

VISWAMBHARA EDUCATIONAL SOCIETY VAAGDEVI COLLEGE OF PHARMACY

(Approved by AICTE & PCI, New Delhi & affiliated to Kakatiya University , Warangal, T.S) Ramnagar Dist. Hanumakonda- 506001, (T.S)

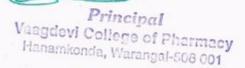
PROGRAMME OUTCOMES

S. No.	Outcome	Description
1	Pharmacy Knowledge	Possess knowledge and comprehension of the core and basic knowledge associated with the Profession of Pharmacy, including biomedical sciences;
		Pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; and manufacturing practices.
2	Planning Abilities	Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines.
3	Problem analysis	Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.
4	Modern tool usage	Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations.
5	Leadership skills	Understand and consider the human reaction to change, motivation issues, leadership and team-building when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and well-being
6	Professional Identity	Understand, analyze and communicate the value of their professional roles in society (e.g., health care professionals, promoters of health, educators, managers, employers, employees).
7	Pharmaceutical	Honor personal values and apply ethical principles in professional and social
	Ethics	contexts. Demonstrate behavior that recognizes cultural and personal

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		variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.
8	Communication	Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions.
9	The Pharmacist and society	Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice.
10	Environment and sustainability	Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
11	Life-long learning	Recognize the need for, and have the preparation and ability to engage in dependent and life-long learning in the broadest context of technological change



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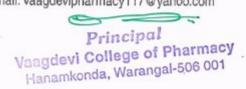
Course outcome of B. Pharmacy course

Semester-1

	emester-1	
BP101T	Human Anatomy and Physiology I— Theory	CO1.To impart fundamental knowledge on human body CO 2. Classify and identify principal hormones and their function. CO 3.To know functions of the various systems CO 4.To Physiology of the human body. CO5. Apply concepts of nervous systems and its coordination.
BP102T	Pharmaceutical Analysis I – Theory	CO1.To Understand terms of pharmaceutical analysis CO2.To know the principles of analysis CO3. To perform volumetric analysis CO4. To do electro chemical analysis. CO5. Construct the fundamental methodology to prepare different of solutions.
BP103T	Pharmaceutics I – Theory	CO1.To study Fundamentals of Pharmaceutics CO2. Knowledge with arts of pharmaceutics. CO3.Science of preparing dosage forms CO4. Differentiation of dosage forms. CO5. Explain where pharmaceutical additives are used and classify
BP104T	Pharmaceutical Inorganic Chemistry Theory	CO1.To know the sources of materials CO2. Understand methods to determine the purity of drugs CO3.Finding impurities in inorganic drugs CO4. To know standards of pharmaceuticals CO5. Evaluate activity and properties of radiopharmaceuticals
BP105T	Communication skills – Theory *	CO1.To prepare the young pharmacy student effectively CO2.To interact effectively with doctors, CO3.To interact nurses, dentists, physiotherapists and CO4. To interact effectively other health workers
BP106T	Remedial Biology/ Remedial Mathematics – Theory*	CO1.To learn Biology/Maths CO2.To understand the components of living world, CO3. To know structure and functional system of plant and CO4. To learn animal kingdom.
BP107P	Human Anatomy and Physiology – Practical	CO1.To impart fundamental knowledge on human body CO2. The human body structure CO3. functions of the various systems CO4.Physiology of the human body.

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BP108P	Pharmaceutical	CO1.Understand terms of analysis
	Analysis I –	CO2.To know the principles of analysis
	Practical	CO3. To perform volumetric analysis
		CO4. Electro chemical analysis.
BP109P	Pharmaceutics I –	CO 1.Fundamentals of Pharmaceutics
	Practical	CO 2. Knowledge with arts of pharmaceutics.
		CO 3.Science of preparing dosage forms
		CO 4. Differentiation of dosage forms.
BP110P	Pharmaceutical	CO 1.To know the sources of materials
DITIOI	Inorganic Chemistry	CO 2. Understand methods to determine them
	_	CO 3.Finding impurities in inorganic drugs and
	Practical	CO 4. To know standards of pharmaceuticals
BP111P	Communication	CO 1.To prepare the young pharmacy student effectively
	skills - Practical*	CO 2.To interact effectively with doctors,
		CO 3.To interact nurses, dentists, physiotherapists and
		CO 4. To interact effectively other health workers
BP112R	Remedial Biology -	CO 1.To learn Biology/Maths
BP	Practical*	CO 2.To understand the components of living world,
		CO 3. To know structure and functional system of plant and
		CO 4. To learn animal kingdom.

Semester 2

BP201T	Human Anatomy and Physiology II – Theory	CO 1.To impart fundamental knowledge on human body CO 2.To know the the human body structure CO 3.To study the functions of the various systems CO 4.Physiology of the human body. CO5. List the major components of blood plasma and describe functions of each
BP202T	Pharmaceutical Organic Chemistry I – Theory	CO 1.To know the Classification of materials CO 2. Understand nomenclatures CO 3.Finding simple organic compounds drugs and CO 4. To know intermediates forming in reaction of pharmaceuticals CO5. Discuss the orientation, reactivity and stability of organic compounds
BP203T	Biochemistry - Theory	CO 1. To find chemical facts CO 2.To know principles to understand metabolism

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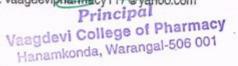
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		CO 3.To apply role of nutrient molecules in physiology CO 4.To know different pathological conditions. CO5:Determine the energetic of various metabolic pathways like the conditions.
E-12-0		glycolysis, ETC, Krebs cycle, β-oxidation of fatty acids etc.
BP204T	Pathophysiology – Theory	CO1.To get knowledge required to practice medicine safe CO2. To develop confidently on medicine use, CO 3. To find medicine rationale CO 4. To apply medicine effectively CO5. To know the diseases related to cardiovascular, respira and renal system.
BP205T	Computer Applications in	CO 1. To know Introduction of Database,
DI 2031	Pharmacy – Theory *	CO 2. To manage Database system,
	Tharmacy – Theory	CO 3. To apply computer in clinical studies and
		CO 4.To Use of databases
BP206T	Environmental sciences -	CO1. To study of physical characters
D1 2001	Theory *	CO 2. To study biological of the environment
	Theory .	CO 3.To study the social and cultural factors and
		CO 4. To understand the impact of man on environment.
BP207P	Human Anatomy and Physiology II –Practical	CO 1.To impart fundamental knowledge on human body CO 2. The human body structure
	,	CO 3.To know functions of the various systems
		CO 4.Physiology of the human body.
BP208P	Pharmaceutical Organic	CO 1.To know the Classification of materials
	Chemistry I— Practical	CO 2. Understand nomenclatures to determine them
		CO 3.Finding simple organic compounds drugs and
	4	CO 4. To know intermediates forming in reactions, of
		pharmaceuticals
BP209P	Biochemistry - Practical	CO 1. To find chemical facts
		CO 2.To know principles to understand metabolism
	1	CO 3.To apply role of nutrient molecules in physiology
		CO 4.To know the different pathological conditions.
BP210P	Computer Applications	CO 1. know Introduction of Database
	in Pharmacy –	CO 2. To manage Database system
	Practical*	CO3.To know the computer in clinical studies and
		CO 4. Use of databases

