



P.K.M Educational Trust (R)

# R.R. COLLEGE OF PHARMACY

Chikkabanavara, Bangalore-560090

Affiliated to Rajiv Gandhi University of Health Sciences Bangalore, and recognised by PCI, AICTE and Govt of Karnataka

Internal Quality Assurance Cell

Course out Comes and Programme outcomes

**B Pharm I Sem**

Name of Course: Human Anatomy and Physiology I

Academic year: 2019-20

Program: B. Pharm I Sem

Faculty in Charge: Mr. Prasad kalahal

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E /C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
<b>CO1</b>	Understand anatomical location and structure of Osseous system, CVS, Sense organs.	R/AP	F/C	PO1, PO6 & PO9
<b>CO2</b>	Understand anatomical location and structure of Skeletal muscles, Lymphatic system & Haemopoietic system.	R/AP	F/C	PO1, PO6 & PO9
<b>CO3</b>	Interpret cell and Tissues.	U	C	PO3
<b>CO4</b>	Analyze the physiology Osseous system, CVS, Sense organs, Skeletal muscles, Lymphatic system & Haemopoietic system.	R/AP	F/C	PO1, PO6 & PO9
<b>CO5</b>	Understand the disorders and diseases associated with Osseous system, CVS, Sense organs.	R/AP	F/C	PO3, PO6, PO11.
<b>CO6</b>	Understand the disorders and diseases associated with Skeletal muscles, Lymphatic system & Haemopoietic system.	R/AP	F/C	PO3, PO6, PO11.



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## Course out Comes and Programme outcomes

Name of Course: Human Anatomy and Physiology I

Academic year: 2019-20

Program: B. Pharm I Sem

Faculty in Charge: Mr. Prasad kalahal

Section: Practical

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E /C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
<b>CO1</b>	Understand anatomical structure of Osseous system and Histology of Tissues.	R/AP	F/C	PO1, PO6 & PO9
<b>CO2</b>	Examine RBC count.	U	C	PO3
<b>CO3</b>	Examine WBC count, Respiratory volums & Blood groups	U	C	PO3
<b>CO4</b>	Understand determination of Heamoglobin, Bleeding time and Clotting time.	R/AP	P	PO1, PO6 & PO9
<b>CO5</b>	Analyze Family planning devices.	R/AP	P	PO3, PO6, PO11.
<b>CO6</b>	Evaluate Organ systems like digestive system Urinary system, Cardiovascular system.	An	MC	PO1, PO6 & PO11



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Internal Quality Assurance Cell

## Course out Comes and Programme outcomes

Name of Course: Pharmaceutical Analysis

Academic year: 2019-20

Program: B. Pharm I Sem

Faculty in Charge: Mrs. Poornima A N

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E /C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3.... PO11
CO1	Explain the Methods of expressing concentration, Preparation, standardization of molar and normal solutions, Errors-their Sources, types, methods to minimize errors.	U	C	PO1
CO2	Describe the Accuracy, precision and significant figures and to develop ,Analytical techniques and Acid-Base titration.	U	C	PO1
CO3	Explain the principles of titration and their indicators, classification, neutralization curves.	U	C	PO1
CO4	Explain the Non Aqueous titration, solvents, types and Precipitation titration,Complexometric titrations and types.	U	C	PO1
CO5	Explain the principals and steps involved in gravimetric, Redox titrations, conductometry.	U	C	PO1
CO6	Explain the principle and concept of potentiometry, polorography and their types.	U	C	PO1, PO4



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## Course out Comes and Programme outcomes

Name of Course: Pharmaceutical Analysis

Academic year: 2019-20

Program: B. Pharm I Sem

Faculty in Charge: Mrs. Poornima A N

Section: Practical

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
<b>C01</b>	Prepare and standardize sodium hydroxide, sulphuric acid; Analyse Ammonium chloride by acid base titration.	U,An,Ap	P	PO1
<b>C02</b>	Prepare and standardize potassium permanganate, Analyse Hydrogen Peroxide by permanganometry,	U,An,Ap	P	PO1
<b>C03</b>	Prepare and standardize ceric ammonium sulphate and Analyse ferrous sulphate by cerimetry.	U,An,Ap	P	PO1
<b>C04</b>	Prepare and standardize sodium thiosulphate; Analyse copper sulphate by Iodometry.	U,An,Ap	P	PO1
<b>C05</b>	Analyse Calcium gluconate by Complexometry, Sodium benzoate by non aqueous titration. Sodium chloride by Precipitation titration.	U,An,Ap	P	PO1
<b>C06</b>	Determine the strength of strong acid against strong base and mixture of strong acid and weak acid against strong base by conductometry and potentiometry	U,An,Ap	P	PO1, PO4



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Internal Quality Assurance Cell

## Course out Comes and Programme outcomes

Name of Course: Pharmaceutics

Academic year: 2019-20

Program: B. Pharm I Sem

Faculty in Charge: Ms Savithri T B

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
C01	Know the history of profession of pharmacy	U/R	F	PO1, PO7
C02	Understand the Basics of different dosage forms, parts and handling of Prescription.	U/R/AP	F/P	PO1, PO7
C03	Understand the Basics of Pharmaceutical incompatibilities ,pharmaceutical calculations	U/R/AP	F/P	PO1, PO7
C04	Understand the professional way of handling the Prescription.	U/R	F/P	PO1, PO7
C05	Preparation of various conventional dosage forms	U/R	F/P	PO1, PO7



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Internal Quality Assurance Cell

## Course out Comes and Programme outcomes

Name of Course: Pharmaceutics

Academic year: 2019-20

Program: B. Pharm I Sem

Faculty in Charge: Ms Savithri T B

Section: Practicals

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Prepare Syrups and Elixirs.	Ap	p	PO1,PO4
CO2	Prepare Linctus and Solutions.	Ap	p	PO1,PO4
CO3	Prepare Suspensions and Emulsions.	Ap	p	PO1,PO4
CO4	Prepare Powders and Granules.	Ap	p	PO1,PO4
CO5	Prepare Suppositories, Semisolids.	Ap	p	PO1,PO4
CO6	Prepare Gargles and Mouthwashes	Ap	p	PO1,PO4



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## Course out Comes and Programme outcomes

Name of Course: Pharmaceutical Inorganic chemistry I

Academic year: 2019-20

Program: B. Pharm I Sem

Faculty in Charge: Mrs C.Geethapriya

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Explain impurities in pharmaceutical substances.	AN/E	P	PO1, PO7,
CO2	Illustrate acid, bases and buffers.	AN/E	P	PO1,
CO3	Illustrate major extra and intra cellular electrolytes.	R,U	F/P	PO1,PO11
CO4	Describe dental products and radio pharmaceuticals	R,U	F/P	PO1,PO11
CO5	Understand the gastrointestinal agents	R,U	F/P	PO1,PO11
CO6	Explain the miscellaneous compounds.	R,U	F/P	PO1,PO11



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## Course out Comes and Programme outcomes

Name of Course: Pharmaceutical Inorganic chemistry I

Academic year: 2019-20

Program: B. Pharm I Sem

Faculty in Charge: Mrs C.Geethapriya

Section: Practical

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E /C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Perform limit test for inorganic compounds	AN	P	PO1,PO2,PO4
CO2	Perform limit test for inorganic compounds	AN	P	PO1,PO2,PO4
CO3	Perform Identification test inorganic compounds	AN	F	PO1,PO2,PO3,PO4
CO4	Perform Identification test inorganic compounds	AN	F	PO1,PO2,PO3,PO4
CO5	Perform Test for purity of inorganic compounds	E	P	PO1,PO2,PO3,PO4
CO6	Prepare inorganic pharmaceuticals	U	P	PO1,PO2,PO3,PO4





