

Program Outcomes & Course Outcomes

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B.Pharm 1 sem		
Subject with code	Scope	Learning outcome
BP101T. HUMAN ANATOMY AND PHYSIOLOGY-I (Theory)	This subject is designed to impart fundamental knowledge on the structure and functions of the various systems of the human body. It also helps in understanding both homeostatic mechanisms. The subject provides the basic knowledge required to understand the various disciplines of pharmacy.	Upon completion of this course the student should be able to 1. Explain the gross morphology, structure and functions of various organs of the human body. 2. Describe the various homeostatic mechanisms and their imbalances. 3. Identify the various tissues and organs of different systems of human body. 4. Perform the various experiments related to special senses and nervous system. 5. Appreciate coordinated working pattern of different organs of each system
BP102T. PHARMACEUTICAL ANALYSIS (Theory)	This course deals with the fundamentals of analytical chemistry and principles of electrochemical analysis of drugs	Upon completion of the course student shall be able to · understand the principles of volumetric and electro chemical analysis · carryout various volumetric and electrochemical titrations · develop analytical skills
BP103T. PHARMACEUTICS- I (Theory)	This course is designed to impart a fundamental knowledge on the preparatory pharmacy with arts and science of preparing the different conventional dosage forms.	Upon completion of this course the student should be able to: · Know the history of profession of pharmacy · Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations · Understand the professional way of handling the prescription · Preparation of various conventional dosage forms
BP104T. PHARMACEUTICAL INORGANIC CHEMISTRY (Theory)	This subject deals with the monographs of inorganic drugs and pharmaceuticals.	Upon completion of course student shall be able to · know the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals · understand the medicinal and pharmaceutical importance of inorganic compounds

BP105T.COMMUNICATION SKILLS (Theory)	This course will prepare the young pharmacy student to interact effectively with doctors, nurses, dentists, physiotherapists and other health workers. At the end of this course the student will get the soft skills set to work cohesively with the team as a team player and will add value to the pharmaceutical business.	Upon completion of the course the student shall be able to 1. Understand the behavioral needs for a Pharmacist to function effectively in the areas of pharmaceutical operation 2. Communicate effectively (Verbal and Non Verbal) 3. Effectively manage the team as a team player 4. Develop interview skills 5. Develop Leadership qualities and essentials
BP 106RBT.REMEDIAL BIOLOGY (Theory)	To learn and understand the components of living world, structure and functional system of plant and animal kingdom.	Upon completion of the course, the student shall be able to · know the classification and salient features of five kingdoms of life · understand the basic components of anatomy & physiology of plant · know understand the basic components of anatomy & physiology animal with special reference to human
BP 106RMT.REMEDIAL MATHEMATICS (Theory)	This is an introductory course in mathematics. This subject deals with the introduction to Partial fraction, Logarithm, matrices and Determinant, Analytical geometry, Calculus, differential equation and Laplace transform.	Upon completion of the course the student shall be able to:- 1. Know the theory and their application in Pharmacy 2. Solve the different types of problems by applying theory 3. Appreciate the important application of mathematics in Pharmacy
B.Pharm 2nd sem		
Subject with code	Scope	Learning outcome

BP 201T. HUMAN ANATOMY AND PHYSIOLOGY-II (Theory)	This subject is designed to impart fundamental knowledge on the structure and functions of the various systems of the human body. It also helps in understanding both homeostatic mechanisms. The subject provides the basic knowledge required to understand the various disciplines of pharmacy.	Upon completion of this course the student should be able to: 1. Explain the gross morphology, structure and functions of various organs of the human body. 2. Describe the various homeostatic mechanisms and their imbalances. 3. Identify the various tissues and organs of different systems of human body. 4. Perform the hematological tests like blood cell counts, haemoglobin estimation, bleeding/clotting time etc and also record blood pressure, heart rate, pulse and respiratory volume. 5. Appreciate coordinated working pattern of different organs of each system 6. Appreciate the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body.
BP202T. PHARMACEUTICAL ORGANIC CHEMISTRY –I (Theory)	This subject deals with classification and nomenclature of simple organic compounds, structural isomerism, intermediates forming in reactions, important physical properties, reactions and methods of preparation of these compounds. The syllabus also emphasizes on mechanisms and orientation of reactions	Upon completion of the course the student shall be able to 1. write the structure, name and the type of isomerism of the organic compound 2. write the reaction, name the reaction and orientation of reactions 3. account for reactivity/stability of compounds, 4. identify/confirm the identification of organic compound

BP203 T. BIOCHEMISTRY (Theory)	<p>Biochemistry deals with complete understanding of the molecular levels of the chemical process associated with living cells. The scope of the subject is providing biochemical facts and the principles to understand metabolism of nutrient molecules in physiological and pathological conditions. It is also emphasizing on genetic organization of mammalian genome and hetero & autocatalytic functions of DNA.</p>	<p>Upon completion of course student shall able to</p> <ol style="list-style-type: none"> 1. Understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes. 2. Understand the metabolism of nutrient molecules in physiological and pathological conditions. 3. Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins.
BP 204T.PATHOPHYSIOLOGY (THEORY)	<p>Pathophysiology is the study of causes of diseases and reactions of the body to such disease producing causes. This course is designed to impart a thorough knowledge of the relevant aspects of pathology of various conditions with reference to its pharmacological applications, and understanding of basic pathophysiological mechanisms. Hence it will not only help to study the syllabus of pathology, but also to get baseline knowledge required to practice medicine safely, confidently, rationally and effectively.</p>	<p>Upon completion of the subject student shall be able to –</p> <ol style="list-style-type: none"> 1. Describe the etiology and pathogenesis of the selected disease states; 2. Name the signs and symptoms of the diseases; and 3. Mention the complications of the diseases.

BP205 T. COMPUTER APPLICATIONS IN PHARMACY (Theory)	This subject deals with the introduction Database, Database Management system, computer application in clinical studies and use of databases.	Upon completion of the course the student shall be able to 1. know the various types of application of computers in pharmacy 2. know the various types of databases 3. know the various applications of databases in pharmacy
BP 206 T. ENVIRONMENTAL SCIENCES (Theory)	Environmental Sciences is the scientific study of the environmental system and the status of its inherent or induced changes on organisms. It includes not only the study of physical and biological characters of the environment but also the social and cultural factors and the impact of man on environment.	Upon completion of the course the student shall be able to: 1. Create the awareness about environmental problems among learners. 2. Impart basic knowledge about the environment and its allied problems. 3. Develop an attitude of concern for the environment. 4. Motivate learner to participate in environment protection and environment improvement. 5. Acquire skills to help the concerned individuals in identifying and solving environmental problems. 6. Strive to attain harmony with Nature.
B.Pharm 3 rd sem		
Subject with code	Scope	Learning outcome
BP301T. PHARMACEUTICAL ORGANIC CHEMISTRY –II (Theory)	This subject deals with general methods of preparation and reactions of some organic compounds. Reactivity of organic compounds are also studied here. The syllabus emphasizes on mechanisms and orientation of reactions. Chemistry of fats and oils are also included in the syllabus.	Upon completion of the course the student shall be able to 1. write the structure, name and the type of isomerism of the organic compound 2. write the reaction, name the reaction and orientation of reactions 3. account for reactivity/stability of compounds, 4. prepare organic compounds

