

Board of studies meeting which was held on 08-07-2016 at 10:30 A.M in
College of Pharmacy, K L University

Date: 8/07/2016

To
The Registrar,
KL UNIVERSITY,
Vaddeswaram.

Sub: - Approval for Programe structure, Academic calendar & Syllabus
From Board of studies -Reg

Respected sir,

This is to bring to your kind notice that K L College of Pharmacy, K L University started B.Pharmacy course for the academic year 2016-2017. Hence I kindly request you to approve the programe structure, academic calendar & syllabus to conduct four year B.Pharmacy course in K L University.

Thanking you,

Yours Sincerely,
Principal
KL College of Pharmacy
KL University.
Principal
KL College of Pharmacy
KL University, Green Fields
Vaddeswaram, Guntur-522 502.

The following BOS members attended the meeting and agreed to approve the above .

S no	Name of the Person	Position of the person in the meeting	Signature
1	Dr G chakravarthi, Principal, KL College of Pharmacy, KL University	Chairman	<i>G. Chakravarthi</i> 8/7/16
2	Dr A Prameela Rani, Principal, Acharya nagarjuna University	External member	<i>Prameela</i> 8/7/16
3	Dr K Satyanarayana, Professor & Principal, Mother therissa college of Pharmacy, Khammam	External Member	<i>Satya</i>
4	Dr K Srinivasulu, HOD-Biotech, KL University	Internal Member	<i>K. Srinivasulu</i> 8/7/16
5	Dr Subhakara raju, Professor, KL College of Pharmacy, KL University	Internal Member	<i>RM.</i>
6	Dr B J K Singh, Professor & Assoc Dean, KL University	Internal Member	<i>B. J. K. Singh</i>

Paul
Associate Professor
KL College of Pharmacy


**MINUTES OF THE MEETING OF THE BOARD OF STUDIES IN PHARMACY
HELD ON 08-07-2016 AT 10.30 A.M IN THE COLLEGE PHARMACY, K L
UNIVERSITY.**

1. The syllabus for B.Pharmacy course 2016-17
 - It was resolved to approve the syllabus for B.Pharmacy course from the Academic year 2016-17 onwards.
2. It was resolved to approve the Academic Calendar for 2016-17.

G. Chellamani
8/7/16
[Bos chairman]

[Signature]
Associate Professor
K L College of Pharmacy
K L University, Green Fields
Vadakkanchery, Kottayam 686 502.

		CO3	Know the preparation and analysis of inorganic medicinal compounds	2		1												
		CO4	Know their diagnostic applications	2		1												
		CO5	Apply the knowledge to prepare various inorganic pharmaceuticals	1	2													
16PH1208: Community Pharmacy	3	CO1	Know the history of profession of pharmacy	2							3							Course provides idea about Role and responsibility of community pharmacist, Patient counselling and patient medication.
		CO2	Understand the basics of different dosage forms	2							3							
		CO3	Understand the pharmaceutical incompatibilities and pharmaceutical calculations	2							3							
		CO4	Understand the professional way of handling the prescription	2							3							
16PH1209: Pharmaceutical Organic Chemistry II	5	CO1	write the structure, name and the type of isomerism of the organic compound		1										2			Course provides idea about reactions of benzene, structure and uses of DDT, Sacharin, BHC etc.
		CO2	write the reaction, name the reaction and orientation of reactions		1										2			
		CO3	account for reactivity/stability of compounds,		1										2			
		CO4	identify/confirm the identification of organic compound		1										2			
		CO5	Apply the knowledge to synthesize various organic compounds		3										2			
16PH1210 : Pharmaceutical analysis I	5	CO1	understand the principles of volumetric and electro chemical analysis	2	1													Course enhances skill for Preparation and standardization of various molar and normal solutions.
		CO2	carryout various volumetric and electrochemical titrations	2	1													
		CO3	develop analytical skills	2	1													
		CO4	Reporting analytical result and data integrity	2	1													
		CO5	Perform various analytical experiments	1	2													
16PH12011:	5	CO1	to know the techniques in the	3										2				Course gives knowledge on