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## Course out Comes and Programme outcomes

Name of Course: Remedial Biology

Academic year: 2019-20

Program: B. Pharm I Sem

Faculty in Charge: Ms Geetha M

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An /E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....P O11
CO 1	Understand living world and classify the five kingdoms of life and explain morphology of flowering plants.	U	C, F	PO1, PO6
CO 2	Explain body fluids circulation, Digestion and absorption, Breathing and respiration	U	C, F	PO1, PO6
CO 3	Explain excretory products natural control and Co-Ordination and Human reproduction	U	C, F	PO1, PO6
CO 4	Define plants and mineral nutrition and Photosynthesis, Respiration, Plant growth development.	U	C, F	PO1, PO6



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Internal Quality Assurance Cell

## Course out Comes and Programme outcomes

Name of Course: Remedial Biology

Academic year: 2019-20

Program: B. Pharm I Sem

Faculty in Charge: Ms Geetha M

Section: Practical

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3...PO11
CO1	Explain Microscope Section cutting Mounting and Staining techniques	U	C, F	PO1, PO6
CO2	Explain About Cell and its inclusions	R, U	C, F	PO1
CO3	Evaluate the showering plant parts by their morphology and microscopical Charters	U, A, N	C	PO1, PO4, PO6
CO4	Explain the frog by using computer models	U, A, N	C, P	PO1, PO4, PO6
CO5	Identify bones, determine blood group, blood pressure tidal volume	U, A, N	C, P	PO1, PO4, PO6, PO9



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Course out Comes and Programme outcomes

B Pharm II Sem

Name of Course: Human Anatomy and Physiology II

Academic year: 2019-20

Program: B. Pharm II Sem

Faculty in Charge: Mr. Prasad Kalahal

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/ C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
C01	Understand the anatomical concepts of CNS, Digestive system, Respiratory system, Urinary system,	R/U	C	PO1, PO6
C02	Understand the Reproductive system & Endocrine system, energetics and genetics.	U	C	PO1
C03	Understand the physiology of CNS, Digestive system, Respiratory system.	R/U	C	PO1, PO6
C04	Understand the physiology of Urinary system, Reproductive system & Endocrine system . .	R/U	C	PO3, PO6
C05	Understand the disorders and diseases associated with Digestive system, Respiratory system,	R/U	C	PO3, PO6
C06	Understand the disorders and diseases associated with Urinary system, Reproductive system & Endocrine system	R/U	C	PO3, PO6



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## Course out Comes and Programme outcomes

Name of Course: Human Anatomy and Physiology II

Academic year: 2019-20

Program: B. Pharm II Sem

Faculty in Charge: Mr. Prasad Kalahal

Section: Practicals

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E /C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
<b>CO1</b>	Understand anatomical structure of Osseous system and Histology of Tissues.	R/AP/U	C	PO1, PO6
<b>CO2</b>	Examine RBC count.	R/AP	C	PO1,PO3, PO6
<b>CO3</b>	Examine WBC count, Respiratory volumes & Blood groups.	R/AP	C	PO1,PO3, PO6
<b>CO4</b>	Determination of Hemoglobin count, Bleeding time and Clotting time.	R/AP	P	PO1,PO3, PO6
<b>CO5</b>	Understand the concepts of Family planning devices.	R/AP	P	PO3, PO6
<b>CO6</b>	Evaluate Organ systems like digestive system Urinary system, Cardiovascular system.	An	MC	PO1, PO6



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## Course out Comes and Programme outcomes

Name of Course: Pharmaceutical Organic chemistry I

Academic year: 2019-20

Program: B. Pharm II Sem

Faculty in Charge: Mrs C.Geethapriya

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E /C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Categorize isomerism and nomenclature of organic compounds.	R,U	C	PO1/PO3
CO2	Determine the reaction and orientation of alkanes, alkenes and conjugated dienes.	R,U	C	PO1/PO3
CO3	Explain kinetics, structure and applications of alkyl halide.	R,U	C	PO1
CO4	Describe structure and applications of alcohols.	AN	C	PO1/PO3
CO5	Understand the mechanism of carbonyl compounds.	AP	C	PO1/PO3
CO6	Explain the acidity and basicity, structure and qualitative test for carboxylic acid aliphatic amines.	AP/AN/E	P/C	PO1/PO3



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## Course out Comes and Programme outcomes

Name of Course: Pharmaceutical Organic chemistry I

Academic year: 2019-20

Program: B. Pharm II Sem

Faculty in Charge: Mrs C.Geethapriya

Section: Practical

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E /C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Perform Qualitative analysis of organic compound	AN	P	PO1,PO2
CO2	Perform Qualitative analysis of organic compound	AN	P	PO1,PO2
CO3	Perform Functional group test	U	P	PO1,PO2
CO4	Determine melting point and boiling point of organic compound	U	P	PO1,PO2
CO5	Prepare suitable solid derivatives from organic compound	C	MC	PO1,PO2
CO6	Demonstrate the construction of molecular models	C	MC	PO1,PO2



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## Course out Comes and Programme outcomes

Name of Course: Biochemistry

Academic year: 2019-20

Program: B. Pharm II Sem

Faculty in Charge: Mrs. Poornima A N

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/ C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO1
CO1	Explain the classification of Enzymes and their kinetics, inhibition, regulation and applications.	U	C	PO1
CO2	Explain the biological oxidation process, Bioenergetics and classification, chemical nature, biological role of Carbohydrates, lipids, Nucleic acid, amino acid and Proteins.	U	C	PO1
CO3	Describe the metabolism of Carbohydrates in physiological and pathological conditions.	U	C	PO1, PO3
CO4	Describe the metabolism of lipids in physiological and pathological conditions.	U	C	PO1, PO3
CO5	Describe the metabolism of proteins, amino acids in physiological and pathological conditions.	U	C	PO1, PO3
CO6	Describe the genetic organization of mammalian genome and functions of DNA in the synthesis of RNA's and proteins.	U	C	PO1, PO3



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## Course out Comes and Programme outcomes

Name of Course: Biochemistry

Academic year: 2019-20

Program: B. Pharm II Sem

Faculty in Charge: Mrs. Poornima A N

Section: practical

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/ E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Analyse the carbohydrates - Glucose, Fructose, Lactose, Maltose, Sucrose , starch - Qualitatively	U,An, Ap	P	PO1
CO2	Analyse the Proteins- Albumin, casein: Abnormal constituents of Urine - Qualitatively	U,An, Ap	P	PO1
CO3	Analyse the Reducing sugars by DNSA method : proteins by biuret method- Quantitatively	U,An, Ap	P	PO1, PO4
CO4	Determine the blood Creatinine, Blood sugar, Serum total cholesterol	U,An, Ap	P	PO1, PO4
CO5	Prepare the buffer solution and measure the pH; Perform the enzymatic hydrolysis of starch	U,An, Ap	P	PO1, PO4
CO6	Determine of Salivary amylase activity, understand the effect of Temperature & substrate concentration on Salivary amylase activity.	U,An, Ap	P	PO1, PO4





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## Course out Comes and Programme outcomes

