, Road Characteristics, Control Mechanisms and Terminal Facilities. Traffic Studies, Traffic Operations – Traffic Regulations, Traffic Control Devices - Traffic Signs, Traffic signals, Road Markings and Islands. Traffic Stream Parameters and their Relations; Design of Traffic Signals, Design of Intersections – Intersection at Grade and grade separated Intersections.

TEXT BOOKS:

1. Principles of Transportation Engineering by Partha Chakroborty and Animesh Das. Prentice Hall of India, New Delhi.
2. Highway Engineering by S.K.Khanna & C.J.Justo, Nemchand & Bros., Latest Edition.

REFERENCE BOOKS:

1. Principles of pavement design – Yoder & Wit zora – Jhonwilley & Sons
2. Principles and practices of highway Engineering by Dr. L. R. Kadiyali & Dr. N. B. Lal Khanna publishers, Latest Edition.
3. Transportation Engineering by C. Jotin Khisty, B.Kent Lall, Prentice Hall of India, New Delhi
4. Traffic Engineering and Transportation Planning by L.R.Kadiyali, Khanna Publishers.

Er. P. K. Singh

L	T	P	Cr
3	1	0	4

K L UNIVERSITY
FOUNDATION ENGINEERING (11CE302)

SYLLABUS

Bearing Capacity of Shallow Foundations: Basic definitions, Principal modes of soil failures, Terzaghi's bearing capacity theory/ equation and its modifications for square, rectangular and circular foundation, Skempton's bearing capacity analysis for clays, Meyerhof's analysis, Hansen's bearing capacity theory, Vesic's bearing capacity theory, IS code recommendations for bearing capacity, Bearing capacity of granular soils based on SPT value and Static cone resistance, Bearing capacity of footings on layered soils, Factors influencing bearing capacity, Allowable bearing pressure, General requirements of foundations, Factors affecting location and depth of foundation, Choice of type of foundations, Steps involved in the proportioning of footings. **Pile Foundations:** Use of piles, Types of piles, Construction, Selection of pile type, Types of foundations to suit subsoil conditions, Pile load capacity, Static formulae, Dynamic formulae, Load tests, on piles, Group action of piles, Load carrying capacity of pile groups, Negative skin friction, Piles subjected to uplift loads. **Well Foundations:** Types of wells and caissons, components of well foundation, shapes of wells, depth of a well foundation, forces acting on a well foundation, lateral stability of well foundation, construction and sinking of a well. **Settlement Analysis:** Consolidation settlement, Immediate settlement, Corrections to settlement due to consolidation, Settlement in different soil types/Settlement from field tests, Allowable settlement, Settlement of pile group. **Stability of Slopes:** Infinite slopes and translational slides, Definitions of factor of safety, Finite Slopes-Forms of slip surface, Limiting equilibrium method and Critical stages in stability, Total stress and effective stress methods of analysis, $\phi_u = 0$ Analysis (total analysis), $c - \phi$ analysis - method of slices, Location of the most critical circle, Friction circle method, Taylor's stability number. **Earth Pressure and Retaining Walls:** Effect of wall movement on earth pressure, Earth pressure at rest, Rankine's theory of earth pressure, Coulomb's theory of earth pressure, Coulomb's equation for $c = 0$ back fills, Cullman's graphical method, Passive earth pressures-Friction circle method, Design considerations retaining walls.

TEXT BOOK:

1. Basic and Applied Soil Mechanics by Gopal Ranjan and ASR Rao, New Age International Publishers, Second Edition, 2007.

REFERENCE BOOKS:

1. Foundation Analysis and Design by J.E. Bowles, MacGraw Hill, 1996.
2. Soil Mechanics and Foundation Engineering by V. N. S. Murthy, CBS Publishers & Distributors, New Delhi.
3. Geotechnical Engineering Principles and Practices by Donald P. Coduto, Man-Chu Ronald Yeung and William A. Kitch, PII Learning Pvt. Ltd., Second Edition.
4. Foundation Design by W. C. Teng, Prentice hall

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L	T	P	Cr
3	0	2	4

K L UNIVERSITY
FOUNDATION ENGINEERING (13CE308)

SYLLABUS

Bearing Capacity Of Shallow Foundations: Introduction, Basic definitions, Principal modes of soil failures, Terzaghi's bearing capacity theory/ equation and its modifications for square, rectangular and circular foundation, Skempton's bearing capacity analysis for clays,