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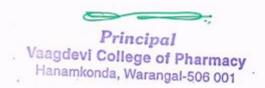
Semester 3

Course Code	Name of the course	Out come
BP301T	Pharmaceutical Organic	CO 1.To know the and the type of isomerism of the organic compound
	Chemistry II – Theory	CO 2. Understand nomenclatures structure
		CO 3. To know reactions and Chemistry of oils
		CO 4. To know reactions and Chemistry of fats
BP302T	Physical Pharmaceutics I –	CO 1.To know Various physical properties and
	Theory	CO 2.To know physicochemical properties, and
		CO 3. To understand principles,
		CO 4.To apply various areas of formulation research and
DD202T	Dhamaaastiaal	development.
BP303T	Pharmaceutical	CO1. To classify microorganisms
	Microbiology - Theory	CO2. To understand alcohol production
		CO3. Evaluate microbial spoilage of pharmaceutical products and apply ce
		cultures in pharmaceutical Industry
		CO4. To understand the production of vitamins and enzymes
		CO5. To know about vaccines and antibiotics production
BP304T		CO 1.The art of unit operations and
	- Theory	CO 2. scienceof various unit operations
		CO 3. Applications in pharmaceutical industry,
		CO 4.significance of plant lay out design for optimumuse of
		resources.
		CO5. Demonstrate the principles and applications of unit operations like
		drying, mixing filtration and centrifugation.
BP305P	Pharmaceutical Organic	CO 1. General methods of preparation and reactions of some organic
	Chemistry II – Practical	compounds reactivity/stability of compounds
		CO 2. Understand nomenclatures structure
		CO 3. To know reactions and Chemistry of oils
		CO 4. To know reactions and Chemistry of fats
BP306P		CO 1.To know Principles of chemical kinetics
	Practical	CO 2. To use them for stability testing
		CO 3.To know expiry date of formulations
		CO 4.To find physico-chemical properties
BP307P	Pharmaceutical	CO 1.Knowing the Staining methods- Simple, Grams staining and
	Microbiology – Practical	acid-fast staining
		CO 2 . sterlization inpharmaceutical processing and industry,
		To find with Microbiological assay of antibiotics by cup plate method
		CO 3.Understand the cell culture technology
		CO 4. applications in pharmaceuticalindustries

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BP 308P	Pharmaceutical Engineer	ring CO 1.The art of unit operations and
	-Practical	CO 2. science of various unit operations
		CO 3. Applications in pharmaceutical industry,
		CO 4.significance of plant lay out design for optimum use of
		resources.

Semester 4

Course Code	Name of the course	Out come
BP401T	Pharmaceutical Organic Chemistry III– Theory	CO 1.To imparts knowledge on stereo-chemical aspects of organic compounds and CO 2.To find organic reactions, CO 3. To learn important named reactions CO 4. To know chemistry of important hetero cyclic compounds. CO5. Compare the reactivity and properties of heterocyclic compounds with uses.
BP402T	Medicinal Chemistry I – Theory	CO 1.To learn medicines structure, CO 2. To know medicines chemistry and CO 3.To understand therapeutic value of drugs. CO 4. To find QSAR CO5. Explain the mechanism of action of various category of drugs
BP403T	Physical Pharmaceutics II - Theory	CO 1. To know the use of physicochemical properties CO 2. To design the formulation CO 3. To develop dosage forms CO 4. To evaluate dosage forms CO5. Determine the nature of flow of liquids and their measurement
BP404T	Pharmacology I – Theory	CO1.To know what drug do to the living organisms and CO 2. To find how their effects can be applied to therapeutics. CO 3. To understand pharmacological actions CO 4. To differentiate various categories of drugs CO5. Understands pharmacology of anti-psychotics, anti-depressants, anti-maniacs, hallucinogens, anti-epileptic and anti-parkinsonian drugs
BP405T	Pharmacognosy and Phytochemistry I– Theory	CO 1.To know pharmacognosy scope, CO 2. To classify crude drugs, CO3. To find phytochemicals present in them CO 4.To understand their medicinal properties. CO5. Study of primary metabolites from natural sources

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BP406P	Medicinal Chemistry I –	CO 1.To learn medicines structure,
	Practical	CO 2. To know medicines chemistry and
		CO 3.To understand therapeutic value of drugs.
		CO 4. To find QSAR.
BP407P	Physical Pharmaceutics II -	CO 1To know the use of physicochemical properties
	Practical	CO 2To design the formulation
		CO 3. To develope of dosage forms
		CO 4 To evaluate dosage forms
BP408P	Pharmacology I - Practical	CO1. To know what drugs will do to the living organisms and
		CO 2. To find how their effects can be applied to therapeutics.
		CO 3.To understand pharmacological actions
		CO 4.To differentiate various categories of drugs.
BP409P	Pharmacognosy and	CO 1.To know pharmacognosy scope
	Phytochemistry I –	CO 2. To classify crude drugs
	Practical	CO 3. To find phytochemicals present in plants
		CO 4. To understand their properties.

Semester 5

Course Code	Name of the course	Out come
BP501T	Medicinal Chemistry II – Theory	CO 1.To know Chemistry of drugs with respect CO 2. To find their pharmacological activity CO 3.To understand drug metabolic pathways, adverse effect
		CO 4. To utilize therapeutic value of drugs CO5. Examine the chemical synthesis of various drugs.
BP502T	Industrial PharmacyI— Theory	CO 1.To know various principle of manufacturing CO 2.To understand the considerations of variables CO 3.To develop of methods of preparations CO 4.To manufacture pharmaceutical dosage forms CO5. To evaluate dosage forms
BP503T	Pharmacology II – Theory	CO 1.To Classify drugs, CO 2. To know mechanism of action, therapeutic effects CO 3.To use medicines clinically, CO 4.To learn side effects and contraindications of drugs acting on different systems of body CO5. Outline Concept of Autacoids- various types of autacoids
BP504T	Pharmacognosy and Phytochemistry II– Theory	CO 1.To get Knowledge of secondary metabolites CO 2.To learn how metabolites are produced in the crude drugs

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		CO 3. To understand how to isolate secondary metabolites and CO 4. To identify them industrially. CO5. Define Alkaloids and glycosides with extraction procedure
BP505T	Pharmaceutical Jurisprudence – Theory	CO 1.To Know Pharmaceutical Legislations CO 2. Their Implications in The Development CO3 Marketing Of Pharmaceuticals CO 4. To learn the legal procedures
BP506P	Industrial Pharmacy I – Practical	CO 1.To know various principle of manufacturing CO 2.To understand the considerations of variables CO 3.To develop of methods CO 4.To manufacture pharmaceutical dosage forms
BP507P	Pharmacology II – Practical	CO 1To isolate different organs/ CO 2To isolate tissues from the laboratory animals CO3.various receptor actions on organs CO4.To learn simulated experiments
BP508P	Pharmacognosy and Phytochemistry II – Practical	CO 1 To know the modern extraction techniques, CO 2 To learn characterization of crude drugs CO 3 To understand identification of the herbal drugs CO 4 To determine phytochemicals.