Name of Course: Pathophysiology

Academic year: 2019-20

Program: B. Pharm II Sem

Faculty in Charge: Ms. Ramya H

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E /C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Understand the basic principles of cell injury ,cellular adaptations& inflammation	U	C	PO1, PO6
CO2	Understand the pathophysiology of diseases of cardio vascular, respiratory& renal system	U	F/C	PO1, PO6
CO3	Explain and understand haematological disorders	U	C	PO1, PO6
CO4	Understand the pathophysiology of endocrine, nervous& gastro intestinal system disease	U	F/C	PO1, PO6
CO5	Explain the pathophysiology of disease of bones & joints	R	F/C	PO1, PO6
CO6	Understand the principle of cancer	U	C	PO1, PO6



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## Course out Comes and Programme outcomes

Name of Course: Computer Application

Academic year: 2019-20

Program: B. Pharm II Sem

Faculty in Charge: Mr Tony Antony

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/ C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3.... PO11
CO1	Understand the Binary, Decimal, Octal, Hexadecimal number system and conversion of the same and addition, subtraction, multiplication and binary division, information system and software.	U & Ap	C & P	PO2, PO4
CO2	Explain the web technology like HTML, XML, CSS and programming language, Web servers. Explain various types of databases of pharmacy drug.	U & Ap	C & P	PO2, PO4
CO3	Explain the various types of applications of computers in pharmacy Understand diagnostic system, lab-diagnostic, patient monitoring and pharma information system.	U & Ap	C & P	PO2, PO4
CO4	Understand the concept and objectives of Bioinformatics, impact of bioinformatics in vaccine discovery.	U & Ap	C&P	PO2, PO4
CO5	Understand the concept of computer as data analysis in preclinical development.	U & Ap	C & P	PO2, PO4



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## Course out Comes and Programme outcomes

Name of Course: Computer Application

Academic year: 2019-20

Program: B. Pharm II Sem

Faculty in Charge: Mr Tony Antony

Section: Practical

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/ E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Ability to apply the knowledge of computer application for design questionnaires comparative analysis of results in pharmaceutical and clinical studies.	R	C	PO1, PO3
CO2	To apply the computer programme concepts in Pharmacy to retrieve the information, Create a data base.	U	C,P	PO1, PO4. PO11
CO3	Apply the knowledge of MS word, Excel, XML pages, web pages, HTML and Access for pharmaceutical and clinical studies.	U	C,P	PO1, PO4. PO11
CO4	To develop programmes, label wizard, generating labels, invoice table.	U	C,P	PO1, PO4



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## Course out Comes and Programme outcomes

Name of Course: Environmental Science

Academic year: 2019-20

Program: B. Pharm II Sem

Faculty in Charge: Ms Geetha M

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E /C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Understand the multidisciplinary nature of environmental studies, Natural resources, Renewable and non renewable resource.	R&U	F&C	PO1 & PO10
CO2	Understand the Natural resources and associated problem, Role of an individual in the conservation of natural resources.	R&U	F&C	PO1 & PO10
CO3	Understand the concept of Ecosystem with its structure, function, characteristic features.	R&U	F&C	PO1 & PO10
CO4	Describe the Environmental pollution-Air, water, soil pollution.	R&U	F&C	PO1 & PO10



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Course out Comes and Programme outcomes

**B Pharm III Sem**

Name of Course: Pharmaceutical Organic Chemistry II

Academic year: 2019-20

Program: B. Pharm III Sem

Faculty in Charge: Ms Manju .S

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E /C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Explain the structure, name and type of Isomerism of the organic compounds	U	F	PO1, PO2
CO2	Explain the structure, name and type of allipathic organic compounds	U	F	PO1, PO2
CO3	Describe the nomenclature, synthesis and reactions of organic compounds	U	F	PO1, PO2, P03
CO4	Discuss the orientation of reactions and stability of organic compounds	C	C	PO1, PO2
CO5	Apply the principles of reaction mechanism in synthesis of organic compounds	A	C	PO1, PO2, PO3



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Internal Quality Assurance Cell

## Course out Comes and Programme outcomes

Name of Course: Pharmaceutical Organic Chemistry II

Program: B. Pharm III Sem

Section: Practicals

At the end of the course the student will able to

Academic year: 2019-20

Faculty in Charge: Ms Manju .S

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Prepare and evaluate the physiochemical properties	U	P	PO1, PO2
CO2	Demonstrate the steam distillation and Re crystallization	U	P	PO1, PO2
CO3	Determine the oil values of Acid value	U	P	PO1, PO2
CO4	Determine the oil values of Saponification value	A	C	PO1, PO2
CO5	Determine the Oil values of Iodine value	E	P	PO1, PO2
CO6	Preparation of compound	E	P	PO1, PO2



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Internal Quality Assurance Cell

## Course out Comes and Programme outcomes

Name of Course: Physical Pharmacy – I

Program: B. Pharm III Sem

Section: Theory

At the end of the course the student will able to

Academic year: 2019-20

Faculty in Charge: Mr.Subhash P G

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Understand the quantitative approach to the factors influencing solubility of drugs.	U & AP	C and P	PO1
CO2	Explain the types of changes in the states of matter.	U	C	PO1, PO2 & PO3
CO3	Explain the surface and interfacial phenomena.	U & AP	C & P	PO1, PO2 & PO3
CO4	Explain the complexation phenomenon and protein binding concept.	U & AP	C & P	PO1, PO2 & PO3
CO5	Understand the determination of pH determination methods.	U & AP	C & P	PO1



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Internal Quality Assurance Cell

## Course out Comes and Programme outcomes

Name of Course: Physical Pharmacy – I

Academic year: 2019-20

Program: B. Pharm III Sem

Faculty in Charge: Mr.Subhash P G

Section: Practicals

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E /C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Determination of the solubility, Partition coefficient of benzoic acid in benzene, Iodine in carbon tetrachloride and water.	U and AP	C and P	PO1, PO3 and PO4
CO2	Determination of % composition of NaCl in a solution using phenol-water system by CST method.	U and AP	C and P	PO1, PO3 and PO4
CO3	Determination of surface tension by drop count and drop weight method, HLB number of a surfactant by saponification method.	U and AP	C and P	PO1, PO3 and PO4
CO4	Determination of Freundlich and Langmuir constants	U and AP	C and P	PO1, PO3 and PO4
CO5	Determination of critical micellar concentration of surfactants.	U and AP	C and P	PO1, PO3 and PO4
CO6	Determination of stability constant and donor acceptor ratio of Cupric-Glycine complex by pH titration method.	U and AP	C and P	PO1, PO3 and PO4





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Internal Quality Assurance Cell

## Course out Comes and Programme outcomes

Name of Course: Pharmaceutical Microbiology

Academic year: 2019-20

Program: B. Pharm III Sem

Faculty in Charge: Mrs. K S Srilatha

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E /C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Understand the methods of identification, cultivation and preservation of microorganism	U	C & P	PO1, PO11
CO 2	Explain the staining techniques and implementation of sterilization in pharmaceutical process and industry and	R & U	C & P	PO1,PO2, PO3
CO 3	Understand virus, fungi and disinfection and evaluation	Ap &U	C	PO1,PO8, PO11
CO 4	Determine the sterility testing of pharmaceuticals	Ap & U	C & P	PO1
CO 5	Explain aseptic area and microbial standardization of pharmaceuticals	An & U	C	PO1, PO2, PO3
CO 6	Summarize cell culture technology and its applications in pharmaceuticals industry	U	C	PO1,PO11



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## Course out Comes and Programme outcomes