<p>BP302T. PHYSICAL PHARMACEUTICS-I (Theory)</p>	<p>The course deals with the various physical and physicochemical properties, and principles involved in dosage forms/formulations. Theory and practical components of the subject help the student to get a better insight into various areas of formulation research and development, and stability studies of pharmaceutical dosage forms.</p>	<p>Upon the completion of the course student shall be able to</p> <ol style="list-style-type: none"> 1. Understand various physicochemical properties of drug molecules in the designing the dosage forms 2. Know the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations 3. Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.
<p>BP 303 T. PHARMACEUTICAL MICROBIOLOGY (Theory)</p>	<p>Study of all categories of microorganisms especially for the production of alcohol antibiotics, vaccines, vitamins enzymes etc..</p>	<p>Upon completion of the subject student shall be able to;</p> <ol style="list-style-type: none"> 1. Understand methods of identification, cultivation and preservation of various microorganisms 2. To understand the importance and implementation of sterilization in pharmaceutical processing and industry 3. Learn sterility testing of pharmaceutical products. 4. Carried out microbiological standardization of Pharmaceuticals. 5. Understand the cell culture technology and its applications in pharmaceutical industries.

BP 304 T. PHARMACEUTICAL ENGINEERING (Theory)	This course is designed to impart a fundamental knowledge on the art and science of various unit operations used in pharmaceutical industry.	Upon completion of the course student shall be able: 1. To know various unit operations used in Pharmaceutical industries. 2. To understand the material handling techniques. 3. To perform various processes involved in pharmaceutical manufacturing process. 4. To carry out various test to prevent environmental pollution. 5. To appreciate and comprehend significance of plant lay out design for optimum use of resources. 6. To appreciate the various preventive methods used for corrosion control in Pharmaceutical industries.
B.Pharm 4th sem		
Subject with code	Scope	Learning outcome
BP401T. PHARMACEUTICAL ORGANIC CHEMISTRY –III (Theory)	This subject imparts knowledge on stereo-chemical aspects of organic compounds and organic reactions, important named reactions, chemistry of important hetero cyclic compounds. It also emphasizes on medicinal and other uses of organic compounds.	At the end of the course, the student shall be able to 1. understand the methods of preparation and properties of organic compounds 2. explain the stereo chemical aspects of organic compounds and stereo chemical reactions 3. know the medicinal uses and other applications of organic compounds
BP402T. MEDICINAL CHEMISTRY – I (Theory)	This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasizes on structure activity relationships of drugs, importance of physicochemical properties and metabolism of drugs. The syllabus also emphasizes on chemical synthesis of important drugs under each class.	Upon completion of the course the student shall be able to 1. understand the chemistry of drugs with respect to their pharmacological activity 2. understand the drug metabolic pathways, adverse effect and therapeutic value of drugs 3. know the Structural Activity Relationship (SAR) of different class of drugs 4. write the chemical synthesis of some drugs

BP 403 T. PHYSICAL PHARMACEUTICS-II (Theory)	The course deals with the various physical and physicochemical properties, and principles involved in dosage forms/formulations. Theory and practical components of the subject help the student to get a better insight into various areas of formulation research and development, and stability studies of pharmaceutical dosage forms.	Upon the completion of the course student shall be able to 1. Understand various physicochemical properties of drug molecules in the designing the dosage forms 2. Know the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations 3. Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.
BP 404 T. PHARMACOLOGY-I (Theory)	The main purpose of the subject is to understand what drugs do to the living organisms and how their effects can be applied to therapeutics. The subject covers the information about the drugs like, mechanism of action, physiological and biochemical effects (pharmacodynamics) as well as absorption, distribution, metabolism and excretion (pharmacokinetics) along with the adverse effects, clinical uses, interactions, doses, contraindications and routes of administration of different classes of drugs.	Upon completion of this course the student should be able to 1. Understand the pharmacological actions of different categories of drugs 2. Explain the mechanism of drug action at organ system/sub cellular/ macromolecular levels. 3. Apply the basic pharmacological knowledge in the prevention and treatment of various diseases. 4. Observe the effect of drugs on animals by simulated experiments 5. Appreciate correlation of pharmacology with other bio medical sciences
BP 405 T. PHARMACOGNOSY AND PHYTOCHEMISTRY I (Theory)	The subject involves the fundamentals of Pharmacognosy like scope, classification of crude drugs, their identification and evaluation, phytochemicals present in them and their medicinal properties.	Upon completion of the course, the student shall be able 1. to know the techniques in the cultivation and production of crude drugs 2. to know the crude drugs, their uses and chemical nature 3. know the evaluation techniques for the herbal drugs 4. to carry out the microscopic and morphological evaluation of crude drugs
B.Pharm 5th sem		
Subject with code	Scope	Learning outcome

BP501T. MEDICINAL CHEMISTRY – II (Theory)	This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasizes on structure activity relationships of drugs, importance of physicochemical properties and metabolism of drugs. The syllabus also emphasizes on chemical synthesis of important drugs under each class	Upon completion of the course the student shall be able to 1. Understand the chemistry of drugs with respect to their pharmacological activity 2. Understand the drug metabolic pathways, adverse effect and therapeutic value of drugs 3. Know the Structural Activity Relationship of different class of drugs 4. Study the chemical synthesis of selected drugs
BP 502 T. Industrial PharmacyI (Theory)	Course enables the student to understand and appreciate the influence of pharmaceutical additives and various pharmaceutical dosage forms on the performance of the drug product.	Upon completion of the course the student shall be able to 1. Know the various pharmaceutical dosage forms and their manufacturing techniques. 2. Know various considerations in development of pharmaceutical dosage forms 3. Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality
BP503.T. PHARMACOLOGY-II (Theory)	This subject is intended to impart the fundamental knowledge on various aspects (classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications) of drugs acting on different systems of body and in addition, emphasis on the basic concepts of bioassay	Upon completion of this course the student should be able to 1. Understand the mechanism of drug action and its relevance in the treatment of different diseases 2. Demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments 3. Demonstrate the various receptor actions using isolated tissue preparation 4. Appreciate correlation of pharmacology with related medical sciences
BP504 T. PHARMACOGNOSY AND PHYTOCHEMISTRY II (Theory)	The main purpose of subject is to impart the students the knowledge of how the secondary metabolites are produced in the crude drugs, how to isolate and identify and produce them industrially. Also this subject involves the study	Upon completion of the course, the student shall be able 1. to know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents 2. to understand the preparation and development of herbal formulation.

	of producing the plants and phytochemicals through plant tissue culture, drug interactions and basic principles of traditional system of medicine	3. to understand the herbal drug interactions 4. to carryout isolation and identification of phytoconstituents
BP 505 T. PHARMACEUTICAL JURISPRUDENCE (Theory)	This course is designed to impart basic knowledge on important legislations related to the profession of pharmacy in India	Upon completion of the course, the student shall be able to understand: 1. The Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals. 2. Various Indian pharmaceutical Acts and Laws 3. The regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals 4. The code of ethics during the pharmaceutical practice
B.Pharm 6th sem		
Subject with code	Scope	Learning outcome
BP601T. MEDICINAL CHEMISTRY – III (Theory)	This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasis on modern techniques of rational drug design like quantitative structure activity relationship (QSAR), Prodrug concept, combinatorial chemistry and Computer aided drug design (CADD). The subject also emphasizes on the chemistry, mechanism of action, metabolism, adverse effects, Structure Activity Relationships (SAR), therapeutic uses and synthesis of important drugs.	Upon completion of the course student shall be able to 1. Understand the importance of drug design and different techniques of drug design. 2. Understand the chemistry of drugs with respect to their biological activity. 3. Know the metabolism, adverse effects and therapeutic value of drugs. 4. Know the importance of SAR of drugs.