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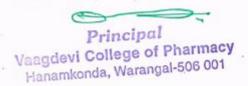
Semester 6

BP601T	Medicinal Chemistry III -	CO 1.To study Chemistry of drugs,
	Theory	CO 2.To learn mechanism of action, metabolism, adverse effects, Structure Activity Relationships,
		CO3. To understand Pro-drug concept, combinatorial chemistry
		CO 4. To apply Computer aided drug design
		CO5. Apply the knowledge of chemistry for synthesis of new
		compounds
BP602T	Pharmacology III -	CO 1.To learn Mechanism of drug action and
	Theory	CO 2. To know its relevance in the treatment
		CO 3. To undersand infectious diseases
		CO 4.To apply clinically
		CO5.
BP603T	Herbal Drug Technology	CO 1.To understand herbal drug industry
	- Theory	CO 2. To identify the quality of raw material
		CO 3. To know guidelines for quality of herbal drugs,
		CO 4. To apply herbal cosmetics, natural sweeteners,
		nutraceutical
	D: 1 .: 1	CO5. Analysis of herbal drugs from recent Pharmacopoeias
BP604T	Bio-pharmaceutics and	CO 1.To develop Skills of Bio-pharmaceutics
	Pharmacokinetics –	CO 2. To learn pharmacokinetics and their applications in
	Theory	pharmaceutical development
		CO 3. To design of dose and dosage regimen
		CO 4. To analyze in solving the problems arise.
		CO5. Correlate In-vitro – In-vivo absorption studies of various
DDCOST	Dhamas and and	dosage forms
BP605T	Pharmaceutical	CO 1. To learn the Use of microorganisms in fermentation
	Biotechnology - Theory	technology
		CO 2. To understand biological revolutions in diagnosis,

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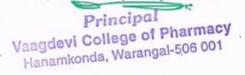
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		CO3. To know prevention adcure of diseases, CO 4. To develop new and cheaper pharmaceutical drugs
BP606T	Quality Assurance – Theory	CO5. Infer blood and related products and define surgical CO 1. To study cGMP aspects CO 2 .To apply cGMP in a pharmaceutical industry CO 3 .To learn responsibilities of QA & CO 4. To know responsibilities QC departments
BP607P	Medicinal chemistry III – Practical	CO 1.To know the importance of drug design CO 2.To understand and different techniques of drugdesign. CO 3.To learn chemistry of drugs CO 4.To analyze their biological activity
BP608P	Pharmacology III – Practical	CO 1To know the principles of toxicology and CO 2. To learn treatment of various poisoning CO 3.To appreciate correlation of pharmacology with CO 4.To relate pharmacology with medical sciences
BP609P	Herbal Drug Technology – Practical	CO 1.To know Raw material as source of herbal drugs from CO 2.To study cultivation to herbal drug production. To learn WHO ICH guidelines. CO 4. To analyze evaluation of herbal drugs.

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Semester 7

Course Code	Name of the course	Out come
BP701T	Instrumental Methods of Analysis – Theory	CO 1. To learn the principles of analysis methods CO 2. To understand instrumentation CO 3. To practice spectroscopic technique CO 4. To Utilize chromatographic technique CO5. To analyze medicines quality
BP702T	Industrial Pharmacy-II Theory	CO 1.To develop pharmaceuticalproduct CO 2.To Understand innovate translation from laboratory to market CO 3. To know Laws and Acts of industries CO 4.To learn the regulations of pharmaceutical industry CO5.To understand MOU
BP703T	Pharmacy Practice – Theory	CO 1.To learn Drug distribution CO 2. To know drug information CO 3.To practice therapeutic drug monitoring CO 4.To utilize for improved patient care CO5.To practice patient counseling
BP704T	Novel Drug Delivery System – Theory	CO 1To understand Criteria for selection of drugs CO 2. To get knowledge of polymers CO 3. To developNovel drug delivery systems, CO 4.To know formulation and evaluation CO5. Apply the mechanisms in developing various alginate beads
BP705P	Instrumental Methods of Analysis – Practical	CO 1. To learn the principles of analysis methods CO 2. To understand instrumentation of CO 3. To practice spectroscopic technique CO 4. To Utilize chromatographic technique

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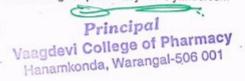
Semester 8

Course Code	Name of the course	Out come
BP801T	Biostatistics and Research Methodology	CO 1.To learn Design of Experiments CO 2.To study Phases of Clinical trials and Observational and Experimental studies, CO 3.To understand SPSS, R and MINITAB statistical software's, CO 4.To determine analyzing the statistical data using Excel CO5. To interpret results
BP802T	Social and Preventive Pharmacy	CO 1.To Acquire high consciousness CO 2. To understand real current issues related to health CO 3. To know problems within the country CO 4. To get aware of worldwide problems in pharma CO5.Practice of quality health
BP803ET	Pharma Marketing Management	CO 1.To study WHO guidelines for CO 2.To determine quality control of herbal drugs
BP804ET	Pharmaceutical Regulatory Science	CO 3.To understand the regulatory approval process and their registration in Indian and
BP805ET	Pharmacovigilance	international markets.
BP806ET	Quality Control and Standardization ofHerbals	CO 4. To find preclinical studies inexperimental animals including design, conduct and interpretations of results
BP810ET	Experimental Pharmacology	

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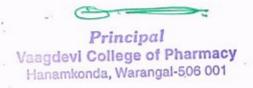
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COURSE OUTCME OF PHARM. D

No	Name of the Course	Course Outcome
1.	1.1 Human Anatomy and Physiology	CO1: Can describe the structure and functions of various organs of the human body.
		CO2: Able to describe the homeostatic mechanisms and their imbalances of various systems.
		CO3: Can identify tissues and organs of the different systems of the human body.
		CO4: Acquired knowledge of anatomy and physiological role of various systems in human body.
		CO5: Appreciate coordinated working pattern & interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body.
2.	1.1 Human Anatomy and	CO1:Capable of carrying out haematological experiments.
	Physiology (Practical)	CO2:Can determine blood pressure using sphygmomanometer.
		CO3:Demonstrate practical knowledge of human gross and microscopic anatomy using prepared histological slides, organ models.
2	100	<u> </u>
3.	1.2 Pharmaceutics	CO1: Have fundamental knowledge in preparing & dispensing various dosage forms.
		CO2: Know the history of profession of pharmacy.
		CO3: Know the professional way of handling the prescription.
		CO4: aware of their professional role in the healthcare system.
		CO5: Have the basics of pharmaceutical incompatibilities and calculations involved in prescribing dose.
4.	1.2 Pharmaceutics (Practical)	CO1:Able to prepare & dispense solid, liquid, semisolid dosage form.
		CO2:Able to differentiate labelling and container requirements for pharmaceutical products.
		CO3:Can analysis the incompatibility problems present in the prescription.
5.	1.3 Medicinal Biochemistry	CO 1: Know the basic concepts of cell and metabolic process in healthy and illness conditions
		CO 2: Can describe activity of enzymes, isoenzymes and