Name of Course: Pharmaceutical Microbiology

Academic year: 2019-20

Program: B. Pharm III Sem

Faculty in Charge: Mrs. K S Srilatha

Section: Practicals

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E /C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Explain the apparatus used in microbiology	U	C & P	PO1,PO2, PO3
CO2	Determine staining techniques	U, Ap	C &P	PO1,PO2, PO3
CO3	Explain the sterility testing of media and glass wares used	U, An	C &P	PO1,PO2, PO3
CO4	Estimate the microbial counting	U, Ap	C &P	PO1, PO2, PO3
CO5	Detect the biochemical reactions	U, E	C & P	PO1, PO2, PO3
CO6	Explain pure culture	U	C & P	PO1, PO2, PO3



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Internal Quality Assurance Cell

## Course out Comes and Programme outcomes

Name of Course: Pharmaceutical Engineering

Academic year: 2019-20

Program: B. Pharm III Sem

Faculty in Charge: Ms. Himavarshini J

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E /C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3 ....PO11
CO1	Explain the principle, instrumentations and Applications of flow of fluids, Size reduction, and Size separation	R&U	C&P	PO1&PO4
CO2	Explain the principles, instrumentations and Applications of Heat transfer, Evaporation, Distillation.	R&U	C&P	PO1&PO4
CO3	Explain the principle, instrumentations and Applications of drying, mixing	R&U	C&P	PO1&PO4
CO4	Explain the principle, instrumentations and Applications of filtration and centrifugal.	R&U	C&P	PO1&PO4
CO5	Understand the materials of pharmaceutical plant construction, corrosion and its prevention.	R&U	C&P	PO1&PO4



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## Course out Comes and Programme outcomes

Name of Course: Pharmaceutical Engineering

Academic year: 2019-20

Program: B. Pharm III Sem

Faculty in Charge: Ms. Himavarshini J

Section: Practicals

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2, PO3... PO11
CO1	Determine the radiation constant of brass, iron, unpainted and painted glass, Heat transfer coefficient by heat exchanger.	U & Ap	C&P	PO1, PO2 & PO3
CO2	Calculate the efficiency of steam distillation	U&AP	C&P	PO1, PO2 & PO3
CO3	Explain the moisture content, loss on drying, drying curves, size reduction using ball mill, factors affecting Rate of Filtration and Evaporation	U & Ap	C&P	PO1, PO2 & PO3
CO4	Determine the humidity of air by using Dew point method, effect of crystallization rate and uniformity Index.	U & Ap	C&P	PO1, PO2 & PO3
CO5	Understand the working and application rotary tablet machine, fluidized bed coater, fluid energy mill, dehumidifier, colloid mill, planetary mixer, fluidized bed dryer, freeze dryer.	U & Ap	C&P	PO1, PO2 & PO3
CO6	Evaluate size distribution of tablet granulations by various size frequency curves including arithmetic and logarithmic probability plots	U&R	C&P	PO1 & PO11



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Course out Comes and Programme outcomes

**B Pharm IV Sem**

Name of Course: Pharmaceutical Organic Chemistry III

Academic year: 2019-20

Program: B. Pharm IV Sem

Faculty in Charge: Mr. Nagaraj D

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Explain the Stereo chemical aspects and reactions of organic compounds	U	F	PO1,PO2
CO2	Describe the nomenclature, synthesis and reactions of certain heterocyclic compounds	U	C	PO1,PO2,P03
CO3	Discuss the medicinal derivatives of certain heterocyclic compounds	C	C	PO1,PO2
CO4	Apply the principles of reaction mechanism in synthesis of organic compounds	A	MC	POC1PO2,PO3



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## Course out Comes and Programme outcomes

Name of Course: Medicinal Chemistry- I

Academic year: 2019-20

Program: B. Pharm IV Sem

Faculty in Charge: Mr. Hemanth S

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO1 1
CO1	Explain the chemistry of drugs with their pharmacological activity	U	C	PO1,PO2
CO2	Describe the drug metabolic pathways,adverse effect and therapeutic value of drugs	R	C	PO1,PO2
CO3	Discuss the structural activity relationship of different class of drugs	A	F	PO1,PO2
CO4	Write the chemical synthesis of some drugs	C	MC	PO1



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## Course out Comes and Programme outcomes

Name of Course: Medicinal Chemistry- I

Academic year: 2019-20

Program: B. Pharm IV Sem

Faculty in Charge: Mr. Hemanth S

Section: Practical

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E /C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Prepare and evaluate the physiochemical properties	U	P	PO1,PO2
CO2	Determine the molecular weight and purity of medicinal drugs	A	C	PO1,PO2
CO3	Evaluate the partition coefficient of drugs	E	P	PO1,PO2



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## Course out Comes and Programme outcomes

Name of Course: Physical Pharmacy – II

Academic year: 2019-20

Program: B. Pharm IV Sem

Faculty in Charge: Mr. Subhash P G

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E /C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Understand the colloidal dispersion systems with their properties.	U	C	PO1
CO2	Explain the types of rheological properties of systems with methods for determination of viscosity.	U and AP	C and P	PO1, PO2, and PO3
CO3	Explain the types of coarse dispersion systems with their properties, theories and stability.	U and AP	C and P	PO1, PO2, and PO3
CO4	Explain the micrometrics with particle size distribution, methods for determination of particle size and surface area and properties.	U and AP	C and P	PO1, PO2, and PO3
CO5	Understand the types of reaction kinetics and factors and overcoming methods for degradation of pharmaceutical product.	U	C	PO1





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## Course out Comes and Programme outcomes

Name of Course: Physical Pharmacy – II

Academic year: 2019-20

Program: B. Pharm IV Sem

Faculty in Charge: Mr. Subhash P G

Section: Practical

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E /C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Determination of particle size, particle size distribution using sieving method, Microscopic method for the given samples.	U, AP	C, P	PO1, PO3 and PO4
CO2	Determination of bulk density, true density ,porosity and angle of repose for the powder samples.	U, AP	C, P	PO1, PO3 and PO4
CO3	Determination of viscosity of liquids using Ostwald's viscometer	U, AP	C, P	PO1, PO3 and PO4
CO4	Determination of sedimentation volume with effect of different concentration of single suspending agents.	U, AP	C, P	PO1, PO3 and PO4
CO5	Determination of reaction rate constant first order, Second order.	U, AP	C, P	PO1, PO3 and PO4
CO6	Determination of sedimentation volume with effect of different suspending agent	U, AP	C, P	PO1, PO3 and PO4



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Internal Quality Assurance Cell

## Course out Comes and Programme outcomes

Name of Course: Pharmacology I

Academic year: 2019-20

Program: B. Pharm IV Sem

Faculty in Charge: Mrs. Aparna S

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/ E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3...PO11
CO1	Understand the basic concepts of pharmacological history, scope & general principles.	U	C	PO1,PO7
CO2	Explain the importance of drugs & illustrate different types of drugs and their uses, routes of administration of drugs with their advantages & disadvantages	R	C	PO1,PO4
CO3	Understand the process of new drug discovery & development of drug, basics of pharmacokinetic & pharmacodynamics	R	C	PO1,PO4
CO4	Explain different types of receptors & the factors modifying drug action	U	C	PO1,PO6
CO5	Understand the various pharmacological effects of drugs on ANS.	U	C	PO1
CO6	Understand the various pharmacological effects of drugs on CNS.	R,U	C	PO1,PO7



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## Course out Comes and Programme outcomes