<p>BP602 T. PHARMACOLOGY-III (Theory) 45</p>	<p>This subject is intended to impart the fundamental knowledge on various aspects (classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications) of drugs acting on respiratory and gastrointestinal system, infectious diseases, immuno-pharmacology and in addition, emphasis on the principles of toxicology and chronopharmacology</p>	<p>Upon completion of this course the student should be able to:</p> <ol style="list-style-type: none"> 1. understand the mechanism of drug action and its relevance in the treatment of different infectious diseases 2. comprehend the principles of toxicology and treatment of various poisonings and 3. appreciate correlation of pharmacology with related medical sciences.
<p>BP 603 T. HERBAL DRUG TECHNOLOGY (Theory)</p>	<p>This subject gives the student the knowledge of basic understanding of herbal drug industry, the quality of raw material, guidelines for quality of herbal drugs, herbal cosmetics, natural sweeteners, nutraceutical etc. The subject also emphasizes on Good Manufacturing Practices (GMP), patenting and regulatory issues of herbal drugs</p>	<p>Upon completion of this course the student should be able to:</p> <ol style="list-style-type: none"> 1. understand raw material as source of herbal drugs from cultivation to herbal drug product 2. know the WHO and ICH guidelines for evaluation of herbal drugs 3. know the herbal cosmetics, natural sweeteners, nutraceuticals 4. appreciate patenting of herbal drugs, GMP .

<p>BP 604 T. BIOPHARMACEUTICS AND PHARMACOKINETICS (Theory)</p>	<p>This subject is designed to impart knowledge and skills of Biopharmaceutics and pharmacokinetics and their applications in pharmaceutical development, design of dose and dosage regimen and in solving the problems arised therein.</p>	<p>Upon completion of the course student shall be able to:</p> <ol style="list-style-type: none"> 1. Understand the basic concepts in biopharmaceutics and pharmacokinetics and their significance. 2. Use of plasma drug concentration-time data to calculate the pharmacokinetic parameters to describe the kinetics of drug absorption, distribution, metabolism, excretion, elimination. 3. To understand the concepts of bioavailability and bioequivalence of drug products and their significance. 4. Understand various pharmacokinetic parameters, their significance & applications.
<p>BP 605 T. PHARMACEUTICAL BIOTECHNOLOGY (Theory)</p>	<p>Biotechnology has a long promise to revolutionize the biological sciences and technology.</p> <ul style="list-style-type: none"> · Scientific application of biotechnology in the field of genetic engineering, medicine and fermentation technology makes the subject interesting. · Biotechnology is leading to new biological revolutions in diagnosis, prevention and cure of diseases, new and cheaper pharmaceutical drugs. · Biotechnology has already produced transgenic crops and animals and the future promises lot more. · It is basically a research-based subject. 	<p>Upon completion of the subject student shall be able to;</p> <ol style="list-style-type: none"> 1. Understanding the importance of Immobilized enzymes in Pharmaceutical Industries 2. Genetic engineering applications in relation to production of pharmaceuticals 3. Importance of Monoclonal antibodies in Industries 4. Appreciate the use of microorganisms in fermentation technology
B.Pharm 7th sem		
Subject name with code	Scope	Objective/learning outcome

<p>BP701T. INSTRUMENTAL METHODS OF ANALYSIS (Theory)</p>	<p>This subject deals with the application of instrumental methods in qualitative and quantitative analysis of drugs. This subject is designed to impart a fundamental knowledge on the principles and instrumentation of spectroscopic and chromatographic technique. This also emphasizes on theoretical and practical knowledge on modern analytical instruments that are used for drug testing.</p>	<p>Upon completion of the course the student shall be able to</p> <ol style="list-style-type: none"> 1. Understand the interaction of matter with electromagnetic radiations and its applications in drug analysis 2. Understand the chromatographic separation and analysis of drugs. 3. Perform quantitative & qualitative analysis of drugs using various analytical instruments.
<p>BP 702 T. INDUSTRIAL PHARMACYII (Theory)</p>	<p>This course is designed to impart fundamental knowledge on pharmaceutical product development and translation from laboratory to market</p>	<p>Upon completion of the course, the student shall be able to:</p> <ol style="list-style-type: none"> 1. Know the process of pilot plant and scale up of pharmaceutical dosage forms 2. Understand the process of technology transfer from lab scale to commercial batch 3. Know different Laws and Acts that regulate pharmaceutical industry 4. Understand the approval process and regulatory requirements for drug products

BP 703T. PHARMACY PRACTICE (Theory)	In the changing scenario of pharmacy practice in India, for successful practice of Hospital Pharmacy, the students are required to learn various skills like drug distribution, drug information, and therapeutic drug monitoring for improved patient care. In community pharmacy, students will be learning various skills such as dispensing of drugs, responding to minor ailments by providing suitable safe medication, patient counselling for improved patient care in the community set up.	Upon completion of the course, the student shall be able to 1. know various drug distribution methods in a hospital 2. appreciate the pharmacy stores management and inventory control 3. monitor drug therapy of patient through medication chart review and clinical review 4. obtain medication history interview and counsel the patients 5. identify drug related problems 6. detect and assess adverse drug reactions 7. interpret selected laboratory results (as monitoring parameters in therapeutics) of specific disease states 8. know pharmaceutical care services 9. do patient counseling in community pharmacy; 10. appreciate the concept of Rational drug therapy.
BP 704T: NOVEL DRUG DELIVERY SYSTEMS (Theory)	This subject is designed to impart basic knowledge on the area of novel drug delivery systems.	Upon completion of the course student shall be able 1. To understand various approaches for development of novel drug delivery systems. 2. To understand the criteria for selection of drugs and polymers for the development of Novel drug delivery systems, their formulation and evaluation
BP705P. INSTRUMENTAL METHODS OF ANALYSIS (Practical)	Practical aspect of analysis of chemistry	Very useful in pharmaceutical industry, chemical industry for purification and synthesis of compound & testing them
B.Pharm 8th sem		
Subject name with code	Scope	Objective/learning outcome