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	The state of the s	
		importance of enzyme inhibitors.
		CO 3: Acquired knowledge of genetic organization of mammalian genome
		CO 4: Know the biochemichemistry of specific organ function tests.
		CO 5: Know the qualitative analysis and determination of biomolecules in the body fluids.
6.	1.3 Medicinal Biochemistry (Practical)	CO1: Able to perform qualitatively analyze normal and abnormal constituents of urine.
		CO2: Able to estimate various biomolecules, SGOT and SGPT in serum.
		CO3 Able to prepare different buffers and its pH measurement.
7.	1.4 Pharmaceutical	CO 1: Can give IUPAC names of simple hydrocarbons.
	Organic Chemistry	CO 2: Acquired understanding of the physical properties of organic compounds.
		CO 3: Acquire the knowledge of preparation and reactions of various clauses of organis compound.
		CO 4: Can explain important name reactions with mechanisms and applications.
		CO 5: Know the methods of preparation, qualitative and quantitative analysis of medicinal organic compounds.
8.	1.4 Pharmaceutical Organic Chemistry (Practical)	CO1: Able to synthesize organic compounds by benzoylation, condensation, diazotization, nitration etc.
		CO2: Able to identify organic compounds through systematic analysis
		CO3 Able to make stereo models of simple organic compounds and evaluate stereochemical aspects.
9.	1.5 Pharmaceutical Inorganic Chemistry	CO1: Can explain the sources of impurities in inorganic pharmaceuticals.
		CO2: Acquired knowledge on theoretical aspects of volumetric analysis.
		CO3: Acquired knowledge of limit test
		CO4: Explain the methods of preparation, assay, properties, medicinal uses of medicinal gases inorganic pharmaceuticals, pharmaceutical aids and





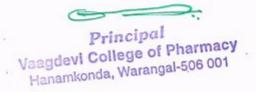


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		miscellaneous compounds.
		CO5: Describe the properties, storage condition and application of radiopharmaceuticals.
10.	1.5 Pharmaceutical Inorganic Chemistry	CO1: Able to perform the identification tests and preparation of inorganic compounds.
	(Practical)	CO2: Able to perform the limit tests and purity test for inorganic pharmaceuticals in a QC lab.
		CO3 Able to perform estimations of inorganic compounds
11.	1.6 Remedial Mathematics	CO 1: Can apply mathematical concepts and principles to perform computations for Pharmaceutical Sciences.
		CO 2: Able to create, use and analyze mathematical representations by applying mathematical theory
		CO 3: Know trigonometry, analytical geometry, matrices, determinant, integration differential equation, Laplace transform & their applications.
		CO 4: Perform abstract mathematical reasoning
		CO 5: Obtained knowledge of mathematical relationships
		CO 1: Acquired basic knowledge of nature of Plant cell and Animal cell
		CO 2: Able to Classify Plants & Animals
	1.6 Remedial biology	CO 3: Know the basic components of anatomy & physiology of plant and animals
	200 (CO 4: Obtained knowledge Various tissue and organ in plant and animals
	S 20	CO 5: Aware of various naturally occurring drugs & its history
12.	1.6: Remedial biology (Practical)	CO1: Able to identify different plants using their morphological characteristics.
		CO2: Can do evaluation of different plants using anatomical methods.
		CO3: Able to prepare permanent slides for different samples of seeds, stems, roots and barks.
13.	2.1 Pathophysiology	CO1: Acquired thorough knowledge of pathology of various conditions with reference to its pharmacological applications.
		CO2: Have understanding of basic Pathophysiological mechanisms.





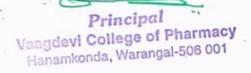


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		CO3: Able to describes the etiology and pathogenesis of the selected disease states
		CO4: Can describe the signs and symptoms of the diseases
		CO5: Aware of complications of the diseases.
14.	2.2 Pharmaceutical Microbiology	CO1: Able to explain the anatomy, identification, growth factors of microorganisms
		CO2: Aware of different methods of sterilization process in pharmaceutical microbiology Lab
		CO3: Obtained knowledge on diagnostic tests for Identification of infectious diseases
		CO4: Possess the understanding of determining drug potency by microbiological assay method
		CO5: Have knowledge on concepts of and types of immunity and antigen -antibody reactions.
15.	2.2 Pharmaceutical Microbiology (Practical)	CO 1: Able to identify different types of microorganisms by using staining techniques and biochemical test
		CO 2: Able to prepare various culture medium for cultivation of microorganisms and to determine the drug potency by microbiological assay technique
		CO 3: Able to perform sterilization, maintain the aseptic condition and able to do the sterility test for different pharmaceutical dosage forms
16.	2.3 Pharmacognosy & Phytopharmaceuticals	CO1: Able to classify crude drugs obtained from natural origin by various approches.
		CO2: Obtained theoretical knowledge of cultivation, collection and processing techniques, factors affecting growth of plant drugs.
		CO3: Possess awareness about adulterants used in herbal products and methods to determine adulterants.
		CO4: Possess knowledge about different herbal remedies belonging to carbohydrates, lipids, proteins, volatile oil, alkaloids and glycosides.
		CO5: Obtained knowledge about herbal source for pesticides and surgical dressings.
17.	2.3 Pharmacognosy & Phytopharmaceuticals	CO 1: Able to perform crude dug evaluation through morphological and microscopical methods.
	(Practical)	CO 2: Able to analyze of oils and fats available in the market and assess their quality.
		and the state of t







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		test.
18.	2.4 Pharmacology I	CO 1: Possess broad knowledge on classification, Pharmacological aspects, adverse effects, Therapeutic uses of different drug categories.
		CO 2: Can apply the knowledge therapeutically in deciding dose, route of administration, precautions, and contraindications.
		CO 3: Understood the pharmacological aspects of drugs used to treat ailment of different organ systems of the body.
		CO 4: Konow the procedures to handle & carry out anima experiments.
		CO5: Appreciate the importance of pharmacology subject as a basis of therapeutics.
19.	2.5 Community Pharmacy	C O 1: Able to provide pharmaceutical care services
		C O 2: Know the business and professional practice management skills in community pharmacies
		C O 3: Learnt to show empathy and provide patient counseling and health screening services to the community
		C O 4: Able to manage to minor ailments and provide appropriate OTC medication
		C O 5: Able to provide rational drug therapy to the patient
20.	2.6 Pharmacotherapeutics I	CO1: Able to identify the abnormal physiology and pathogenesis of diseases.
		CO2: Able to interpret the data from diagnostic tools.
		CO3: Able to diagnose the disease by monitoring the clinical manifestations of the patient and suggest individualized therapy.
		CO4: Able to provide rational drug therapy to the patient
		CO5: Capable to suggest the treatment options for special populations like pediatric, geriatric, breast feeding & pregnant.
21.	2.6 Pharmaco-therapeutics I (Practical)	CO 1: Can use therapeutic approach for the management of diseases
		CO 2: Know the controversies in drug
		CO 3: Able to identify the needed interventions from the prescription.