Name of Course: Pharmacology I

Program: B. Pharm IV Sem

Section: Practical

At the end of the course the student will able to

Academic year: 2019-20

Faculty in Charge: Mrs. Aparna S

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Understand the concepts in the routes of administration of drugs in animals, Study the common laboratory animals	U/R	U/R	PO1,PO7
CO2	Understand the guidelines for the maintainace of laboratory animals as per CPCSEA	U/R	U/R	PO1,PO7
CO3	Observe the effect of skeletal muscle relaxant on animals by simulated experiments	U/R	U/R	PO1,PO7
CO4	Observe the effect of anticonvulsant drugs on animals by simulated experiments	U/R	U/R	PO1,PO7
CO5	Observe the effect of anxiolytic drug on animals by simulated experiments	U/R	U/R	PO1,PO7
CO6	Study of anesthetics on animals	U/R	U/R	PO1,PO7



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Internal Quality Assurance Cell

## Course out Comes and Programme outcomes

Name of Course: Pharmacognosy & Phytochemistry -I

Academic year: 2019-20

Program: B. Pharm IV Sem

Faculty in Charge: Mr. Hoonesh N H

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An /E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Explain Pharmacognosy, Sources of crude drugs and categorize the organized and unorganized drugs	U	F	PO1,PO2,PO6
CO2	Classify the crude drugs and analyze Quality control of drugs of Natural origin	U,AN	C,P	PO1,PO2,PO3
CO3	Explain techniques in cultivation and production of crude drugs.	U,AP	C	PO1,PO2,PO3, PO4, PO11
CO4	Summarize Plant Tissue Culture applications in Pharmacognosy and types of cultures, growth and their maintenance.	U	C	PO1,PO2,PO4
CO5	Illustrate role of Pharmacognosy in AYUSH and identify the plant secondary metabolites.	U,AN	C	PO1,PO6,PO7,PO9
CO6	Explain biological source, chemical nature and uses of plant products, primary metabolites and marine drugs	U	F	PO1,PO9



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Internal Quality Assurance Cell

## Course out Comes and Programme outcomes

Name of Course: Pharmacognosy & Phytochemistry -I

Academic year: 2019-20

Program: B. Pharm IV Sem

Faculty in Charge: Mr. Hoonesh N H

Section: Practicals

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E /C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3.... PO11
CO1	Analyse of crude drugs by Chemical tests	U,AN	C,P	PO1,PO2,PO6
CO2	Determine the stomatal number and index, Vein islet number, Vein termination and palisade ratio	U,AN	C,P	PO1,PO2,PO4,P O6
CO3	Perform the Quantitative microscopical study of crude drugs and determine the starch grains, Calcium oxalate crystals, fibre length and width by eyepiece micrometer	AN, R, E	C,P	PO1,PO2,PO4,P O6
CO4	Determine the number of Starch grains by Lycopodium Spore Method.	U,AN	C,P	PO1,PO2,PO4,P O6
CO5	Determine the moisture content, Extractive values and ash values of crude drugs	E,AN	P,C	PO1,PO2,PO3, PO4
CO6	Evaluate the Swelling index and Foaming index of crude drugs	U,AN	C,P	PO1,PO2,PO3, PO4



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## Course out Comes and Programme outcomes

**B Pharm V Sem**

Name of Course: Medicinal Chemistry II

Academic year: 2019-20

Program: B. Pharm V Sem

Faculty in Charge: Mr. Nagaraj N Durgadasheemi

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/ C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3.... PO11
CO1	Understand fundamental knowledge on the structure	AN/U	P	PO1, PO7,
CO2	Study of the development of the drugs, Classification, and mechanism of action.	R	P	PO1,PO9
CO3	Understand the chemistry of drugs with respect to their pharmacological activity	R,U	F/P	PO1,PO9 ,PO11
CO4	Understand the drug metabolic pathways, adverse effect and therapeutic value of drugs	R,U	F/P	PO1,PO11
CO5	Remember the Structural Activity Relationship of different class of drug	R,U	F/P	PO1,PO11
CO6	Remember the chemical synthesis of selected drugs	R,U	F/P	PO1,PO11



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## Course out Comes and Programme outcomes

Name of Course: Industrial Pharmacy -I

Academic year: 2019-20

Program: B. Pharm V Sem

Faculty in Charge: Mr. Pannaga M S

Section: Theory

At the end of the course the student will able to

Co. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/ E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3... .PO11
CO1	Understand the physicochemical characteristics of drug substances & Application of pre-formulation considerations in the development of solid, liquid oral and parenteral dosage forms	U	C	PO1, PO11
CO2	Explain the processing of tablets, tablet coating & Quality control test with equipment.	U	C,P	PO1, PO4,PO11
CO3	Explain the production of hard gelatin capsule, Soft gelatin capsules & QC test & Pellets	U	C,P	PO1, PO4,PO11
CO4	Explain the formulation, production & QC test of parenteral	U	C,P	PO1, PO4,PO11
CO5	Explain the formulation and manufacturing considerations, filling, packaging methods of liquid orals & the Formulation of emulsions, suspensions and Ophthalmic formulations	U	C,P	PO1, PO4,PO11
CO6	Explain the formulation and preparation of Aerosols, Cosmetics and packaging materials	U	C,P	PO1, PO4, PO11



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## Course out Comes and Programme outcomes

Name of Course: Industrial Pharmacy -I

Academic year: 2019-20

Program: B. Pharm V Sem

Faculty in Charge: Mr. Pannaga M S

Section: Practical

At the end of the course the student will able to

CO No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3... .PO11
CO1	Prepare & evaluate and pre-fomulation studies of Paracetamol tablets and Aspirin tablets.	Ap, E	C,P	PO2,PO3,PO4, PO11
CO2	Prepare ampoules of Ascorbic acid Injection, calcium gluconate Injection,	Ap, E	C,P	PO2,PO3,PO4, PO11
CO3	Evaluate the quality control tests for tablets, Capsules	Ap, E	C,P	PO2,PO3,PO4, PO11
CO4	Prepare and evaluation of Tetracycline capsules	Ap, E	C,P	PO2,PO3,PO4, PO11
CO5	Prepare eye drops /eye ointment, cold cream , vanishing cream	Ap, E	C,P	PO2,PO3,PO4, PO11
CO6	Evaluate Glass containers (as per IP) and Demonstrate coating of tablets/granules	U, Ap, C	F,C,P	PO2,PO3,PO4, PO11





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## Course out Comes and Programme outcomes

Name of Course: Pharmacology II

Academic year: 2019-20

Program: B. Pharm V Sem

Faculty in Charge: Mr. Dhanunjaya E

Section: Theory

At the end of the course the student will able to

CO	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/ C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2, PO3....PO11
CO1	Apply the current knowledge of Cardiovascular system	R/AP	F/C	PO1, PO6 & PO9
CO2	Assess involvement of drugs used for the treatment of urinary system.	U	C	PO3
CO3	Elucidate the approaches to the autacoids and related drugs	R/AP	F/C	PO1, PO6 & PO9
CO4	Explain the pharmacotherapy of Endocrine system.	R/AP	F/C	PO3, PO6, PO11.
CO5	Elaborate the concepts and types of bioassay.	R/AP	F/C	PO3, PO6, PO11.



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Internal Quality Assurance Cell

## Course out Comes and Programme outcomes

Name of Course: Pharmacology II

Academic year: 2019-20

Program: B. Pharm V Sem

Faculty in Charge: Mr. Dhanunjaya E

Section: Practical

At the end of the course the student will able to

CO	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E /C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2, PO3...PO11
CO1	Understand the in-vitro pharmacology and physiological salt solution, drugs on isolated frog heart with the activity.	R/AP	F/C	PO1, PO6 & PO9
CO2	Asses involvement of diuretic activity, DRC of acetylcholine activity.	U	C	PO3
CO3	Understand the Bioassay of oxytocin, serotonin by using three point bioassay and four point bioassay.	R/AP	F/C	PO1, PO6 & PO9
CO4	Understand the determination of PA2 value and PD2 value, spasmogens and analgesic activity of drugs by using rats.	R/AP	F/C	PO3, PO6, PO11.