<p>BIOSTATISTICS AND RESEARCH METHODOLOGY (Theory) (BP801T.)</p>	<p>To understand the applications of Biostatistics in Pharmacy. This subject deals with descriptive statistics, Graphics, Correlation, Regression, logistic regression Probability theory, Sampling technique, Parametric tests, Non Parametric tests, ANOVA, Introduction to Design of Experiments, Phases of Clinical trials and Observational and Experimental studies, SPSS, R and MINITAB statistical software's, analyzing the statistical data using Excel.</p>	<p>Upon completion of the course the student shall be able to • Know the operation of M.S. Excel, SPSS, R and MINITAB[®], DoE (Design of Experiment) • Know the various statistical techniques to solve statistical problems • Appreciate statistical techniques in solving the problems.</p>
<p>SOCIAL AND PREVENTIVE PHARMACY (BP 802T)</p>	<p>The purpose of this course is to introduce to students a number of health issues and their challenges. This course also introduced a number of national health programmes. The roles of the pharmacist in these contexts are also discussed.</p>	<p>Objectives: After the successful completion of this course, the student shall be able to: · Acquire high consciousness/realization of current issues related to health and pharmaceutical problems within the country and worldwide. · Have a critical way of thinking based on current healthcare development. · Evaluate alternative ways of solving problems related to health and pharmaceutical issues</p>
<p>BP803ET. PHARMA MARKETING MANAGEMENT (Theory)</p>	<p>The pharmaceutical industry not only needs highly qualified researchers, chemists and, technical people, but also requires skilled managers who can take the industry forward by managing and taking the complex decisions which are imperative for the growth of the industry. The Knowledge and Know-how of marketing management groom the people for taking a challenging role</p>	<p>The course aims to provide an understanding of marketing concepts and techniques and their applications in the pharmaceutical industry.</p>

	<p>in Sales and Product management.</p>	
<p>BP804 ET: PHARMACEUTICAL REGULATORY SCIENCE (Theory)</p>	<p>This course is designed to impart the fundamental knowledge on the regulatory requirements for approval of new drugs, and drug products in regulated markets of India & other countries like US, EU, Japan, Australia, UK etc. It prepares the students to learn in detail on the regulatory requirements, documentation requirements, and registration procedures for marketing the drug products.</p>	<p>Upon completion of the subject student shall be able to;</p> <ol style="list-style-type: none"> 1. Know about the process of drug discovery and development 2. Know the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals 3. Know the regulatory approval process and their registration in Indian and international markets

<p>BP 805T: PHARMACOVIGILANCE (Theory)</p>	<p>This paper will provide an opportunity for the student to learn about development of pharmacovigilance as a science, basic terminologies used in pharmacovigilance, global scenario of Pharmacovigilance, train students on establishing pharmacovigilance programme in an organization, various methods that can be used to generate safety data and signal detection. This paper also develops the skills of classifying drugs, diseases and adverse drug reactions.</p>	<p>At completion of this paper it is expected that students will be able to (know, do, and appreciate):</p> <ol style="list-style-type: none"> 1. Why drug safety monitoring is important? 2. History and development of pharmacovigilance 3. National and international scenario of pharmacovigilance 4. Dictionaries, coding and terminologies used in pharmacovigilance 5. Detection of new adverse drug reactions and their assessment 6. International standards for classification of diseases and drugs 7. Adverse drug reaction reporting systems and communication in pharmacovigilance 8. Methods to generate safety data during pre clinical, clinical and post approval phases of drugs' life cycle 9. Drug safety evaluation in paediatrics, geriatrics, pregnancy and lactation 10. Pharmacovigilance Program of India (PvPI) requirement for ADR reporting in India 11. ICH guidelines for ICSR, PSUR, expedited reporting, pharmacovigilance planning 12. CIOMS requirements for ADR reporting 13. Writing case narratives of adverse events and their quality.
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BP808ET: CELL AND MOLECULAR BIOLOGY (Elective subject)	Cell biology is a branch of biology that studies cells – their physiological properties, their structure, the organelles they contain, interactions with their environment, their life cycle, division, death and cell function. · This is done both on a microscopic and molecular level. · Cell biology research encompasses both the great diversity of single-celled organisms like bacteria and protozoa, as well as the many specialized cells in multi-cellular organisms such as humans, plants, and sponges.	Upon completion of the subject student shall be able to; · Summarize cell and molecular biology history. · Summarize cellular functioning and composition. · Describe the chemical foundations of cell biology. · Summarize the DNA properties of cell biology. · Describe protein structure and function. · Describe cellular membrane structure and function. · Describe basic molecular genetic mechanisms. · Summarize the Cell Cycle
BP809ET. COSMETIC SCIENCE(Theory)	Cosmetic Industry	Science of cosmetics can be learn
BP810 ET. PHARMACOLOGICAL SCREENING METHODS	This subject is designed to impart the basic knowledge of preclinical studies in experimental animals including design, conduct and interpretations of results	Upon completion of the course the student shall be able to, · Appreciate the applications of various commonly used laboratory animals. · Appreciate and demonstrate the various screening methods used in preclinical research · Appreciate and demonstrate the importance of biostatistics and research methodology · Design and execute a research hypothesis independently
BP 811 ET. ADVANCED INSTRUMENTATION TECHNIQUES	This subject deals with the application of instrumental methods in qualitative and quantitative analysis of drugs. This subject is designed to impart advanced knowledge on the principles and instrumentation of spectroscopic and chromatographic hyphenated techniques. This also emphasizes on theoretical and practical knowledge on	:Upon completion of the course the student shall be able to · understand the advanced instruments used and its applications in drug analysis · understand the chromatographic separation and analysis of drugs. · understand the calibration of various analytical instruments · know analysis of drugs using various analytical instruments.

	modern analytical instruments that are used for drug testing.	
Elective course on Pharmaceutical Product Development	Dosage form development	In Pharmaceutical industry how product is developed

Department of Geology
Faculty of Earth Sciences
Mohanlal Sukhadia University, Udaipur

Outcome of B. Sc. Geology Programme

Students become eligible for M.Sc. Geology programs. Get jobs in Department of Mines and Geology as Forman. Supervision and quality control work in private mines. Lad assistant/technician in universities and colleges.

PROGRAMME: B. Sc. First Year GEOLOGY

Paper	Course/Paper Name	Outcome of Course
Paper I	Physical Geology	Origin, composition and structure of Earth. Types and causes of Earthquakes and Volcano. Geological work and features formed by natural agencies like Wind, River, glacier and groundwater.
Paper II	Paleontology	Students come to know about type of fossils. Morphology and geological distribution of different Invertebrate groups
Paper III	Crystallography and Mineralogy	Classification of crystal system and study of various crystal forms. Physical and optical properties of minerals. Study of certain rock forming mineral families.
	Practical	Identification of minerals, crystal models and fossils. Study of geomorphological features formed by various natural agencies.

PROGRAMME: B. Sc. Second Year Science GEOLOGY

Paper	Course/Paper Name	Outcome of Course
Paper I	Structural Geology	Students come to know various structures present in rocks like fold, fault, unconformity, joints, cleavages etc.
Paper II	Petrology	Students come to know types of rock's their origin, structure and textures.
Paper III	Stratigraphy	Study of rock layer in sequence of age from Precambrian to Quaternary time. Their types, characters and life preserved in them.
	Practical	Preparation of Structural sections and completion of outcrops in maps. Study of rocks in hand specimen and thin section. Geological maps of various stratigraphic rocks and Palaeogeographic maps.