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22.	3.1 Pharmacology II	CO1: Possess in depth knowledge of pharmacological aspects of drugs.
		CO2: Possess knowledge on the procedure to carry out animal experiments.
		CO3: Able to correlate pharmacology and therapeutics to provide better pharmaceutical care.
		CO4: Posses in depth knowledge on cell, macromolecules, cell signaling, DNA replication and cell cycle.
	5	CO5: Appreciate the importance of gene and its structure, genome, gene expression, recombinant and DNA technology.
23.	3.1 Pharmacology II (Practical)	CO 1: Able to perform Pharmacological effect of drugs on tissue preparations.
		CO 2: Able to perform the dosage calculations of drug.
		CO 3: Able to perform animal experiments by using isolated organs.
24.	3.2 Pharmaceutical	CO1: Aware of basic concepts of quality assurance
,	Analysis II	CO2: Obtained basic knowledge on spectroscopic, chromatographic and, electrometric methods of analysis.
		CO3: Acquired knowledge on the basic concept, instrumentation and application of sensitive instrumental analysis
		CO4: Perform quantitative & qualitative analysis of drugs using various analytical instruments
		CO5: Can perform mathematical treatment of analytical data in quantitative analysis
25.	3.2 Pharmaceutical Analysis II	CO 1: Able to perform quantitative & qualitative analysis of drugs using various analytical instruments.
	(Practical)	CO 2: Able to operate different analytical equipments.
		CO 3: Apply the concepts of quality assurance and evaluation of analytical standards.
26.	3.3 Pharmacotherapeutics	CO1: Able to understand different causes of diseases.
	п	CO2: Able to identify the abnormal physiology of individual with specific disease states.
		CO3: Able to diagnose the disease by correlating clinical manifestations and laboratory indices.
		CO4: Able to prepare individualized therapeutic plans







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		based on diagnosis.
		CO5: Able to suggest lifestyle modifications based on the disease states.
27.	3.3Pharmaco-therapeutics II (Practical)	CO 1: Able to perform patient counseling regarding specific disease states and drugs.
		CO 2: Can identify relevant patient specific parameters in initiating drug therapy and monitoring therapy
		CO 3: Can monitor controversies in drug therapy and suggest rationale for drug therapy of selected diseases.
28.	3.4 Pharmaceutical Jurisprudence	CO 1: Developed inclination to follow the Professional ethics
		CO 2: Aware of various concepts of the pharmaceutical legislation in India
		CO 3: Obtained in depth knowledge of various acts & rules governing pharmacy profession Know the various parameters in the Drug and Cosmetic Act and rules
		CO 4: Know the Drug policy, DPCO, Patent and design act and understand the labeling requirements and packaging guidelines for drugs and cosmetics
		CO 5: Obtained understanding of Pharmacy Act, Pharmacy Council of India and its functioning
29.	3.5 Medicinal Chemistry	CO 1: Obtained knowledge of the chemistry of drugs with respect to their biological activity.
		CO 2: Can explain metabolism, therapeutic uses and adverse effects of drugs.
		CO 3: Obtained basic knowledge on modern techniques of drug design.
		CO 4: Appreciate the role SAR and QSAR in drug discovery.
		CO 5: Possess knowledge of synthesis, and analysis of selected representative drugs.
30.	3.5 Medicinal Chemistry (Practical)	CO 1: Able to prepare different medicinally important compounds.
		CO 2: Able to determine partition coefficient and Hansch analysis of different drugs.
		CO 3: Able to perform standardization and assay of drugs.





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31.	3.6 Pharmaceutical Formulations	CO1: Acquired knowledge about the various non parenteral pharmaceutical dosage forms and their manufacturing techniques.
		CO2: Learnt Pharmacopeial specifications, and quality control techniques used in different dosage forms.
		CO3: Acquired knowledge on manufacturing, labeling, sterilization & sterility testing of SVPs, LVPs, and ophthalmic preparations.
		CO4: Realized the concepts of controlled drug delivery system
		CO5: Obtained basic knowledge on cosmetics technology
32.	3.6 Pharmaceutical Formulations (Practical)	CO 1: Able to formulate different dosage forms and carry out their in process control tests
		CO 2: Able to formulate the cosmetic preparations and perform its evaluation tests.
		CO 3: Can perform the quality control tests and to operate the equipments required for the tests
33.	PD 4.1	CO1: Able to identify the abnormal physiology individuals
	Pharmacotherapeutics-III	with diseases.
		CO2: Able to interpret the data from diagnostic tools.
		CO3: Able to diagnose the disease by monitoring the clinical features of the patient and suggest the therapy.
		CO4: Able to differentiate types of pain and can suggest the management strategies for each.
		CO5: Capable to suggest the treatment options from the evidences.
34.	PD 4.1	CO1:Able to systematically analyse a case
	Pharmaco-therapeutics-III (Practical)	CO2:Able to diagnose as well as suggest the medicine
		CO3:Can perform the patient counseling effectively
35.	PD 4.2	CO 1: Know various drug distribution methods.
	Hospital Pharmacy	CO 2: Know the professional practice management in hospital pharmacies
		CO 3: Can provide unbiased drug information to the doctors.
		CO 4: Aware of the manufacturing practices of various formulations in hospital set up.
		CO 5: Appreciate importance of stores management and



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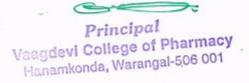


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		inventory control.
36.	PD 4.3 Clinical Pharmacy	CO1: have good understanding of elements of comprehensive pharmaceutical care
		CO2: Can Interpret laboratory results to aid the clinical diagnosis of various disorders
		CO3: Can provide integrated medicine information
		CO4: Can provide integrated poison information
		CO5: Able to promote in the efficient patient management along with other health care professionals.
37.	PD 4.3	CO1:Can analyse, interpret and formulate drug information
	Clinical Pharmacy (Practical)	CO2Able to detect monitoring parameters in therapeutics for determination of liver and kidney abnormalities.
		CO3:Can identify, detect, assess and monitor adverse drug reaction
38.	PD 4.4	CO1: Have fundamental knowledge on selection of
	Biostatistics & Research Methodology	research topic.
		CO2: Acquired basic understanding of different types of research data and documentation of data.
		CO3: Have the preliminary knowledge on data collection in
		clinical research
		CO4: Can design sampling protocol for research
	31	CO5: Can use different statistical tool for the research data analysis using software
39.	PD 4.5 Biopharmaceutics & Pharmacokinetics	CO1: Learnt the basic concepts in biopharmaceutics and pharmacokinetics.
		CO2: Possess knowledge on the effect of Pharmacokinetic parameters on biological effects of the drug.
		CO3: Capable of designing and evaluating dosage regimens of the drugs using pharmacokinetic and biopharmaceutic parameters.
		CO4: Can calculate various pharmacokinetic parameters from plasma and urinary excretion data applying compartment modeling and model independent methods.
		CO5: Can design Bioavailability and Bioequivalence studies of new drugs or dosage forms.