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Internal Quality Assurance Cell

## Course out Comes and Programme outcomes

Name of Course: Pharmacognosy & Phytochemistry II

Academic year: 2019-20

Program: B. Pharm V Sem

Faculty in Charge: Mrs Akila E

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/APO/An/E/C	Knowledge Categories (KC) F/C/PO/MC	Programme outcomes (PO) PO1/PO2,PO3...PO11
CO1	Illustrate the Basic Metabolic Pathways in Higher Plants and their determination	U,R,APO,AN	C,F,PO	PO1,PO3,PO4,PO6,PO11
CO2	Summarize the modern extraction techniques, Characterization and identification of the herbal drugs and Phytoconstituents	U,R,AN,APO,C	C, F, PO	PO1,PO2,PO3,PO4,PO5,PO6
CO3	Exemplify the Preparation and development of Herbal formulation	U,R,AN,APO,C	C, F, PO	PO1,PO3,PO4,PO5,PO6,PO11
CO4	Detect the Herbal drug interactions	E,U,R,AN,APO	C, F, PO	PO1,PO2,PO3,PO4,PO6,PO11
CO5	Perform isolation and identification of Phytoconstituents	R,U,APO,AN,C	C, F, PO	PO1,PO2,PO3,PO4,PO6,PO11



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Internal Quality Assurance Cell

## Course out Comes and Programme outcomes

Name of Course: Pharmacognosy & Phytochemistry II

Academic year: 2019-20

Program: B. Pharm V Sem

Faculty in Charge: Mrs Akila E

Section: Practical

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3...PO11
CO1	Identify crude drugs by Morphology & Microscopical characters	U,R,AP,AN	C,F,P	PO1,PO3,PO4,PO6,PO11
CO2	Execute the isolation and Detection of active principles of phytoconstituents	U,R,AN,AP,C	C,F,P	PO1,PO2,PO3,PO4, ,P O6,PO11
CO3	Detect the crude drugs by Chemical Test	U,R,AN,AP,C	C,F,P	PO1,PO2,PO3, ,PO5,P O6,PO11
CO4	Illustrate the chromatographic techniques	E,U,R,AN,AP,C	C,F,P	PO1,PO2,PO3,PO4,PO5,PO6,
CO5	Describe the Distillation of Volatile Oils and Detection of phytoconstituents by TLC	R,U,AP,AN,C	C,F,P	PO1,PO2,PO3,PO4, ,P O6,PO11



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Internal Quality Assurance Cell

## Course out Comes and Programme outcomes

Name of Course: Jurisprudence

Academic year: 2019-20

Program: B. Pharm V Sem

Faculty in Charge: Mrs. Sujatha Muchalambe

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Understand the various concepts of the pharmaceutical legislations in india.	U/R	F	PO1,PO7
CO2	Known the various parameters in the drug and cosmetic act and its rules.	U/R	F/P	PO1,PO7
CO3	Know the Drug policy, DPCO, Patent and design act	U/R	F/P	PO1,PO7
CO4	Understand the concept of Dangerous Drugs act, Pharmacy act, Excise duties act	U/R	F/P	PO1,PO7



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Internal Quality Assurance Cell

## Course out Comes and Programme outcomes

**B Pharm VI Sem**

Name of Course: Medicinal Chemistry-III

Academic year: 2019-20

Program: B. Pharm VI Sem

Faculty in Charge: Mr. Nagaraj. N. Durgadasheemi

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An /E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3 ....PO11
CO1	Explain Antibiotics, Aminoglycosides.	U	C	PO1 &PO3
CO2	Explain Macrolide, Prodrugs, Antimalarials.	U	C &P	PO1 &PO3
CO3	Explain Anti-tubercular Agents , Anti tubercular antibiotics, Urinary tract anti-infective agents, Antiviral agents.	U	C&P	PO1 &PO3
CO4	Explain Antifungal agents, Antifungal antibiotics, Anti-protozoal Agents, Anthelmintics, Sulphonamides, Folate reductase inhibitors.	U	C&P	PO1 &PO3
CO5	Explain Drug Design Various approaches used in drug design, Physicochemical parameters QSAR, Pharmacophore modeling and docking techniques.	U	C&P	PO1 &PO3
CO6	Combinatorial Chemistry: Concept and applications chemistry: solid phase and solution phase synthesis.	U	C&P	PO1 &PO3



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Internal Quality Assurance Cell

## Course out Comes and Programme outcomes

Name of Course: Medicinal Chemistry-III

Academic year: 2019-20

Program: B. Pharm VI Sem

Faculty in Charge: Mr. Nagaraj. N. Durgadasheemi

Section: Practical

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/ E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO 11
CO1	Perform the synthesis of Sulphanilamide, 7-Hydroxy, 4-methyl coumarin, Chlorobutanol, Triphenyl imidazole, Tolbutamide, Hexamine.	U	C &P	PO1 &PO3
CO2	Estimate the Isonicotinic acid hydrazide, Chloroquine, Metronidazole, Dapsone, Chlorpheniraminemaleate, Benzyl penicillin	U	C &P	PO1 &PO3
CO3	Preparation of medicinally important compounds or intermediates by Microwave irradiation technique.	U	C&P	PO1 &PO3
CO4	Drawing structures and reactions using chem draw®	U	C &P	PO1 &PO3
CO5	Determination of physicochemical properties such as logP, clogP, MR, Molecular weight, Hydrogen bond donors and acceptors for class of drugs course content using drug design software Drug likeliness screening (Lipinskies RO5)	U	C &P	PO1 &PO3



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Internal Quality Assurance Cell

## Course out Comes and Programme outcomes

Name of Course: Pharmacology -III

Academic year: 2019-20

Program: B. Pharm VI Sem

Faculty in Charge: Mr. Dhanunjaya E

Section: Theory

At the end of the course the student will able to

Sl.No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/ E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2, PO3....PO11
CO1	Apply the current knowledge of pharmacological and toxicological aspects of various disorders.	R/AP	F/C	PO1, PO6 & PO9
CO2	Assess involvement of autacoids along with therapeutics of inflammatory processes.	U	C	PO3
CO3	Elucidate the approaches to the treatment of respiratory disorders.	R/AP	F/C	PO1, PO6 & PO9
CO4	Explain the pharmacotherapy of gastrointestinal and CNS ailments.	R/AP	F/C	PO3, PO6, PO11.
CO5	Elaborate the concepts and general management of toxicity.	R/AP	F/C	PO3, PO6, PO11.





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Internal Quality Assurance Cell

## Course out Comes and Programme outcomes

Name of Course: Pharmacology -III

Academic year: 2019-20

Program: B. Pharm VI Sem

Faculty in Charge: Mr. Dhanunjaya E

Section: Practical

At the end of the course the student will able to

CO	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/ E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2, PO3....PO11
CO1	Understand the dose calculation of different experimentation	R/AP	F/C	PO1, PO6 & PO9
CO2	Clarify test for pyrogen	U	C	PO3
CO3	Understand the effect of drugs on motility	R/AP	F/C	PO1, PO6 & PO9
CO4	Understand biochemical parameters	R/AP	F/C	PO3, PO6, PO11.