PROGRAMME: B. Sc. Third Year GEOLOGY

Paper	Course/Paper Name	Outcome of Course
Paper I	Mineral Resources	Ore minerals and ore forming processes. Their occurrences, distribution and uses.
Paper II	Geoexploration and Principles of Mining	Mineral exploration principles and methods. Fundamentals of open and underground mining
Paper III	Geology of Rajasthan and Groundwater Geology	Stratigraphic rocks of Rajasthan and their distribution. Groundwater types, distribution, occurrences and aquifer.
	Practical	Study of different economic minerals in hand specimen. Mines terminology, technical features and

		their drawings. Study Stratigraphic Rocks of Rajasthan and groundwater problems.
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Outcome of M. Sc. Tech Applied Geology Programe

After getting M.Sc. degree students study advance geology in M.Sc.Tech (Applied Geology) course. M.Sc. Tech students get privilege in jobs of all geological organization and industry specially for exploration work. Central Government Department like Geological survey of India, Indian Beauru of Mines, Central Groundwater Board etc. Public enterprises and MNCs like ONGC, Oil India, Cairn Energy etc. They also get jobs in state Government Department like Department of Mines and Geology, Groundwater Department, state government enterprises like RSMM. All mineral, cement and building stone industries employ them as geologist. Also get opportunities in consultancy work.

Course/Paper Code	Course/Paper Name	Outcome of Course
MT1GEO01-CT01	Structural Geology and Tectonics	Structures preserved in rocks like fold, fault, joints, cleavages, lineation, unconformities and their significance in mineral deposits. Type of deformation in rocks. Plate tectonics and its importance in mineral and rock formation.
MT1GEO02-CT02	Micropalaeontology	Student get trained in morphology, classification, palaeoecology and uses of microfossils. Their importance in Petroleum Geology.
MT1GEO03-CT03	Mineral Exploration and Mining Geology	Students get expertise in advance techniques of mineral exploration and mining.
MT1GEO04-CT04	Mineral Technology and Mineral Economics	They learn separation techniques of elements from ore. Ore grades required in different mineral industries. Use of minerals.
MT2GEO01-CT05	Advance Remote Sensing in Geosciences	As it is clear from papers title advance study in remote sensing is carried out. How remote sensing is useful for rock mapping, mineral exploration, structure identification, geomorphic feature etc.
MT2GEO02-CT06	Engineering and Groundwater Geology	How and where dams, tunnels, highways to be constructed. Types of Dams and Tunnels.

		Groundwater explorations and tubewell construction.
MT2GEO03-CT07	Petroleum, Coal and Radioactive Minerals	How Petroleum, Coal and Radioactive minerals formed in rocks, their classification and suitable conditions for their origin. Their distribution and occurrences in India.
MT2GEO04-CT08	Oceanography and Climatology	Ocean morphology, minerals in ocean and ocean behavior. Type of climates and their behaviour
MT1GEO05-CP01	Practical-I: Structural Geology and Tectonics. Micropalaeontology	Practical problems covering structural aspect and tectonics provided them for solution. Identification, age and characteristics of certain microfossil.
MT1GEO06-CP02	Practical-II: Mineral Exploration and Mining Geology. Mineral Technology and Mineral Economics	Problem related to exploration and mining provided them to solve. Hand specimen and poly section provided for identification.
MT2GEO05-CP03	Practical-III: Advance Remote Sensing in Geosciences. Engineering and Groundwater Geology	Remote sensing imageries studied for identification of lithology, geological structure and geomorphology. Problems on engineering and groundwater provided for solution.
MT2GEO06-CP04	Practical-IV: Petroleum, coal and Radioactive Minerals. Oceanography and Climatology	Students are exposed to varieties of coal. Techniques and structures helpful in exploration of these minerals. Ocean morphology, behavior of ocean current and climatology.

Skill Papers

Course /Paper Code	Course /Paper Name	Outcome of Course
MT2GEO07-SE01	Geological and Mining Consultancy	Students learn about ore reserve estimation and planning of mine

Department of Geology
Faculty of Earth Sciences
Mohanlal Sukhadia University, Udaipur

Outcome of M. Sc. Geology Programe

After getting M.Sc. degree students get jobs in Central Government Department like Geological survey of India, Indian Beaur of Mines, Central Groundwater Board etc. Public enterprises and MNC like ONGC, Oil India, Cairn Energy etc. They also get jobs in state Government Department like Department of Mines and Geology, Groundwater Department, state government enterprises like RSMM. All mineral, cement and building stone industries employ them as geologist. Also working as private consultants.

Course/Paper Code	Course/Paper Name	Outcome of Course
M1GEO01-CT01	Tectonics and Geomorphology	Through this course students learn geomorphology and process of its formation. How ocean and continents evolved.
M1GEO02-CT02	Mineralogy	Students come to know about various type of minerals, their composition, physical and optical properties, origin and uses.
M1GEO03-CT03	Palaeontology -I	Origin and evolution of life. Other invertebrates evolved in beginning and their morphology, classification, palaeoecology, geological history. Microfossils.
M1GEO04-CT04	Precambrian Stratigraphy	Sequence of rock layers formed in India and world in Precambrian time. Their typical characters, lithology, structure, extension, location, age and life preserved in them if any.
M2GEO01-CT05	Structural Geology	Structures of rocks preserved in them like fold, fault,

		joints, cleavages, lineation and their importance in mineral deposits and rock deformation
M2GEO02-CT06	Sedimentary Petrology	Students study the rocks which are deposited in ocean and lakes. Their classification, structure, texture, environment and origin.
M2GEO03-CT07	Palaeontology – II	Morphology, classification, palaeoecology, geological history of higher order invertebrates and evolution of vertebrates. Gondwana plant fossils.
M2GEO04-CT08	Phanerozoic Stratigraphy	Study of rock layers formed during Phanerozoic time. Their typical characters, lithology, structure, extension, location, age and life preserved in them.
M3GEO01-CT09	Economic Geology	Study of industrial and economically useful minerals. Their physical and optical properties and uses. Places of their occurrences and mining.
M3GEO02-CT10	Igneous Petrology	Study of the rocks originated from crystallization of magma. Their classification, composition, structure, texture and origin.
M4GEO01-CT11	Metamorphic Petrology	Study of the rocks originated by partially re-melting of pre-existing rocks. Their classification, composition, structure, texture and origin.
M4GEO02-CT12	Mineral Exploration & Mining Geology	Study of procedures of mineral exploration discovery. Underground and opencast mining method.
M1GEO05-CP01	Practical – I : Tectonics and Geomorphology & Mineralogy	Practical problems given to students for solution on mineralogy, crystallography and tectonics and geomorphology .
M1GEO06-CP02	Practical – II : Palaeontology I & Precambrian Stratigraphy	Students learn identifications of fossils and Precambrian rocks. Stratigraphic and palaeogeographic maps.
M2GEO05-CP03	Practical – III : Structural Geology & Sedimentary Petrology	Problems on structural maps and identification of sedimentary rocks in hand specimen and thin section
M2GEO06-CP04	Practical – IV : Palaeontology II & Stratigraphy	Identifications of fossils and Phanerozoic rocks. Stratigraphic and palaeogeographic maps.
M3GEO05-CP05	Practical – V : Economic Geology & Igneous	Identification of economic minerals and igneous rocks

	Petrology	in hands specimen as well as in poly- and thin sections.
M4GEO05-CP06	Practical – VI : Metamorphic Petrology & Mineral Exploration and Mining Geology	Identification of metamorphic rocks in hands specimen as well as in poly- and thin sections.