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PD 4.5 Biopharmaceutics & Pharmacokinetics	CO1:Able to perform the Dissolution studies for different marketed products of the same drug.
(Practical)	CO2Able to compute various pharmacokinetic parameters from plasma and urinary excretion data applying compartment modeling and model independent methods.
	CO3:Can perform Bioavailability and Bioequivalency studies of drugs on animal/human model.
PD 4.6 Clinical Toxicology	CO1: Student can support the medical professional in identifying the antidote for specified poisons.
	CO2: Able to give poison information especially regarding clinical features and management of poisoning.
	CO3: Can identify the venomous snakebite poison substance.
	CO4: Able to differentiate different types of substance abuse and can suggest the clinical features and its management.
	CO5: Able to give suggestions on the management of poisoning.
PD (PB)	CO1: Able to understand different causes of diseases.
I.1Pharmacotherapeutics- I & II	CO2: Able to identify the abnormal physiology of individual with specific disease states.
	CO3: Able to diagnose the disease by correlating clinical manifestations and laboratory indices.
	CO4: Able to prepare individualized therapeutic plans based on diagnosis.
	CO5: Able to suggest lifestyle modifications based on the disease states.
PD (PB)	CO1:Able to systematically analyse a case
	CO2: Able to diagnose as well as to prescribe the medicine
T ce ii (Flactical)	CO3:Can perform the patient counseling effectively
5.1-Clinical Research	CO1: Able to take part in drug discovery and new drug development process at clinical trial stage CO2: Acquired knowledge to conduct clinical trial CO3: Capable of preparing various study documents used in clinical trials and able to carry out clinical trial start up activities CO4: Possess knowledge about the procurement, storage,
	PD (PB) 1.1Pharmacotherapeutics- I & II PD (PB) 1.1Pharmacotherapeutics- I & II PD (PB) 1.1Pharmacotherapeutics- I & II (Practical)







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-	T	
		filing of investigational product and to conduct monitoring visit, close out visit and safety reporting
		CO.5: Possess knowledge of data management and quality assurance in CDM.
45.	5.2 Pharmacoepidemiology	CO1: Posses knowledge of pharmacoepidemiology and concept of risk in pharmacoepidemiology
	and Pharmacoeconomics	CO2: Capable of measuring outcomes pharmacoepidemiology using various pharmacoepidemiological methods
		CO3: Possess knowledge of Sources of data for pharmacoepidemiological studies and applications of pharmacoepidemiology
		CO4:. Aware of concepts of pharmacoeconomics and its significance
		CO5: Can perform pharmacoeconomic evaluation
46.	5.3 Clinical Pharmacokinetics and TDM	CO1: Able to design of dosage regimen
		CO2: Able to give drug dosing information about elderly, pediatrics and obese patients.
		CO3: Able to describe different types of conversion from IV to Oral therapy.
		CO4: Able to give TDM information especially regards cardiac, seizure and psychiatric conditions
		CO5: Can support the medical professional in dosage adjustment in Renal and Hepatic disease
47.	5.4 Clerkship	CO1: capable of delivering clinical pharmacy services efficiently,
		CO2:Able to plan and execute pharmaceutical care
		CO3: Possess sound knowledge of therapeutics s
48.	5.5 Project work	CO1: Able to identify, design and carry out research work scientifically following research ethics
		CO2: Able to collect date, interpret them using appropriate statistical tools and arrive at conclusion scientifically
		CO3: Able to document the research work in the form of thesis in an acceptable format



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49.	Internship	CO1: Expert in providing patient care as well as manage and use resources efficiently as a member of healthcare team
		CO2: Capable of promoting health improvement, wellness, and disease prevention in cooperation with other related professionals and community
		CO3; Developed skills in monitoring of the National Health Programmes and schemes with effective communication skill





M. Pharmacy Pharmaceutics Course outcomes

S.No.	Subject Code and name	Out come
1	1. Bio Pharmaceutics &	CO1. understand the basic concepts of bio-
	Pharmacokinetics	pharmaceutics, pharmacokinetics & pharmacokinetic
		models
		CO2.Identify the physiological, physicochemical and
		dosage form-related factors that affects drug
		absorption from different dosage forms
		CO3. Outline and recognize various drug disposition
		process that can cause pharmacokinetic and
		pharmacodynamic variability
		CO4. Identify and understand different study designs
		and various statistical tests applied
		in bioequivalence studies.
		CO5. Evaluate the PK parameters and examine
		absolute, relative bioavailability of drugs
		from different dosage forms using either plasma or
		urine data along with In vitro-in vivo correlation
2	2. Pharmaceutical	CO1. Explain how solubility, particle size, particle
	Formulation Technology	shape, crystallinity, amorphous
		structure of pure drug as pre-formulation parameters
		plays a major role in the
	85	CO2. Determine the formulation and manufacturing
		procedures of different types of
		tablet dosage forms and capsule dosage forms.
		CO3. Develop different coating procedures to tablets
		and evaluate prepared coated tablets.
		CO4. Evaluate materials used for packaging such as
		glass, plastic and rubber
		containers.
3	3. Physical Pharmaceutics	CO1. Explain and determine interfacial properties of
		liquids. Explain types and properties of colloidal
		systems.
		CO2. Estimate the size, shape and surface area of
		powder







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		CO3. Determine the nature of flow of liquids and their measurement CO4. Formulate and evaluate suspensions and emulsions. CO5. Apply mathematical models to determine the rate and order of reaction, shelf life and explain various factors influencing reaction rates
4	4. Quality Assurance	CO1. Understand the c GMP aspects in a pharmaceutical industry.
		CO2. Appreciate the importance and Construct the documentation. CO3. Develop Knowledge and understand the scope of quality certifications applicable to Pharmaceutical industry CO4. Develop basic knowledge and understand the responsibilities of QA & QC departments.
		CO5. Develop basic knowledge Manufacturing operations and controls.
5	1P. Bio Pharmaceutics & Pharmacokinetics(Practical)	CO1. Compare the influence of dosage forms on dissolution behaviour of same API CO2. Connect various physicochemical properties of drug affect on dissolution rate of drug substance CO3. Design various techniques that enhance the
		dissolution rate of drugs
		CO4. Correlate <i>In-vitro</i> – <i>In-vivo</i> absorption studies of various dosage forms CO5. Solve and interpret various pharmacokinetic parameters by applying statistical treatment to pharmacokinetic data







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6	2P . Pharmaceutical Formulation Technology &	CO1. Determine the formulation and manufacturing procedures of different types of
	Physical Pharmaceutics(Practical)	tablet dosage forms and capsule dosage forms. CO2. Develop different coating procedures to tablets and evaluate prepared coated tablets. CO3. Estimate the size, shape and surface area of powder CO4. Determine the nature of flow of liquids and their measurement CO5. Formulate and evaluate suspensions and emulsions.
8	5. Novel Drug Delivery Systems-I	CO1. Develop various vesicles and devices related to drug delivery systems
		CO2. Define various types of drug delivery systems CO3. Compare the different types of delivery systems based on their formulation and Usage CO4. Evaluate drug delivery systems for their quality CO5. Apply the mechanisms in developing various drug delivery systems
9	6. Novel Drug Delivery Systems-II	CO1.Define basic concepts of enzymes, transporters and protein engineering.
		CO2. Outline about recombinant DNA technology and Immunity
		CO3. Utilize the knowledge of hybridoma technology and vaccines
		CO4. Examine immunization techniques and genetic organization
		CO5. Explain about mutants, use of microorganisms in fermentation technology
10	7. Pharmaceutical Equipment validation	CO1. Determine Construction, operation, Working Application and validation Of Pharmaceutical Machinery
		CO2. Understand validation Of Steam Distillation