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## Course out Comes and Programme outcomes

Name of Course: Herbal Drug Technology

Academic year: 2019-20

Program: B. Pharm VI Sem

Faculty in Charge: Mrs. Akila E

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/ C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3...PO11
CO1	Describe the herb as a source of medicine along with the cultivation of the herbal drugs & other Indian system of medicine with their preparation and standardization of Ayurvedic formulation.	U,R,AP,AN	F,P	PO1,PO2,PO3, PO5,PO6,PO8, PO11
CO2	Explain importance of Nutraceuticals in the health care system, their possible side effects and interactions with drugs and food.	U,R,AN,AP	C,F,P	PO1,PO2,PO3,PO4,P O9, PO10,PO11
CO3	Explain the various herbal cosmetics, excipients and conventional herbal formulations.	U,R,AP,C	C,F	PO1,PO2,PO3,PO6,P O7, PO8, PO10, PO11
CO4	Explain the patenting and other regulatory bodies for the evaluation, assessment of herbal and ASU drugs.	U,R,AN,AP	C,F,P	PO1,PO2,PO3,PO4, PO10,PO11
CO5	Describe the importance and scope of Herbal Drug Industry & GMP (Schedule T).	R,U,AP,AN,C	C,F,P	PO1, PO3,PO4, PO6,PO7, PO10,PO11



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## Course out Comes and Programme outcomes

Name of Course: Herbal Drug Technology

Academic year: 2019-20

Program: B. Pharm VI Sem

Faculty in Charge: Mrs. Akila E

Section: Practical

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/ E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3...PO11
CO1	Assessment of the phyto constituents of crude drug.	U,R,AP,AN	F,P	PO1,PO2,PO3,PO5,PO6, PO8,PO11.
CO2	Evaluation and analysis of excipients, herbs drugs from a pharmacopoeia.	U,R,AN,AP	C,F,P	PO1,PO2,PO3,PO4,PO9, PO10,PO11.
CO3	Evaluation and formulation of various herbal cosmetics, conventional herbal dosage form.	U,R,AP,C	C,F	PO1,PO2,PO3,PO6,PO7, PO8, PO10, PO11.
CO4	Determination of phenolic, aldehyde, total alkaloid contents and alcohol content of asava and arista	U,R,AN,AP	C,F,P	PO1,PO2,PO3,PO4, PO10,PO11.



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Internal Quality Assurance Cell

## Course out Comes and Programme outcomes

Name of Course: Bio Pharm. Pharmacokinetics

Academic year: 2019-20

Program: B. Pharm VI Sem

Faculty in Charge: Mrs. Sujatha muchalambe

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/ E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3.... PO11
CO1	Understand Biopharmaceutics, Absorption of drugs from gastrointestinal tract & Distribution.	U, AP	C	PO1, PO10, PO11
CO2	Understand Drug Distribution & Elimination.	U, AP	C & P	PO1, PO10, PO11
CO3	Understand Bioavailability & bioequivalence	U, AP	C & P	PO1, PO10, PO11
CO4	Apply Pharmacokinetics : One compartment open model a. Intravenous Injection (Bolus) b. Intravenous infusion.	U, AP	C & P	PO1, PO10, PO11
CO5	Apply & calculate Multicompartment models. Two compartment open model. IV bolus, kinetics of multiple dosing, steady state drug levels, loading & maintenance doses	U, AP	C & P	PO1, PO10, PO11
CO6	Explain Nonlinear Pharmacokinetics, Michaelis-menten equation.	U, AP	C & P	PO1, PO10, PO11



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## Course out Comes and Programme outcomes

Name of Course: Pharmaceutical Biotechnology

Academic year: 2019-20

Program: B. Pharm VI Sem

Faculty in Charge: Mrs. K S Srilatha

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E /C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Understand the different methods of enzyme immobilization	U	C	PO1,PO6 PO7
CO2	Understand the cloning vectors and r DNA technology	R, U	C	PO1,PO6 PO7
CO3	Understand the immunity and structure of immunoglobulin	Ap, U	P	PO1,PO6
CO4	Determine the immune blotting techniques	An, U	C, P	PO1 PO7
CO5	Explain the fermentation methods using microorganisms and Summarize storage condition of blood products and vaccines	U	C	PO1,PO6



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Internal Quality Assurance Cell

## Course out Comes and Programme outcomes

Name of Course: Quality Assurance

Academic year: 2019-20

Program: B. Pharm VI Sem

Faculty in Charge: Mr. Mahalingan K

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Quality Assurance and Quality Management concepts, ICH Guidelines: Quality by design (QbD), ISO 9000 & ISO14000, NABL accreditation	U, AP	C	PO1, PO10, PO11
CO2	Organization and personnel, Premises, Equipments and raw materials	U, AP	C &P	PO1, PO10, PO11
CO3	Quality Control, Good Laboratory Practices	U, AP	C&P	PO1, PO10, PO11
CO4	Complaints, Document maintenance in pharmaceutical industry	U, AP	C&P	PO1, PO10, PO11
CO5	Calibration and Validation, Warehousing	U, AP	C&P	PO1, PO10, PO11



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Course out Comes and Programme outcomes

**B Pharm VII Sem**

Name of Course: Instrumental Methods of Analysis

Academic year: 2019-20

Program: B. Pharm VII Sem

Faculty in Charge: Ms. Shilpashree A T

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO 11
CO1	Explain the theoretical principles of UV and Fluorimetry.	U	C	PO1, PO4, PO11
CO2	Learn basic principles and instrumentation of IR spectroscopy, flame photometry, Atomic absorption spectroscopy, Nepheloturbidometry.	U	C	PO1, PO4, PO11
CO3	Learn basic principles involved in TLC, column chromatography, paper chromatography and electrophoresis.	U	C	PO1, PO4, PO11
CO4	Explain theory and instrumentation of GC, HPLC.	U	C	PO1, PO4, PO11
CO5	Explain theory and instrumentation gel chromatography, ion exchange chromatography and affinity chromatography.	U	C	PO1, PO4, PO11



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## Course out Comes and Programme outcomes

Name of Course: Instrumental Methods of Analysis

Academic year: 2019-20

Program: B. Pharm VII Sem

Faculty in Charge: Ms. Shilpashree A T

Section: Practical

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Learn absorption maxima and effect of solvents on absorption of various organic compounds.	U,An,Ap	P	PO1 , PO4, PO11,
CO2	Learn separation and identification of compounds by various chromatographic techniques.	U,An,Ap	P	PO1 , PO4, PO11,
CO3	Analyse the compounds by UV-Visible spectrophotometry.	U,An,Ap	P	PO1 , PO4, PO11,
CO4	Analyse the compounds by fluorimetry.	U,An,Ap	P	PO1 , PO4, PO11,
CO5	Analyse the inorganic ions by flame photometry and Nepheloturbidometry.	U,An,Ap	P	PO1 , PO4, PO11,
CO6	Understand the separation of compounds by GC & HPLC methods.	U,An,Ap	P	PO1 , PO4, PO11,





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## Course out Comes and Programme outcomes