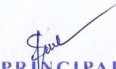

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Pharmacognosy I		cultivation and production of crude drugs																		various sources of drugs, adulteration of drugs and Plant tissue culture.
	CO2	to know the crude drugs, their uses and chemical nature	3																2	
	CO3	know the evaluation techniques for the herbal drugs	3																2	
	CO4	Understand the microscopic and morphological features of crude drugs	3																2	
	CO5	Perform the microscopic experiments and morphological evaluation of crude drugs	1	3																
16PH1212 : Environmental science	3	CO1	Create the awareness about environmental problems among learners.					1											2	Course gives Knowledge on renewable and non-renewable resources, Structure and functions of ecosystems and environment pollution.
		CO2	Impart basic knowledge about the environment and its allied problems.					1											2	
		CO3	Develop an attitude of concern for the environment.					1											2	
		CO4	Motivate learner to participate in environment protection and environment improvement.																2	
16PH1213: Pharmaceutical biochemistry	5	CO1	Understand the principles of chemistry in biology	2				1												Course enhances knowledge on biomolecules(carbohydrate, proteins, lipids).
		CO2	Understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes.	2				1												
		CO3	Understand the metabolism of nutrient molecules in physiological and pathological conditions.	2				1												
		CO4	Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins.	2				1												
		CO5	Apply the knowledge to estimate	1	2															


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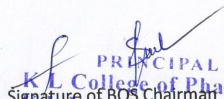
16PH2114: PHYSICAL PHARMACEUTI CS-I	6		various biochemical parameters in physiological systems																	Course enhances skill for determination of refractive index, optical rotation, dielectric constant, dipole moment etc.		
		CO1	Understand the principles of physical chemistry in pharmaceutical technology	3	1																	
		CO2	Understand various physicochemical properties of drug molecules in the designing the dosage forms	3	1																	
		CO3	Know the principles of chemical kinetics & to use them for stability testing nad determination of expiry date of formulations	3	1																	
		CO4	Understand the use of physicochemical properties in the formulation development and evaluation of dosage forms.	3	1																	
		CO5	Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.	2	3																	
16PH2115 : Anatomy Physiology & Pathophysiology	6																				Course gives knowledge on organization of nervous system, brain structure, anatomy of GIT, formation and role of ATP.	
		CO1	Explain the gross morphology, structure and functions of various organs of the human body.	2				1														
		CO2	Describe the various homeostatic mechanisms and their imbalances.	2				1														
		CO3	Identify the various tissues and organs of different systems of human body.	2				1														
		CO4	Perform the hematological tests like blood cell counts, haemoglobin estimation, bleeding/clotting time etc and also record blood pressure, heart rate, pulse and respiratory volume.	2				1														


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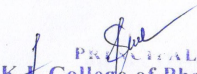
		CO5	Apply the knowledge to perform various physiology experiments	1	2																							
16PH2116 : PHARMACEUTICAL ENGINEERING	6	CO1	To know various unit operations used in Pharmaceutical industries.	3				1																	Course enhances skill for Drying, mixing of pharmaceuticals Filtration, and centrifugation			
		CO2	To understand the material handling techniques.	3				1																				
		CO3	Understand various processes involved in pharmaceutical manufacturing process.	3				1																				
		CO4	Aquire knowledge on operation of pharmaceutical manufacturing equipment	3				1																				
		CO5	Demonstrate the ability to use and operate pharmaceutical manufacturing equipment	3	2																							
16PH2217: Computer applications	6	CO1	know the various types of application of computers in pharmacy					3																	Course provides concept on information system and software.			
		CO2	know the various types of databases					3																				
		CO3	know the various applications of databases in pharmacy					3																				
		CO4	Know the web based tools for pharmacy practice					3																				
		CO5	Apply the knowledge to design and develop digital tools for pharmaceutical applications														3											
16PH2218: Pharmaceutical microbiology	6	CO1	Understand methods of identification, cultivation and preservation of various microorganisms	2					1																Course enhances skill for staining, sterilization methods, Sterility testing of products (solids, liquids, ophthalmic and other sterile products).			
		CO2	To understand the importance and implementation of sterilization in pharmaceutical processing and industry	2					1																			


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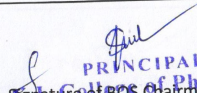
		CO3	Learn sterility testing of pharmaceutical products.	2		1												
		CO4	Understand microbiological standardization of Pharmaceuticals.	2		1												
		CO5	Apply microbiological testing tools in pharmaceutical products.		2	1												
16PH2219: MEDICINAL CHEMISTRY – I	6	CO1	understand the chemistry of drugs with respect to their pharmacological activity	3														Course gives knowledge on drug metabolism, Biosynthesis and catabolism of catecholamine
		CO2	understand the drug metabolic pathways, adverse effect and therapeutic value of drugs	3														
		CO3	know the Structural Activity Relationship (SAR) of different class of drugs	3		2												
		CO4	write the chemical synthesis of some drugs	3		2												
		CO5	Perform chemical synthesis of some drugs			2						3						
16PH2220 : PHYSICAL PHARMACEUTI CS-II	6	CO1	Understand the principles of physical chemistry in pharmaceutical technology	2		1												Course enhances skill for determining particle size, Stabilization of medicinal agents against common reactions like hydrolysis & oxidation.
		CO2	Understand various physicochemical properties of drug molecules in the designing the dosage forms	2		1												
		CO3	Know the principles of chemical kinetics & to use them for stability testing nad determination of expiry date of formulations	2		1												
		CO4	Understand the use of physicochemical properties in the formulation development and evaluation of dosage forms.	2		1												
		CO5	Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.		2	1												