IS code recommendations for bearing capacity, Bearing capacity of granular soils based on SPT value and Static cone resistance, Bearing capacity of footings on layered soils, Factors influencing bearing capacity, Allowable bearing pressure, General requirements of foundations, Factors affecting location and depth of foundation, Choice of type of foundations, Steps involved in the proportioning of footings, **Pile Foundations:** Use of piles; Types of piles, Construction, Selection of pile type, Types of foundations to suit subsoil conditions, Pile load capacity, Static formulae, Dynamic formulae, Load tests, on piles, Group action of piles, Load carrying capacity of pile groups, Negative skin friction, Piles subjected to uplift loads, **Well Foundations:** Types of wells and caissons, components of well foundation, shapes of wells, depth of a well foundation, forces acting on a well foundation, lateral stability of well foundation, construction and sinking of a well, **Settlement Analysis:** Consolidation settlement, Immediate settlement, Corrections to settlement due to consolidation, Settlement in different soil types/Settlement from field tests, Allowable settlement, Settlement of pile group, **Stability of Slopes:** Infinite slopes and translational slides, Definitions of factor of safety, Finite Slopes-Forms of slip surface, Limiting equilibrium method and Critical stages in stability, Total stress and effective stress methods of analysis, $\sigma_u = 0$ Analysis (total analysis), $c - \phi$ analysis - method of slices, Location of the most critical circle, Friction circle method, Taylor's stability number, **Earth Pressure and Retaining Walls:** Effect of wall movement on earth pressure, Earth pressure at rest, Rankine's theory of earth pressure, Coulomb's theory of earth pressure, Coulomb's equation for $c = 0$ back fills, Cullman's graphical method, Passive earth pressures-Friction circle method, Design considerations retaining walls.

TEXT BOOK:

1. Basic and Applied Soil Mechanics by Gopal Ranjan and ASR Rao, New Age International Publishers, Second Edition, 2007.

REFERENCE BOOKS:

1. Foundation Analysis and Design by J.E. Bowles, MacGraw Hill, 1996.
2. Soil Mechanics and Foundation Engineering by V. N. S. Murthy, CBS Publishers & Distributors, New Delhi.
3. Geotechnical Engineering Principles and Practices by Donald P. Coduto, Man-Chu Ronald Yeung and William A. Kitch, PHI Learning Pvt. Ltd., Second Edition.
5. Foundation Design by W. C. Teng, Prentice hall

Signature

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K L UNIVERSITY

DESIGN OF STEEL STRUCTURES (11CE306)

SYLLABUS:

Materials and Structural Fasteners: Rolled steel sections, Common steel structures, Advantages and Disadvantages, Types of steel, properties of structural steel, Special considerations in steel design, Loads and Load combinations, Principles of Limit state design, Types of bolted and welded joints, Advantages and disadvantages of bolted and welded joints, Design of bolts, Design of welds. **Tension Members:** Types of sections, Net sectional area, Permissible stress, Design of axially loaded tension member, Design strength of a Tension member, Design Procedure-Tension member splice-Lug angles. **Compression Members:** Buckling class of Cross Section-Slenderness Ratio-Design compressive Stress and Strength-Shapes of compression members-Design of compression members, Design of lacing and battening type columns – Design of column bases – Gusseted base. **Beams:** Design of laterally supported beam, Design of Laterally unsupported beam, Bending strength of laterally supported beam, Shear strength of laterally supported beam, Web buckling, Web crippling and unsupported beams – Effective length for lateral torsional buckling, Built up beams – design of purlin -design of grillage beams. **Design of Bolted and Welded Beam Connection:** Types- framed connection- unstiffened seated-stiffened seated-small moment resistant-large moment resistant connections – For both Bolted and welded.

TEXT BOOKS:

1. Steel Structures (Design and Practice) by N Subramanian. Oxford University Press, New Delhi, 2010.
2. Indian standard code of practice for General Construction in Steel (IS: 800-2007); Bureau of Indian standards New Delhi

REFERENCE BOOKS:

1. Design of steel structures by limit state method by S.S. Bhavikatti. I.K International Publishing House Pvt. Ltd. New Delhi-110016
2. Limit state design of Steel Structures by S.K Duggal, Tata McGraw Hill publishing company Limited, New Delhi- 110008.
3. Limit State Design in Structural Steel by M R Shiyekar, PHI learning private limited, New Delhi, 2011.