Discipline Specific Electives

Course /Paper Code	Course /Paper Name	Use of Course
M3GEO03-ET01	Ground Water Geology	Study of groundwater exploration, occurrence and qualities.
M3GEO04-ET02	Photogeology and Remote Sensing	Techniques of Remote sensing and photogeology. Study of imagery and photos with their characteristics. How helpful these science in geology for rocks mapping, mineral and groundwater exploration.
M4GEO03-ET03	Environmental Geology & Disaster Management	Aspects of environment and geology. How geological activities degrading environment and how to check it including landslides and soil degradation. Study of Natural Disaster like earthquake, flood, typhoon, sunamies etc.
M4GEO04-ET04	Geochemistry	Study of chemistry of geological minerals.
M3GEO06-EP01	Elective Practical - I : Groundwater Geology & Photogeology and Remote Sensing	Practical problems related to groundwater and remote sensing given to students. Study of imageries for identification of geomorphological features and rock types.
M4GEO06-EP02	Elective Practical – II : Environmental Geology and Disaster Management & Geochemistry	Practical problem on Environmental Geology and Disaster Management & Geochemistry

Skill Papers

Course /Paper Code	Course /Paper Name	Use of Course
M2GEO07-SE01	Application of GIS	Understanding GIS software and its use in preparation and presentation of Geological data.

M4GEO07-SE02	Survey & Leveling	Students learn how to do survey for mining plans.
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Programme Specific Outcomes and Course Outcomes
Department of Mathematics and Statistics

Programme Specific Outcomes	<p>PSOs of B.Sc. Mathematics</p> <p>PSO1. Understand Group Theory, Ring Theory and Fields and apply in problems.</p> <p>PSO2. Understand the basic concept of Differential Equations of various types and apply in various real life problems.</p> <p>PSO3. Understand the Geometrical Interpretations of 2D and 3D shapes and evaluate their area and volume.</p> <p>PSO4. Analyse real numbers and their applications by certain results and apply then in various pure problems.</p> <p>PSO5. Analyse numerical problems and apply in various problems by different methods.</p> <p>PSO6. Understand the basic definition of Graph Theory, Tree and Boolean Algebra and analyse their application.</p> <p>PSOs of M.Sc. Mathematics</p> <p>PSO1. Understand the concept of group theorems, ring theory and field theory and evaluate their applications also expansion of these concepts from the view point of Discrete Mathematics.</p> <p>PSO2. Analyze and interpret real and complex functions with their applications.</p> <p>PSO3. Study the analytic and numerical solutions of various differential equations, initial and boundary value problems by various approaches.</p> <p>PSO4. Apply various techniques in solving linear and non-linear programming problems and find their applications.</p> <p>PSO5. Understand the concept of hydrodynamics, equation of Continuity, rigid dynamics, moment of inertia and boundary surface with their applications.</p> <p>PSO6. Find applications of tensor analysis in electromagnetism and physics.</p> <p>PSO7. Discuss testing of hypothesis by various Mathematical distributions.</p>
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Course Outcomes	COs of the course “Algebra” (B.Sc. I Year)
	CO1 Understand concepts of matrices, system of linear equation and their consistency, using by rank.
	CO2 Understand different methods to find the solution of cubic equations.
	CO3 Understand basic concept of group subgroup, cyclic group, permutation group etc. and analyse their applications.
	CO4 Apply Lagrange’s theorem and understand the concept of normal sub group, centre of group etc.
	CO5 Apply Cayley theorem of finite groups.
	COs of the course “Calculus” (B.Sc. I Year)
	CO1 Understand concepts of arc length and Geometrical interpretation of results obtained from it.
	CO2 Understand the concepts of Asymptotes points of inflexion and apply them in curve tracing.
	CO3 Apply Beta and Gamma function in quardature and rectification.
	CO4 Understand the concept of differential equation and their types and analyse their applications.
	COs of the course “Geometry” (B.Sc. I Year)
	CO1 Identify the nature of conic of second and third degree.
	CO2 Geometrical properties of ellipse and hyperbola as well as 3-D shapes
	CO3 Interpret the relation between plane and straight line.
CO4 Evaluation of principal plane and direction of conics.	
COs of the course “Advanced Calculus” (B.Sc. II Year)	
CO1 Understand basic concepts of continuity important theorems.	
CO2 Concepts of partial differentiation and its applications.	
CO3 Evaluate double and triple integrals and their applications.	
CO4 Understand vectors & scalars quantity, evaluate of gradient, divergence and curl. Some important vector identity.	
CO5 Understand Gauss’s theorem, Stoke’s theorem and Green’s theorem and their applications.	

COs of the course “Differential equations”(B.Sc. II Year)

CO1 Understand the concept of exact, simultaneous and total differential equation and analyse their applications.

CO2 Evolution of solution of linear differential equation with variable coefficients by various approach.

CO3 Classify the partial differential equation and evaluate their solution using different approaches.

CO4 Analyze numerical solution of differential equation.

COs of the course “Mechanics” (B.Sc. II Year)

CO1 Finding resultant of coplanar forces and study equilibrium of bodies under three or more forces.

CO2 Interpretation of virtual work by forces.

CO3 Study the projective motion of various particles.

CO4 Finding velocity and acceleration in various direction and study rectilinear motion.

CO5 Study the motion of particle in resisting medium.

COs of the course “Real Analysis” (B.Sc. III Year)

CO1 Understand the concepts of real number and analyse their properties.

CO2 Study sequence, series and their applications.

CO3 Apply Riemann integrals in evaluation of some integrals.

CO4 Understand the concept of uniform convergence and study their application.

COs of the course “Abstract Algebra” (B.Sc. III Year)

CO1 Understand the concept of ring theory and their applications.

CO2 Study the concept of homomorphism and isomorphism of rings and their applications.

CO3 Evolution of examples of vector spaces and related problems.

CO4 Apply Sylvester law of nullity in linear transformations.

COs of the course “Discrete Mathematics” (B.Sc. III Year)

- CO1 Understand the basic concept of sets and propositions, permutations and combinations.
- CO2 Understand the basic of relations and functions, Pigeon Hole principle graphs and related theorems.
- CO3 Understand the basic concept of trees and finite state machines.
- CO4 Understand the basic concept of Recurrence relations solution by the method of generation functions.
- CO5 Basic concept of Boolean algebra Lattices, Duality, Digital network switching circuits.

COs of the course “Numerical Analysis and Operation Research” (B.Sc. III Year)

- CO1 Study the interpolation methods of equi-distance and unequal distance intervals.
- CO2 Discusses the numerical integration methods and their derivations.
- CO3 Understand the concept of linear programming problems and methods of solving it.
- CO4 Apply assignment and transportation problem in various physical problems.

COs of the course “Mathematical Statistics” (B.Sc. III Year)

- CO1 Understand the basic concept of probability, independent events and related problems.
- CO1 Understand the basic of Random variables, distribution functions, density functions.
- CO1 Understand the basic concept of theoretical probability distribution and related theorems.
- CO1 Understand the basic definition of Mathematical expectation, moments and related theorems.
- CO1 Understand the basic concept of curve fitting by the least square principle, fitting of straight line and parabola and regression.