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16PH2221 : PATHOPHYSIOLOGY	4	CO1	Understand the conditions leading to a disease	2						1						Course gives knowledge on Cell injury, inflammation Pathogenesis of cardiovascular disease. diabetes, rheumatoid arthritis, gout. cancer, UTI etc.	
		CO2	Describe the etiology and pathogenesis of the selected disease states;	2							1						
		CO3	Name the signs and symptoms of the diseases; and	2							1						
		CO4	Mention the complications of the diseases.	2							1						
16PH2222 : PHARMACOLOGY-I	6	CO1	Understand the pharmacological actions of different categories of drugs	3			2				1					Course enhances knowledge on absorption, distribution, metabolism and excretion of drugs, adverse drug reactions.	
		CO2	Explain the mechanism of drug action at organ system/sub cellular/ macromolecular levels.	3			2										
		CO3	Apply the basic pharmacological knowledge in the prevention and treatment of various diseases.	3			2										
		CO4	Understand the effect of drugs on physiological systems	3			2										
		CO5	Observe the effect of drugs on animals by simulated experiments				3										
16PH3123 : Medicinal Chemistry II	4	CO1	understand the chemistry of drugs with respect to their pharmacological activity	3			2									Course gives idea about CVS drugs, diuretics coagulant and anticoagulant.	
		CO2	understand the drug metabolic pathways, adverse effect and therapeutic value of drugs	3			2										
		CO3	know the Structural Activity Relationship (SAR) of different class of drugs	3			2										
		CO4	write the chemical synthesis of some drugs	3			2										
		CO5	Perform chemical synthesis of some drugs		3										2		


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16PH3124: Industrial Pharmacy I	6	CO1	Know the design and layout of various procedures in pharmaceutical industry	3															1			
		CO2	Know the various pharmaceutical dosage forms and their manufacturing techniques.	3																1		
		CO3	Know various considerations in development of pharmaceutical dosage forms	3																1		
		CO4	Understand the quality control of solid, liquid and semisolid dosage forms	3																1		
		CO5	Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality		3															2		
16PH3125: Pharmacology II	6	CO1	Understand the mechanism of drug action and its relevance in the treatment of different diseases	3					1													
		CO2	Apply the basic pharmacological knowledge in the prevention and treatment of various diseases.	3					1													
		CO3	Understand the effect of drugs on physiological systems	3					1													
		CO4	Appreciate correlation of pharmacology with related medical sciences	3					1													
		CO5	Perform various invitro experiments to demonstrate receptor actions using isolated tissue preparation		3				2													
16PH3126 : Pharmacognosy and Phytochemistry II	6	CO1	to know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents	3																1		
		CO2	to understand the preparation and development of herbal formulation.	3																1		
		CO3	to understand the herbal drug interactions	3																1		
		CO4	Understand the isolation	3																1		
		Course enhances skill for formulation of injections, sterile powders, large volume parenterals and lyophilized products.																				
		Course gives knowledge on pharmacology of drugs acting on endocrine system, steroids and bioassay.																				
		Course enhances knowledge on metabolic pathways in higher plants and their determination.																				


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			procedures and identification of phytoconstituents																		
		CO5	to carryout isolation and identification of phytoconstituents	3											2						
16PH3127 : PHARMACEUTI CAL JURISPRUDENC E	4	CO1	The Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals.	3											1						
		CO2	Various Indian pharmaceutical Acts and Laws	3												1					
		CO3	The regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals	3													1				
		CO4	The code of ethics during the pharmaceutical practice	3													1				
16PH3228: MEDICINAL CHEMISTRY – III	6	CO1	Understand the importance of drug design and different techniques of drug design.	3			2														
		CO2	Understand the chemistry of drugs with respect to their biological activity.	3			2														
		CO3	Know the metabolism, adverse effects and therapeutic value of drugs.	3			2														
		CO4	Know the importance of SAR of drugs.	3			2														
		CO5	Understand the importance of drug design and different techniques of drug design.		3												2				
16PH3229: PHARMACOLOGY-III	6	CO1	understand the mechanism of drug action and its relevance in the treatment of different infectious diseases	3			1														
		CO2	comprehend the principles of toxicology and treatment of various poisonings and	3			1														
		CO3	appreciate correlation of pharmacology with related medical	3			1														