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K L UNIVERSITY

DESIGN OF STEEL STRUCTURES (13CE307)

SYLLABUS

Materials and Structural Fasteners: Rolled steel sections, Common steel structures, Advantages and Disadvantages, Types of steel, properties of structural steel, Special considerations in steel design, Loads and Load combinations Principles of Limit state design, Types of riveted and welded joints, Advantages and disadvantages of riveted and welded joints, Design of Rivet, Design of welds, Tension Members: Types of sections Net sectional area-Permissible Stress-Design of axially loaded tension member-Design strength of a Tension member- Design Procedure-Tension member splice-Lug angles, Compression Members: Buckling class of Cross Section-Slenderness Ratio-Design compressive Stress and Strength-Shapes of compression members-Design of compression members – Design of lacing and battening type columns Design of column bases – Gusseted base, Beams: Design of laterally supported beam, Design of Laterally unsupported beam, bending strength of laterally supported beam, Shear strength of laterally supported beam, Web buckling, Web crippling and unsupported beams – Effective length for lateral torsional buckling, Built up beams – design of purlins -design of grillage beams, Design of Bolted and Welded Beam Connection: Types- framed connection- unstiffened seated-stiffened seated-small moment resistant-large moment resistant connections – For both Bolted and welded, Design of Beam Columns: Introduction-behaviour-second order moments-elastic torsional buckling-interaction-Eccentricity of load-Eccentrically loaded base plates. ~~Roof trusses, Roof frames, Roof and side coverings, Design loads, design of purlin, Sheeting, design of column bases, design of trusses and elements of truss, Grouping of members- end bearing~~

TEXT BOOKS:

1. Steel Structures (Design and Practice) by N Subramanian, Oxford University Press, New Delhi, 2010.

REFERENCE BOOKS:

1. Design of steel structures by limit state method by S.S. Bhavikatti, I.K International Publishing House Pvt. Ltd, New Delhi-110016.
2. Limit state design of Steel Structures by S.K Duggal, Tata McGraw Hill publishing company Limited, New Delhi- 110008.
3. Limit State Design in Structural Steel by M R Shiyekar, PHI learning private limited, New Delhi, 2011.

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K L UNIVERSITY

WATER RESOURCES ENGINEERING (11CE304)

Syllabus:

Hydrology: Hydrologic cycle – Rainfall measurement and estimation. -- evaporation, infiltration Hydrographs- Unit hydrograph, Method of construction of unit hydrograph for different duration, Method of super position, S-hydrograph. **Ground Water Hydrology** Types of aquifers Aquifer, Specific yield; Specific retention; Darcy's Law, Well hydraulics; Steady radial flow to a well-Dupuit's theory for confined and unconfined aquifers; Tube wells; Open wells; Yield of an open well-Constant level pumping test, Recuperation test. **Irrigation:** Duty, delta, Estimation of evapo-transpiration -- crop water requirements **Irrigation Channels:** design of lined and unlined canals --Silt theories--Kennedy's theory, Lacey's regime theory. Reservoir and channel routing **Dams:** Designs of gravity dams and earthen dams. Classification of spillways.

TEXT BOOK:

1. Irrigation Engineering and Hydraulic Structure by S. K. Garg; Khanna Publishers, Delhi.
2. Asawa G.L. (2005) Irrigation and Water Resources Engineering New Age International Ltd.

Reference Books

1. Engineering hydrology by K. Subramanyam, Tata McGraw Hill, New Delhi.
2. R.K. Linsley and J.L.H.Paulhus "Water Resources Engineering by McGraw-Hill Book Company
3. Irrigation Water Resources and Water Power Engineering by, Dr. P.N. Modi, Standard book house, New Delhi.
4. Applied Hydrology by Ven Te Chow, McGraw-Hill Book Company.



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K L UNIVERSITY

WATER RESOURCES ENGINEERING (13CE310)

SYLLABUS

Hydrology: Distribution of water over earth, characteristics of rainfall in India, major river basin of India, surface water and ground water potential. **Hydrology:** Definition, Hydrologic cycle; **Precipitation:** Measurement of precipitation, Rain gauge network, Classification of storms, Detection of heterogeneity in rainfall records, Estimation of missing data, mean rainfall over an area, frequency of point rainfall, Interception, Evaporation, Depression storage, Infiltration, Infiltration index, Runoff; Factors affecting runoff; Computation of run-off, Estimation of design peak rate of runoff. **Hydrographs:** Introduction, Effect of basin shape on hydrograph, components of hydrograph, Unit hydrograph; use and application of the unit hydrograph for flood hydrograph resulting from rainfall of unit duration and two or more periods of rainfall; Method of construction of unit hydrograph in different duration; Method of super position, S-hydrograph. **Ground Water Hydrology:** Forms of sub-surface water; Types of aquifers Aquifer; Aquitard, Aquicludes; Aquifuge; Specific yield; Specific retention; Darcy's Law, Well hydraulics; Steady radial flow to a well-Dupuit's theory for confined and unconfined aquifers; Tube wells; Open wells; Well shrouding and well development; Yield of an open well-Constant level pumping test, Recuperation test.