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		And Uniformity Index For Given Sample
		CO3. Validation of Mixing, Drying, Filtration, Centrifugation CO4. Demonstration Of Colloid Mill, Planetary Mixer, Fluidized Bed Dryer, Freeze Dryer And Such Other Major Equipment and their validation. CO5. To study about various sterilization equipments validation
11	8. Regulatory affairs	CO1.To understand about New Drug Application CO2. To study about Documentation CO3. To know the Importance of documentation, CO4. To learn Current good manufacturing practices (CGMP) as per WHO.
12	5P. Novel Drug Delivery Systems-I	CO1. To prepare Microparticles, liposomes and nanoparticles CO2. To prepare and evaluate bioadhesive, transdermal and buccal drug delivery systems CO3. Compare the different types of delivery systems based on their formulation and Usage CO4. Evaluate drug delivery systems for their quality CO5. Apply the mechanisms in developing various drug delivery systems
13.	6.P. Novel Drug Delivery Systems-II and Pharmaceutical Equipment validation	CO1.Define basic concepts of enzymes, transporters and protein engineering. CO4. Examine immunization techniques and genetic organization
		CO3. Validation of Mixing, Drying, Filtration, Centrifugation CO4. Demonstration Of Colloid Mill, Planetary Mixer, Fluidized Bed Dryer, Freeze Dryer And Such Other Major Equipment and their validation. CO5. To study about various sterilization equipment validation







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Course out comes for M. Pharm. Pharmaceutical analysis

S.no.	Subject name	Outcomes Outcomes
1.1.T	Advanced Pharmaceutical analytical techniques	CO1. Theoretical aspects of the HPLC and GCtechniques CO2. To get knowledge and skills in advanced instrumentation techniques for drug analysis CO3. To learn hyphenated analytical techniques Critical analysis of analytical problem CO4. Selection of appropriate analytical tool for the quantification of chemicals and excepients.
1.2.T	Pharmaceutical Analysis- I	CO1. To study of the principles and procedures involved in Non - aqueous, Complex metric, Oxidation - reduction and Diazotization methods, CO2. To study the principles and procedures involved in the electrometric methods: Conductometry, Potentiometry, Polarography and Amperometry CO3. To learn Principles and procedures involved in using the following reagents in pharmaceutical analysis with suitable examples MBTH(3-methyl - 2- benzothiazolone hydrazone) F.C. Reagent (Folin - Ciocalteau), PDAB (Para Dimethyl Amnio Benzaldehyde)etc, CO4. To practice Principles and Procedures involved in quantitative determination of various pharmaceutical preparations and dosage forms of the Alkaloids (Pilocarpine and quinine sulphate)
1.3.T	Quality control of Pharmaceutical dosage forms	CO1. To study Quality control of Solid dosage Forms CO2 To evaluate Ointments, Creams CO3. To learn quality control tests Liquid oral preparations,, CO4. To evaluate and study about Parenterals,
1.4. T	Biological standardization	CO1. To study principles & procedures involved in bio assay of. Heparin, Insulin, Posterior Pituitary CO2. To study principles & procedures involved in bio assay of. Diphtheria, Typhoid Principles and Procedures involved in Biological tests of the following. CO3. To study principles & procedures involved in bio assay of Living contaminants in vaccines. Endotoxins Microbiological assay of Vitamins CO4.To study principles & procedures involved in bio assay of. Antibiotics such as Neomycin sulphate.
1.1.P	Advanced Pharmaceutical analytical techniques	CO1. To learn assay of paracetamol tablet By UV –spectroscopy, and Assay of paracetamol Tablets By colorimetry Method, CO2. To perform Assay of Ibuprofen Tablets by UV -visible spectroscopy, CO3. To learn Assay of Diclotenac Potassium Tablets By Uv- spectroscopy. CO 4. To perform Assay of Furosemide Tablets by UV - spectroropy Assay of Riboflavin By Ur – spectroscopy& colorimetrys
1.2.P	Pharmaceutical Analysis-I	CO1.To study Non aqueous titrations CO2. To leran oxidation reduction titration





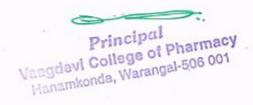


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		CO3. To know quantitative determination of Alkaloids, Griseofulvin
2.1T	Quality assurance	CO1. To understand New Drug Application
		CO2. To learn Documentation and its Importance
		CO3. To study the Current good manufacturing practices (CGMP) as per
		WHO.
		CO4. To know about principles of quality assurance.
2.2.1	Pharmaceutical	CO1. To know the advanced study of medicines (GLC, GC-MS
	Analysis-II	CO2. To know the principles and procedures of LC-MS, MS-MS
		CO3. To learn instrumental methods in the development of medicines HPLC, HPTLC
		CO4. To develop medicines Flame Photometry, Fluorimetry,
		CO5. To know the advanced study of the principles and procedures and
COLUMN DESIGNATION OF THE PARTY		applications of instrumental methods in the development of medicines
2.3.T	Analytical method	CO1. To learn on the importance of patent and intellectual property
	development and	rights& trained on thequalification aspects of instruments.
	validation	CO2. To understand the importance of calibration to be performed for the
		instruments.
		CO3. To know the various validation aspects to be carried out in the
		industry.
		CO4. To gain knowledge on how validation are carried for various
		components such as instrument, cleaning, process validation.
2.4.T	Regulatory Affairs	CO1.To understand about New Drug Application
		CO2. To study about Documentation
		CO3. To know the Importance of documentation
		CO4. To learn Current good manufacturing practices (CGMP) as per WHO.
2.1, P	Analytical method	CO1. To isolation and quantstative determination of casein, Lactose from
	development and validation 9	Milk
	validation 9	CO2. Simultaneous estimation of paracetamol and Ibuprofen taldets,
		CO3. Assay of Glibendlamide by Uv-spectroscopy, nterpretation of IR Spectumand mass spectrum
2.2.P.	Pharmaceutical	CO1. To Isolate and quantitative determination of casein, Lactose from
	Analysis-II	Milk
		CO2. Simultaneous estimation of paracetamol and Ibuprofen taldets
		CO3. Assay of Glibendlamide by Uv-spectroscopy. nterpretation of IR
		Spectumand mass spectrum.
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Course outcome of M. Pharmacy Pharmaceutical Chemistry

Course Code	Name of the Course	Out come
M. Pharm	Advanced Organic Chemistry - I	CO ₁ : Nucleophilic & Electrophilic substitution. CO ₂ : Heterocylic chemistry, reactivity of aromatic heterocycles. CO ₃ : Electrophilic addition at nitrogen, electrophilic, nucleophilic and radical substitution. CO ₄ : Five-membered ring compounds with one heteroatom: Pyrroles, Furans and Thiophenes. CO ₅ : Elimination reactions.
	Advanced Medicinal Chemistry - I	 CO₁: Genesis of new drugs-sources of new drugs; leads from natural products. CO₂: Molecular modifications, Drug Design-QSAR in drug design. CO₃: A study includes an account of their origin and development, classification, structures, mechanism of action, SAR, uses and toxicity some important class of drugs-Beta blockers, ACE Inhibitors. CO₄: H1 and H2 antagonist, Protan pump inhibitors. CO₅: NSAIDS, Anticancers some important drugs synthesis.
	Spectroscopic Identification of Organic Compounds	CO ₁ : To understand the basic principles involved & instrumentation, and a detailed study of applications of the following spectroscopic techniques in the determination of structure of the following classes of compounds with the help of simple examples: ¡i) Alkanes il) Cycloalkanes ili) Alkenes iv) Aldehydes and ketones v) Alcohols vi) Carboxylic acids vi) Phenols viti) Amines ix) Simple Heterocyclic Compounds CO ₂ : UV & IR spectroscopy. CO ₃ : 'H NMR, ¹³ C NMR CO ₄ : Mass spectrometry CO ₅ : To know the knowledge two dimensional NMR techniques, COSY, HETCOR, HMBC, TOCY.