Course enhances knowledge on Drugs and Cosmetics Act, 1940 and its rules 1945
Drugs and Cosmetics Act, 1940 and its rules 1945, constitution and functions

Drugs Price Control Order (DPCO)

Basic concepts and application of prodrugs design, Knowledge on Antiviral agents.

Pharmacology of drugs acting on Respiratory system, general principles of chemotherapy. Protein drugs, target drugs to antigen.

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			sciences.																				
		C04	To be able to ascertain the pharmacodynamics of medicinal agents	3			1																
		C05	Perform various invitro experiments to demonstrate receptor actions using isolated tissue preparation		3		2																
16PH3230 : HERBAL DRUG TECHNOLOGY	6	C01	understand raw material as source of herbal drugs from cultivation to herbal drug product	2												3				Herbal-Drug and Herb-Food Interactions. Conventional herbal formulations like syrups, mixtures and tablets.			
		C02	know the WHO and ICH guidelines for evaluation of herbal drugs	2													3						
		C03	know the herbal cosmetics, natural sweeteners, nutraceuticals	2														3					
		C04	appreciate patenting of herbal drugs, GMP .	2														3					
		C05	Prepare various herbal formulations		3												2						
16PH3231 : BIOPHARMACE UTICS AND PHARMACOKIN ETICS	4	C01	Understand the basic concepts in biopharmaceutics and pharmacokinetics and their significance.	2													1				Kinetics of protein binding, Clinical significance of protein binding of drugs.		
		C02	Use of plasma drug concentration-time data to calculate the pharmacokinetic parameters to describe the kinetics of drug absorption, distribution, metabolism, excretion, elimination.	2														1					
		C03	To understand the concepts of bioavailability and bioequivalence of drug products and their significance.	2															1				
		C04	Understand various pharmacokinetic parameters, their significance & applications.	2															1				

			to commercial batch																									
		CO3	Know different Laws and Acts that regulate pharmaceutical industry	2																								
		CO4	Understand the approval process and regulatory requirements for drug products	2																								
16PH4136: PHARMACY PRACTICE	4	CO1	know various drug distribution methods in a hospital								2	3																
		CO2	appreciate the pharmacy stores management and inventory control									2	3															
		CO3	monitor drug therapy of patient through medication chart review and clinical review										2	3														
		CO4	obtain medication history interview and counsel the patients										2	3														
16PH4137: NOVEL DRUG DELIVERY SYSTEMS	4	CO1	Know about current developments in drug delivery technologies																									
		CO2	To understand various approaches for development of novel drug delivery systems.																									
		CO3	To understand the criteria for selection of drugs and polymers for the development of Novel drug delivery systems, their formulation and evaluation																									
		CO4	To be able to design or recommend a drug delivery system																									
16PH4138. PRACTICE SCHOOL	6																											
16PH4239: BIOSTATISTICS AND RESEARCH METHODOLOG Y	4	CO1	Know the operation of M.S. Excel, SPSS, R and MINITAB®, DoE (Design of Experiment)																									
		CO2	Know the various statistical techniques to solve statistical problems																									
		CO3	Appreciate statistical techniques in																									

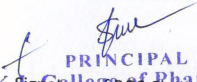
Dispensing of drugs to inpatients, types of drug distribution systems, charging policy and labelling.

advantages and application of polymers in formulation of controlled release drug delivery systems.

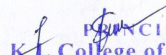
Design of Experiments, Experiential Design Technique, plagiarism