Soil-Water-Plant Relationship: Impacts of soil, soil texture and soil structure, Water holding capacity of soil, Soil water characteristics of soil water, Soil moisture tension, Soil moisture stress, Soil moisture potential, Saturation capacity, Field capacity, Moisture equivalent, Permanent wilting point, temporary wilting, ultimate wilting, Available moisture, Readily available moisture, Salinisation in soil and water, reclamation of salt affected soils. **Water Requirement of Crops:** Soil moisture conditions, gross command area, culturable command area, culturable, fallow and uncultivated area, kor depth and kor period, Crop period and Base period, Duty, available duty, relation between duty and delta, factors affecting duty; methods of improving duty, crop seasons and crops of India, consumptive use of water (evapo-transpiration), Consumptive irrigation requirement, Net irrigation requirement, Estimating depth and frequency of irrigation, Irrigation efficiencies, Irrigation methods, types of irrigation system, Irrigation Channels, Classification of canal, Canal alignment, Intensity of irrigation, Net and Gross sown area, Net and Gross irrigated areas, time factor, capacity factor, Inundation canals, Cross section of an irrigation channel, Balancing depth, Borrow pit; Spoil bank, Land width, Maintenance of irrigation channels, Silt theories-Kennedy's theory, Lacey's regime theory, Reservoir Planning: Investigations for reservoir planning, Selection of site for a reservoir, Zone of storage in a reservoir, Storage capacity and yield; Mass inflow curve and demand curve, Estimation of reservoir capacity for a specified yield from the mass inflow curve; Determination of safe yield from a reservoir of a given capacity, Sediment flow in streams; Reservoir sedimentation, life of reservoir, Reservoir sediment control;

Signature

flood routing; ~~Method of trial and error method~~ ~~Graphical Method~~ (Inflow-storage-discharge curves method), ~~Trial and error method~~ Dams: Classification; Gravity dams, Arch dams, Buttress dams, Steel dams, Timber dams, Earth dams and rock fill dams; Physical factors governing selection of type of dam and selection of site for a dam. **Earth Dams:** Types of earth dams; Causes of failure of earth dams; Criteria for safe design of earth dams; Section of an earth dam; Design to suit available materials; Seepage analysis, Seepage control measures; Slope protection.

Gravity Dams: Forces acting on a gravity dam; Combination of loading for design; Modes of failure and criteria for stability requirements; Stability analysis; Elementary profile of a gravity dam; Practical profile of a gravity dam; Limiting height of a gravity dam; High and low gravity dams; Design of gravity dams—single step method.

TEXT BOOK:

1. R.K. Linsley & J.L.H. Paulhus, 'Water Resource Engineering', McGraw Hill Book Co.
2. Engineering hydrology by K. Subramanyam, Tata McGraw Hill, New Delhi.
3. Irrigation Engineering and Hydraulic Structure by S.K. Garg; Khanna Publishers, Delhi.
4. Asawa, G.L. (2005). Irrigation and Water Resources Engineering, New Age International Ltd.

Reference Books

1. Irrigation Water Resources and Water Power Engineering by, P. N. Modi, Standard book house, New Delhi.
2. Elementary Hydrology by V. P. Singh, PHI Publishers, New Delhi.
3. Applied Hydrology by Ven Te Chow, McGraw-Hill Book Company.



Department of Civil Engineering					
Department Academic Committee Meeting (11/10/2012 & 14/03/2013)					
Annexure-II: Proposed M.Tech 2013-14 Course Structure					
Master of Technology in Structural Engineering (SE)					
S.No	Course Name	L-T-P	Cr	Pre-Req.	Remarks
1	Applied Mathematics	3-2-0	4	NIL.	NIL.
2	Theory of Elasticity	3-2-0	4	NIL.	NIL.
3	Structural Dynamics	3-0-2	4	NIL.	NIL.
4	Advanced Prestressed Concrete	3-0-2	4	NIL.	NIL.
5	REPAIR AND REHABILITATION OF STRUCTURES	3-0-0	3	NIL.	NIL.
6	GEO TECHNICAL EARTH QUAKE ENGINEERING	3-0-0	3	NIL.	NIL.
7	Seminar	0-0-4	3	NIL.	NIL.
8	Finite Element Analysis	3-0-2	4	NIL.	NIL.
9	Bridge Engineering	3-2-0	4	NIL.	NIL.
10	Earthquake Resistant Design of Structures	3-0-2	4	NIL.	NIL.
11	Theory of Plates and Shells	3-2-0	4	NIL.	NIL.
12	INDUSTRIAL STRUCTURES	3-0-0	3	NIL.	NIL.
13	GREEN BUILDINGS	3-0-0	3	NIL.	NIL.
14	Term Paper	0-0-4	3	NIL.	NIL.
15	DISSERTATION	0-0-72	72	NIL.	NIL.