COs of the course “Algebra-I” (Sem-I)

- CO1 Understand types of direct product of subgroups. Cauchy’s theorem for abelian and non abelian groups.
- CO2 Understand and apply Sylow’s three theorem. Composition series and Jordan Holder theorem.
- CO3 Understand solvable group and their properties fundamental theorem for finite abelian group.
- CO4 Understand Annihilators of subspace, invariant and projection.
- CO5 Understand types of Linear transformation and diagonalization.

COs of the course “Real Analysis” (Sem-I)

- CO1 Study the measure and their properties of subsets of Real numbers.
- CO2 Study the measurability of various functions discuss.
- CO3 Discuss the integral properties of measurable functions.
- CO4 Discuss the convergence of equation of measurable function and other applications.
- CO1 Establish the relations between the solutions of various differential equations.
- CO2 Application of special function to solve various problems.
- CO3 Study the various problems of special functions.
- CO4 Understand the concept of orthogonal polynomials and generating functions.

COs of the course “Differential Equations and Calculus of Variation” (Sem-I)

- CO1 Understand concept of partial differential equations, existence and uniqueness theorem and solution of second order PDE through Monge’s method.
- CO2 Understand concepts of canonical forms and reduction of second order semi linear partial differential equations to canonical forms. classification of second order PDE having more than two independent variables, Cauchy’s problem.

- CO3 Understand concept of BVP's of second order ordinary differential equations, Sturm-Liouville BPS's Lagrange's identity and relevant theorems and properties based on study Eigen values and Eigen functions.
- CO4 Study solution of second order PDE's by the method of separation of variables, Green's functions and solution of second order homogeneous BPV's through Green's function.
- CO5 Understand concept of calculus of variations functional, Euler-Lagrange differential equation for externals and its alternative forms. Solution of variational problems using Ritz method.

COs of the course "Mechanics" (Sem-I)

- CO1 Understand the concepts of hydrodynamics, equation of continuity and boundary surface.
- CO2 Derive Feeler's dynamical equations and Bernoulli's equation with applications and problems
- CO3 Understand the concept of central orbit and planetary motion with Kepler's laws.
- CO4 Understand the concept of special theory of relativity, Michelson-Marley experiment and Lorentz transformation.
- CO5 Describe applications of Lorentz transformations and concept of Minkowski's 4-dimensional continuum space, relativistic Hamiltonian and Lagrangian.

COs of the course "Differential Geometry-I" (Sem-I)

- CO1 Understand the basic concept of plane section and circular section.
- CO2 Understand the concept of any section of a central conicoid. Generating lines Tangent plane.
- CO3 Understand the basic concept of projection of generators, Hyperbolic paraboloid.
- CO4 Understand the basic of confocal conoids elliptic coordinates, parameter of confocals.
- CO5 Understand the basic concept of conoids inflexional tangents and indicatrix.

COs of the course “Algebra-II” (Sem-II)

- CO1 Understand prime fields, polynomial rings, integral domain, Euclidean domain, principal ideal domain and unique factorization domain and their related theorems.
- CO2 Understand concept of modules, sub module, Quotient modules with suitable examples. Fundamental theorem of homomorphism and isomorphism.
- CO3 Understand finitely generated modules with fundamental theorem, Noetherian and Artinian modules and related theorems.
- CO4 Understand field extension with examples types of extension. Perfect field and finite fields.
- CO5 Understand Automorphism, Galois theory of field extension and its theorem. Solution of polynomial equations.

COs of the course “Complex Analysis” (Sem-II)

- CO1 Interpret complex numbers Geometrically and study the concept of analytic function and their applications.
- CO2 Understand the concept of conformal transformation and apply it in various problems.
- CO3 Discusses the concept of complex integrations and its application.
- CO4 Study of various types of singularities and zero and application of Cauchy’s Residue’s theorem.

COs of the course “Special Functions” (Sem-II)

- CO1 Find solutions of various differential equations using series solution.
- CO2 Understand concept of various special functions and their relations.
- CO3 Study properties of various special functions.
- CO4 Discuss applications of special functions in various problems.
- CO5 Understand concept of generating functions and their applications.

COs of the course “Mechanics” (Sem-II)

- CO1 Understand the concept of Rigid dynamics, moment of inertia, product of inertia, Momental ellipsoid and principal axes.
- CO2 Understand D’Alembert’s principle and derive equations of motion.
Study motion about a fixed axis
- CO3 Understand the motion in two dimensions under finite forces and impulsive forces.
- CO4 Understand principles of the conservation of momentum and conservation of energy.
- CO5 Derive Lagrange’s equations in generalized coordinates under finite and impulsive forces.

COs of the course “Differential Geometry-II” (Sem-II)

- CO1 Understand the concept of differential geometry.
- CO2 Understand the basic of surfaces. Ruled surface and developable surface and related theorems.
- CO3 Understand the concept of curvature of normal section principal radii.
- CO4 Understand the concept of an oblique section radius of curvature, lines of curvature of an ellipsoid.
- CO5 Understand the concept of umbilicus, curvature at point of a generator of a skew surface curve linear coordinates.

COs of the course “Topology” (Sem-III)

- CO1 Understand the concept of metric space with properties and examples open set, closed set, sequence, compact space and related theorems.
- CO2 Understand basic concepts of topology, bases, countable space and related theorems.
- CO3 Understand the various types of topological space T_0 T_1 T_2 etc. and related theorems, compactness and their theorems.
- CO4 Understand Connectedness and continuity related theorems.
- CO5 Understand function algebra and some important theorems.

COs of the course “Tensor Analysis” (Sem-III)

- CO1 Understand the concepts of tensors, its types and operations. Define Quotient law, fundamental tensor and associate tensors.
- CO2 Understand the concepts of Christoffel symbols, transformation of Christoffel symbols and covariant differentiation of tensors.
- CO3 Define Geodesics, null geodesics and applications, understand the concept of Riemannian, Normal Gaussian Coordinates and parallel propagation.
- CO4 Define and understand Riemannian, Curvature tensor, its properties and conformal curvature tensor.
- CO5 Understand the concept of electromagnetism, Max well’s equations, transformation of electric and magnetic intensities and energy momentum tensor for electromagnetic field.

COs of the course “Numerical Analysis-I” (Sem-III)

Course outcome:- at the end of class students will gain knowledge of

- CO1 Understand the basic concept of iteration theory, rate of convergence, acceleration of convergence, multiple and complex roots.
- CO2 Understand the real and complex roots, Bisection method, secant method, Regula falsie method, Newton Raphson method.
- CO3 Concept of synthetic division Birge vieta method, Graffes root squaring method.
- CO4 Understand the solution of Gauss Jordan method, partition method, Jacobi method.
- CO5 Understand the basic concept of Eigen value problem, power method complex Eigen values.

COs of the course “Computer Programming in-C” (Sem-III)

- CO1 Understand basic concepts of computer and generations of computer.
- CO2 Understand concepts of computer languages, use of all PC software's, Algorithm, flow chart.
- CO3 Understand concepts and features of High level language C.
- CO4 Understand concepts of how to compile and run C Programs.
- CO5 Understand concepts of writing and run all programs on topics mentioned in syllabus.