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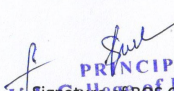
			solving the problems.																			
		CO4	Know the applications of statistics in clinical data management							3	1											
16PH4240: SOCIAL AND PREVENTIVE PHARMACY	4	CO1	Acquire high consciousness/realization of current issues related to health and pharmaceutical problems within the country and worldwide.											3	2					Understanding the concept of prevention and control of disease. HIV AND AIDS control programme, TB, Integrated disease surveillance program (IDSP)		
		CO2	Have a critical way of thinking based on current healthcare development.											3	2							
		CO3	Evaluate alternative ways of solving problems related to health and pharmaceutical issues												3	2						
		CO4	Design a better health care service system												3	2						
		CO1	to provide an understanding of sales and marketing of pharmaceutical products.												3				2			
16PH4241ET. PHARMA MARKETING MA-GEMENT	2 X 4	CO2	Know about various policies for drug inventory management											3				2		Product management in pharmaceutical industry motivating, evaluating, compensation and future prospects of the PSR		
		CO3	Know about retail and wholesale marketing											3				2				
		CO4	Understand business potential and development in product sales and manufacturing												3			2				
		CO1	Know about legal aspects and quality policies for drug manufacturing	3														2				
16PH4242ET: PHARMACEUTI CAL REGULATORY SCIENCE	2 X 4	CO2	Know about the process of drug discovery and development	3													2			Concept of Generic drug product development. Approval processes and timelines involved in Investigational New Drug (IND).		
		CO3	Know the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals	3													2					
		CO4	Know the regulatory approval process and their registration in Indian and international markets	3													2					
		CO1	Know about legal aspects and quality policies for drug manufacturing	3													2					


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16PH4243ET: PHARMACOVIGI LANCE	CO1	Why drug safety monitoring is important?								3							2		WHO international drug monitoring programme, Management of adverse drug reactions.
	CO2	History and development of pharmacovigilance								3							2		
	CO3	National and international scenario of pharmacovigilance								3							2		
	CO4	Dictionaries, coding and terminologies used in pharmacovigilance								3							2		
16PH4244ET. QUALITY CONTROL AND STANDARDIZAT ION OF HERBALS	CO1	know WHO guidelines for quality control of herbal drugs	3														2		WHO Guidelines on current good manufacturing Practices (cGMP) for Herbal Medicines. products.
	CO2	know Quality assurance in herbal drug industry	3														2		
	CO3	know the regulatory approval process and their registration in Indian and international markets	3														2		
	CO4	appreciate EU and ICH guidelines for quality control of herbal drugs	3														2		
16PH4245ET. COMPUTER AIDED DRUG DESIGN	CO1	Design and discovery of lead molecules								3							2		Stages of drug discovery and development. Quantitative Structure Activity Relationship (QSAR)
	CO2	The role of drug design in drug discovery process								3							2		
	CO3	The concept of QSAR and docking								3							2		
	CO4	Various strategies to develop new drug like molecules.								3							2		
16PH4246ET: CELL AND MOLECULAR BIOLOGY	CO1	Summarize cell and molecular biology history.	2							3									Cell and Molecular Biology: Definitions theory and basics and Applications, DNA and the Flow of Molecular Information
	CO2	Summarize cellular functioning and composition.	2							3									
	CO3	Describe the chemical foundations of cell biology.	2							3									
	CO4	Summarize the DNA properties of cell biology.	2							3									
16PH4247ET. COSMETIC SCIENCE	CO1	Principles of formulation and building blocks of skin care products															3	2	Classification of cosmetic and cosmeceutical products. Principles of Cosmetic Evaluation.
	CO2	Principles of formulation and building blocks of Hair care products															3	2	


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		CO3	Role of herbs in cosmetics													3	2	
		CO4	Principles of Cosmetic Evaluation													3	2	
16PH4248ET. EXPERIMENTAL PHARMACOLOGY		CO1	Appreciate the applications of various commonly used laboratory animals.	2	3													
		CO2	Appreciate and demonstrate the various screening methods used in preclinical research	2	3													
		CO3	Appreciate and demonstrate the importance of biostatistics and research methodology	2	3													
		CO4	Design and execute a research hypothesis independently	2	3													
16PH4249ET. ADVANCED INSTRUMENTATION TECHNIQUES		CO1	understand the advanced instruments used and its applications in drug analysis	3	2													
		CO2	understand the chromatographic separation and analysis of drugs.	3	2													
		CO3	understand the calibration of various analytical instruments	3	2													
		CO4	know analysis of drugs using various analytical instruments.	3	2													
16PH4250ET. DIETARY SUPPLEMENTS AND NUTRACEUTICALS		CO1	Understand the need of supplements by the different group of people to maintain healthy life.													3	2	
		CO2	Understand the outcome of deficiencies in dietary supplements.													3	2	
		CO3	Appreciate the components in dietary supplements and the application.													3	2	
		CO4	Appreciate the regulatory and commercial aspects of dietary supplements including health claims.													3	2	
16PH4251PW. PROJECT WORK	6			2	3										1	1		Pharmaceutical product development.


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