Signature

K L UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING
MINUTES OF DEPARTMENT ACADEMIC COMMITTEE MEETING

Meeting Particulars

Type of Meeting	INTERNAL ACADEMIC DISCUSSIONS
Department conducting the meeting	CIVIL ENGINEERING
Date of the meeting	10-10-13
Time of the meeting	9.30 A.M
Venue of the meeting	HoD Chamber (Civil)

The following members were present:

S.No.	Name	Designation of the person	Position of the person in the meeting
1	Dr. S. K. Gupta	Professor & HoD	Chairman
2	Mr. B. G. Rahul	Assistant Professor	Convener
3	Mr. S. Kanakambara Rao	Associate Professor	Member
4	Mr. P. Sundara Kumar	Associate Professor	Member
5	Dr. A. Siva Sankar	Associate Professor	Member
6	Dr. K. Rajasekhara Reddy	Associate Professor	Member
7	Mr. K. Shyam Chamberlin	Assistant Professor	Member
8	Ms. K. Prasanthi	Assistant Professor	Member
9	Mr. Adithya Chebrolu (1010066)	IV/IV B. Tech Student	Member
10	Ms. Y. Divya (1010086)	IV/IV B. Tech Student	Member

Agenda:

1. To discuss the feedbacks received from stake holders on curriculum
2. To propose the curriculum for B. Tech 2014-15 admitting batch
3. Any other points with the permission of the DAC chairman

Gupta

The following points were discussed and resolved:

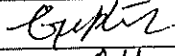


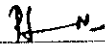

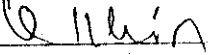
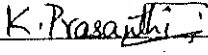
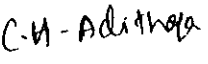
1. Upon discussing on feedbacks received from stake holders on curriculum, the DAC members discussed and resolved to recommend the following to forth coming BOS:
 - a. Student feedback:
 - i. Professional electives that cater to needs of industry are identified domain wise and the same is presented Annexure-I.
 - ii. Syllabus of all the professional core courses were reviewed and topics having less significance are removed to cover the syllabus within the stipulated time frame and the same is given in Annexure-I.
 - iii. Syllabus of professional communication skills is reviewed and revised and the same is given in Annexure-I.
 - b. Parents feedback:
 - i. Syllabus of all the professional core and elective courses were reviewed and revised by considering the competitive examinations, higher education and industry needs and the same is given in Annexure-I.
 - c. Alumini feedback:
 - i. Syllabus of the professional elective courses such as were reviewed and revised considering getting admission in to higher education of premier institutes and industry needs
2. Upon considering above mentioned feedbacks and surveying through the policy documents in relevance to APIIC, Human Resource Development Policy, Govt. of India, National Skill Development Corporation, Govt. of India, Confederation of Indian Industries, The Associated Chambers of Commerce of India (Assocham), The National Association of Software and Services Companies (NASSCOM), ABET, NBA norms, AICTE statutory norms and American Society of Civil Engineers (ASCE), it is resolved to propose enclosed Program development documents and curriculum for B.Tech-Civil Engineering Program for 2014-15 for BOS approval (Annexure-I).



Dr. S.K. Gupta
(Head of the Department)

K L University
Department of Civil Engineering
Department Academic Committee (DAC)

The following members attended the meeting on 10th October 2013 at 9:30 A.M.:

S.No.	Name	Designation of the person	Signature
1	Dr. S. K. Gupta	Professor & HoD	
2	Mr. B. G. Rahul	Assistant Professor	
3	Mr. S. Kanakambara Rao	Associate Professor	
4	Mr. P. Sundara Kumar	Associate Professor	
5	Dr. A. Siva Sankar	Associate Professor	
6	Dr. K. Rajasekhara Reddy	Associate Professor	
7	Mr. K. Shyam Chamberlin	Assistant Professor	
8	Ms. K. Prasanthi	Assistant Professor	
9	Mr. Adithya Chebrolu (1010066)	IV/IV B. Tech Student	
10	Ms. Y. Divya (1010086)	IV/IV B. Tech Student	