Name of Course: Industrial Pharmacy-II

Academic year: 2019-20

Program: B. Pharm VII Sem

Faculty in Charge: Ms. Savithri T B

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/C	Knowledge Categories (KC)F/C/P/MC	Programme outcomes(PO)PO1 /PO2,PO3....PO11
CO1	Understand the Pilot plant scale up techniques and considerations for solids, liquid orals, semi solids and relevant documentation, SUPAC guidelines, platform technology.	R , U	F, C	PO1,PO11
CO2	Explain the technology development, transfer, WHO guidelines for Technology Transfer, Commercialization, TT agencies in India its confidentiality agreement, licensing, MoUs, legal issues.	R, U	F, C	PO1, PO11
CO3	Explain the Regulatory affairs and Regulatory requirements for drug approval	R, U, and A	C, P	PO1, PO2, and PO11
CO4	Explain the Quality management systems & Certifications, Quality by Design , Six Sigma concept, Out of Specifications, Change control, Introduction to ISO 9000 series of quality systems standards.	R, U	F, C	PO1, PO11
CO5	Understand the Indian Regulatory Requirements for CDSCO and State Licensing Authority	R, U, and A	F, C	PO1, PO11



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## Course out Comes and Programme outcomes

Name of Course: Pharmacy Practice

Academic year: 2019-20

Program: B. Pharm VII Sem

Faculty in Charge: Ms. Nayana P Kunderi

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/ E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....P O11
CO1	Demonstrate knowledge and ability to use principles of therapeutics, quality improvement, communication, economics, health behavior, social and administrative aspects, health policy and legal issues in the practice of pharmacy.	U/R/ AP	F/P	PO1,PO2
CO2	Knowledge of drug distribution methods in hospital and apply it in the practice of pharmacy.	U/R/AP	F/C	PO1,PO4
CO3	Effectively apply principles of drug store management and inventory control to medication use.	U/R/AP/C	F/P	PO1,PO2, PO4
CO4	Provide patient-centered care to diverse patients using the best available evidence and monitor drug therapy of patient	U/R	F/C/P	PO1,PO6, PO8
CO5	Students will engage in innovative activities by making use of the knowledge of clinical trials	U/R/AP	F/P	PO1,PO4
CO6	Exhibit professional ethics by producing safe and appropriate medication use throughout society.	U/R	F/C	PO1, PO7



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## Course out Comes and Programme outcomes

Name of Course: Novel Drug Delivery System

Academic year: 2019-20

Program: B. Pharm VII Sem

Faculty in Charge: Mr. Subhash P G

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E /C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Understand the various approaches for development of novel drug delivery systems.	R and U	C	PO1 and PO11
CO2	Understand the various methods for development of microspheres.	R and U	C	PO1 and PO11
CO3	Explain the gastro retentive drug delivery systems.	U, A and E	C and P	PO1, PO2, PO4 and PO11
CO4	Understand ocular drug delivery systems and vaccine delivery systems.	R and U	C	PO1 and PO11
CO5	Explain the transdermal drug delivery systems.	U, A and E	C and P	PO1, PO2, PO4 and PO11
CO6	Explain the concepts and approaches for targeted drug delivery.	U, A and E	C and P	PO1, PO2, PO4 and PO11



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Course out Comes and Programme outcomes

**B Pharm VIII Sem**

Name of Course: Biostatistics and Research Methodology

Academic year: 2019-20

Program: B. Pharm VIII Sem

Faculty in Charge: Ms. Kavita Yadav

Section: Theory

At the end of the course the student will able to

Co. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Understand Statistics, Biostatistics, Frequency distribution Measures of central tendency, Measures of dispersion and Correlation	R, U A and E	C,P	PO1, PO4,PO11
CO2	Understand Regression, Probability and Parametric test	R, U A and E	C,P	PO1, PO2, PO3 , PO4 and PO11
CO3	Explain Non Parametric tests	R, U A and E	C,P	PO1, PO2, PO3 , PO4 and PO11
CO4	Know the need for design of Experiments, Experiential Design Technique, plagiarism, Graphs and Designing the methodology for formulation.	R, U A and E	C,P	PO1, PO2, PO3 , PO4 and PO11
CO5	Know the Blocking and confounding system for Two-level factorials, Regression modeling, Statistical Analysis Using Excel, SPSS, MINITAB®, DESIGN OF EXPERIMENTS, R-Online Statistical Software's to Industrial and Clinical trial approach	R, U A and E	C,P	PO1, PO2, PO3 , PO4 and PO11
CO6	Design and Analysis experiments by using design of experiment software	R, U A and E	C,P	PO1, PO2, PO3 , PO4 and PO11



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Internal Quality Assurance Cell

## Course out Comes and Programme outcomes

Name of Course: Social and Preventive Pharmacy

Academic year: 2019-20

Program: B. Pharm VIII Sem

Faculty in Charge: Ms. Nayana P Kunderi

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3...PO11
CO1	Recognize the concepts and evaluation of public health	U/R	F/P	PO1,PO3
CO2	Illustrate socio-cultural factors and its relation with health	U/R/AP	F/C	PO1,PO11
CO3	Identify avoidable habits for personal hygiene and health	U/R/An	F/P	PO3,PO11
CO4	Explain the principles on the prevention and control of communicable and non-communicable diseases	U/R	F/C/P	PO1,PO11
CO5	Identify National health programs its objectives functioning and outcomes	U/R	F/P	PO1,PO4
CO6	Recognize the community services in rural, urban and school health	U/R/Ap	F/C	PO1, PO6, PO8



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Internal Quality Assurance Cell

## Course out Comes and Programme outcomes

Name of Course: Pharmaceutical Regulatory Science

Academic year: 2019-20

Program: B. Pharm VIII Sem

Faculty in Charge: Mr. Subhash P G

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E /C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Understand the concepts of innovator and generic drugs, drug development process.	R and U	F and C	PO1 and PO11
CO2	Understand the regulatory guidelines and guidelines for filling and approval process.	R and U	F and C	PO1 and PO11
CO3	Apply preparation of dossiers and their submission to regulatory agencies in different countries.	R, U, and A	C and P	PO1, PO2, and PO11
CO4	Understand the post-approval regulatory requirements for actives and drug products.	R and U	F and C	PO1 and PO11
CO5	Explain the submission of global documents in CTD/eCTD formats.	R, U, and A	F and C	PO1 and PO11
CO6	Explain the clinical trial requirements for approval for conducting clinical trials.	R, U, and A	C and P	PO1 and PO11
CO7	Explain the pharmacovigilance and process of monitoring in clinical trials.	R, U, and A	C and P	PO1 and PO11



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## Course out Comes and Programme outcomes

Name of Course: Cosmetic Science

Academic year: 2019-20

Program: B. Pharm VIII Sem

Faculty in Charge: Mr. Pannaga M S

Section: Theory

At the end of the course the student will able to

Sl. No	Course Outcome (CO)	Cognitive level (CL) R/U/AP/An/E/ C	Knowledge Categories (KC) F/C/P/MC	Programme outcomes (PO) PO1/PO2,PO3....PO11
CO1	Understand & classify cosmetic & cosmetical products,cosmetic excipients,structure & function of skin.hair&oral cavity.	U	C	PO1, PO10, PO11
CO2	Understand & explain formulation & building blocks of skin care,hair care & oral care products.	U, AP	C &P	PO1, PO10, PO11
CO3	Understand & analyze role of herbs in cosmetics. skin care,hair care & oral care products.	U, AP	C&P	PO1, PO10, PO11
CO4	Understand & apply sebumeter,corneometer,TEWL,Skin color, hair tensile strength,hair combing properties,syndet bars &soaps.	U, AP	C&P	PO1, PO10, PO11
CO5	Understand & apply oily & dry skin,skin moisterisation,comedogenic & dermatitis cosmetic problem associated with hair & scalp,skin, antiperspirants & deodorants.	U, AP	C&P	PO1, PO10, PO11