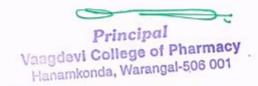
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	Screening Methods In Pharmacology	CO ₁ : To study the Principles and techniques involved in the Pharmacological screening of various diseases, Enzyme inhibition studies - Inhibition of COX-1, COX-2 and 5-LOX, Screening of cytotoxicity. CO ₂ : Statistical analysis of data, methods of precision, accuracy, fiducial limits. CO ₃ : Regression analysis, standard error, tests for significance - chisquare test, students T test, ANOVA. CO ₄ : Important of tests in pharmaceutical/biological experiments.
U# 1	Advanced Organic Chemistry–I(Pr)	 CO₁: To gain the knowledge Calibration of thermometer and finding melting point, boiling point. Crystallization, Distillation. CO₂: Separation and identification of organic compounds from binary mixtures. CO₃: Synthesis of some of the heterocyclic compounds.
	Advanced Medicinal Chemistry -I(Pr)	CO ₁ : Synthesis, purification and identification some of the drugs.

Course Code	Name of the Course	Out come
M. Pharm	Advanced Organic Chemistry - II	CO ₁ : To understand the Strategies in organic synthesis, CO ₂ : disconnection approach, functional group intervoncersions. Synthons & Retrosyntheis. CO ₃ :Chiral drug synthesis: Modern synthetic methods: CO ₄ : Green Synthesis CO ₅ : Microwave assisted synthesis Six-membered heterocyclic ring compounds with one heteroatom.
	Advanced Medicinal Chemistry - II	CO ₁ : Psychopharmacological agents. CO ₂ : Anxiolytics, sedatives and hypnotics: Benzodiazepines and related compounds. CO ₃ : Antidepressants: MAO inhibitors. CO ₄ : Antiepileptics & CNS stimulants. CO ₅ : Diuretics, Antihyperlipidemic agents, Quinolones.
	Chemistry of Natural Products	CO ₁ : To know Alkaloids-opium, ergot. Structure of morphine- peripheral groups; SAR. Anticancer agents of natural origin, Vinca rosea, Anticancer antibiotics-dactinomycin etc, CO ₂ : Sources and structures of cholesterol, ergosterol, stigmasterol and diosgenin. CO ₃ : Development of new cephalosporins - recent advances. CO ₄ : Steroidal Hormonal Drugs. CO ₅ : Structural Elucidation.







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Chromatographic Separation Technology	CO ₁ : To study the Theory and instrumentation of thefollowing techniques for the separation of organic compounds. TLC &HPTLC, Coloumns chromatography, Electrophoresis CO ₂ : Chiral Separations, Circular counter current chromatography (CCCC), Ion Exchange methods. CO ₃ : Electrophoresis. CO ₄ : HPLC CO ₅ : GLC
Advanced Medicinal Chemistry – II (Pr)	CO ₁ : To gain the Synthetic procedures, purification and identification of some of the drugs.CO ₂ : Spectra to be recorded for some compounds and analyzed.
Chemisty of Natural Products (Pr)	CO ₁ :Isolation and purification of the a)Piperine from black pepper b) Strychnine and Brucine from Strychnin nuxvomica seeds c) Caffeine from Tea Powder d) Curcumin from Turmeric etc. Identification of alkaloids in mixture by TLC. CO ₂ : Preparation of TLC for separation and isolation.







Course outcome of M. Pharmacy Pharmacology

Course Code	Name of the Course	Out come
MPharm	Clinical Pharmacology& Toxicology	CO ₁ : To understand the Adverse Drug Reactions. CO ₂ : Pathophysiology of some disease. CO ₃ : drug therapy of some disease. CO ₄ : Pharmacogenomics. CO ₅ : Principles of Toxicology
	Advances In Preclinical Evaluation - II	CO ₁ : To Know the basic principles of bioassays Experimental models and Statistical designs employed in biological Standardization. CO ₂ : Preclinical evaluation of some drugs like sedatives etc. CO ₃ : Cell culture technology. CO ₄ : Animal Screening Procedures. CO ₅ : Concept of transgenic animals, principle of immunoassay.
	Clinical Research	 CO₁: Know the Introduction to Clinical Research CO₂:Research Design Methods, Planning and execution of Clinical trials. CO₃: Bioavailability and Bioequivalence studies, Ethics and Guidelines in Biomedical Research. CO₄: Clinical research, Designing of clinical trial documents, Data management.
	Molecular And Biochemical Pharmacology Basis Of Drug Discovery & Development	the trends in modern drug discovery. CO ₃ : Drug Receptor theory. CO ₄ : Quantitative analysis of Structure activity relation ship. CO ₅ : Principle of computered aided drug design.
	Advances In Preclinical Evaluation – II(Pr)	 CO₁: Preparation of various physiological salutations. CO₂: Bio assays of Ach by three point& four point methods. CO₃: Anticonvelsentactivity, CNS depressant activity.
	Clinical Pharmacology &Toxicology(Pr)	CO ₁ : Liver function test, Determination of lipid profile, Renal function test. CO ₂ :GOD-POD methods. CO ₃ :Bio markers test.







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Course Code	Name of the Course	Out come
M.Pharm	Advanced pharmacology-I	CO ₁ : The basic Pharmacological knowledge in the preventation and treatment of various disease. CO ₂ : Drugs acting on synoptic & neuro effect junctional sites. CO ₃ : Drug acting on ANS & CNS(agonist & antagonist), blood forming Organs CO ₄ : Muscarinic receptor agonists & antagonist. CO ₅ : Drugs affected renal and cardiovascular function.
	Advanced pharmacology-II	 CO₁: To gain the knowledge about Autacoids, Drug therapy of inflammation. CO₂: Drugs affecting gastro intestinal function. CO₃: Chemotherapy of Malaria, microbial infection Neoplastic diseases. CO₄: Oral hypoglycemic agents. CO₅: Thyroid and Steroidal hormones.
	Advances in preclinical Evaluation-I	CO ₁ : To understand about the handling & breeding techniques. CO ₂ : Regulations of laboratory animals, Ethical requirement. CO ₃ : Drug discovery process principles, techniques and strategies used in drug discovery. CO ₄ : To understand the preclinical and clinical models employed in the screening of new drugs. CO ₅ : Principals of Toxicological evaluations, parametric and non para metric tests.
	Pharmacokinetics, Pharmacodynamics & Drug Metabolism (PPDM)	CO ₁ : To understand about the ADME. CO ₂ : Bioavailability and Bioequivalence of drug products. CO ₃ : Biotransformation reactions. CO ₄ : Protein binding. CO ₅ : Excretion of drugs ,routes of excretion of drugs.
	Advanced pharmacology-I(pr)	CO ₁ : Preparation of physiological salt solutions. CO ₂ :DRC of Ach on frog rectus abdomen muscle.
	Pharmacokinetics, Pharmacodynamics & Drug Metabolism (PPDM)(pr)	CO ₁ : Preparation of standard graph of caffeine, calculate the linearity, correlations. CO ₂ : Determination of apparent permeability.





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