COs of the course “Discrete Mathematics” (Sem-III)

- CO1 Understanding fundamental concepts of mathematical logic and certain Algebra concepts from the view point of Discrete Mathematics.
- CO2 Expansion of the Algebra concepts from the view point of Discrete Mathematics.
- CO3 Introduction to the Mathematical structure of Lattices, Partially ordered sets and their various kinds of Lattices.
- CO4 Introduction to Boolean Algebra, its relation with Lattices and relevant concepts.
- CO5 Minimization of Boolean function, Various canonical forms and Karnaugh-Map.

COs of the course “Optimization Techniques-I” (Sem-III)

- CO1 Explain linear programming problem (L.P.P.), parametric linear programming and method used to solve it.
- CO2 Analyse the discrete changes in the parameters of the problem and its effect on optimal solution.
- CO3 Enumerate fundamentals of integer programming techniques and apply different techniques to solve various optimization problems arising from different areas.
- CO4 Understanding of project scheduling by PERT and CPM.
- CO5 Understand how optimization can be used to solve industrial problems.

COs of the course “Mathematical Theory of Statistics-I” (M-III)

- CO1 Understand concepts of probability, laws of probability, Baye’s theorem and its applications.
- CO2 Understand basic concepts of Mathematical expectations, moments generating function, inversion theorem and its applications.
- CO3 Understand and apply Binomial, Poisson distribution etc.
- CO4 Understand Normal, Gamma and Beta distributions and its applications in real life problem.
- CO5 Understand basic concepts of curve fitting, Correlation and regression and their applications.

COs of the course “Integral Equation” (Sem-III)

- CO1 Study the concept of linear integral equations and their classifications.
- CO2 Finding solution of linear integral equations.
- CO3 Study the various properties of Eigen values and Eigen functions.
- CO4 Apply Hilbert Schmidt theorem in solving freedholm integral equation of second kind.
- CO5 Discusses freedholm theorems and their applications.

COs of the course “Functional Analysis” (Sem-IV)

- CO1 Know about normal linear and Banach space and their applications.
- CO2 Understand the various Important theorems.
- CO3 Know about inner product space and Hilbert space with various important law.
- CO4 Understand orthonormal basis and sets.
- CO5 Learn various operation and apply to solve problems.

COs of the course “Relativity and Cosmology” (Sem-IV)

- CO1 Understand the principle of covariance equivalence, Mach’s principle and Newton’s potential derive Einstein field equations.
- CO2 Discuss Schwarzschild extensor solution singularise and related problems. Derive energy momentum tensor for perfect fluid.
- CO3 Discuss planetary orbit, Three crucial tests of general relativity, Radar echo delay and study Schwarzschild interior solution.
- CO4 Understand principle of cosmology, Einstein and De-sitter Universes and their derivations with properties and their comparison.
- CO5 Understand the concept of non-static cosmological models, Hubble’s law derivation of Robertson-walker metric, its geometric feature and expressions for FRW model.

COs of the course “Numerical Analysis-II” (Sem-IV)

Course outcome:- at the end of class students will gain knowledge of

- CO1 Understand the concept of curve fitting with least square principle.
- CO2 Understand the numerical solution of ordinary differential equations by Taylors series method, Picard’s method, Fuler’s method and modified eulers method.
- CO3 Understand the solution of Rungekutta method and stability analysis.
- CO4 Understand the solution of linear boundary value problems of ordinary differential equations by finite difference methods.
- CO5 Understand the solution of Non linear boundary value problems by finite difference scheme.

COs of the course “Computer Programming of Numerical Methods” (Sem-IV)

- CO1 Understand concepts of Normalized floating numbers, perform operations of normalized floating number and to write & run C program on Normalized floating Number.
- CO2 Understand concepts of write and run programs to find roots of Algebraic and Transcendental equations.

- CO3 Understand concepts of write and run programs to solve numerical solutions of simultaneous linear equations.
- CO4 Understand concepts of write and run programs of Differentiation and integration.
- CO5 Understand concepts of write and run Programs of numerical solutions of Differential equation.

COs of the course “Discrete Mathematics” (Sem-IV)

- CO1 Understand basic concept of Graph Theory, introducing planar graphs.
- CO2 Trees (an important class of graphs, planar graphs, Bipartite graphs, Spanning trees and their properties.
- CO3 Discussion of Euler’s Theorem related to Euler graphs, Directed graphs and certain other advanced concepts of trees.
- CO4 Finite state machines and related concepts and their various kinds understanding.
- CO5 Grammar, Languages and their construction derivations etc. with their various type and certain advanced concepts.

COs of the course “Optimization Techniques-II” (M-I)

- CO1 Explain the fundamental knowledge of non linear programming and dynamic programming problems.
- CO2 Uses of classical optimization techniques.
- CO3 Describes the basics of different evolutionary algorithms.
- CO4 Analyse and appreciate variety of performance measure for various optimization problems.
- CO5 Understand the different methods of optimization and be able to suggest a technique for a specific problem.

COs of the course “Mathematical Theory of Statistics-II” (M-IV)

CO1 Describe Chi square and t distribution with properties and applications.

CO2 Understand F distribution with properties and applications.

CO3 Understand basic concepts of estimation, criterion of good estimators, consistency, efficiency, sufficiency and unbiaseeness.

CO4 Discuss the method of maximum Likelihood estimator and its properties and find M.L.E. for binomial, Poisson and Normal populations.

CO5 Discuss testing of hypothesis, error Neyman Pearson Lemma and its applications.

COs of the course “Integral Transform” (Sem-IV)

CO1 Understand the concept of Laplace transform and study its applications in finding solution of differential equations.

CO2 Study the concept of Fourier transform and its applications.

CO3 Discuss the application of Mellin transform.

CO4 Study the Henkel transform with elementary property and its applications.

Programme and Course Outputs

Dept of Pub. Adm.

Name of Programme -MA- Public Administration, CBCS, Semester, 2 years and 4 semesters.

Programme outputs / aim-

1. After the completion of the programme the students will be able to understand theoretical and practical aspects of Public Administration existing at international, national, state and local levels which will ultimately make them the aware citizens and suitable candidates for civil services.
2. Be able to learn and demonstrate the office administration and office automation techniques through skill oriented add –on papers and enhance their employability.
3. Be able to analyze organizational behavior, group dynamics, decision making, leadership and motivational aspects and to use that in professional and personal life.

Course or paper –wise outcomes

First Semester

MIPAD01-CT-01- Administrative Theories

1. Will be able to discuss origin, meaning, importance of Public Administration and its principles, theories and organizational behavior aspects.
2. Will be able to describe various tools and methods of administrative improvements.

MIPAD02-CT-02- Administrative Thinkers

1. Will be able to describe the administrative thoughts of various thinkers.
2. Will be able to analyze the utility of administrative thoughts in present era.

MIPAD03-CT-03-Public Personnel Administration

1. Will be able to explain the concept and theories of personnel policy and aspects of personnel administration in civil services.
2. Will be able to describe the Administrative reforms policies and processes in personnel administration.

MIPAD04-CT-04- Comparative Public Administration

1. Will be able to explain the evolution, concept and importance of comparative public administration with the ecological aspects.
2. Will be able to describe and compare the constitutional and administrative mechanism of UK, USA and France.
3. Will be able to describe the *Weberian and Riggsian* theories.

MIPAD05-CT-05-Constitution and Administration

1. Will be able to explain basics of the Indian Constitution and its impacts of Indian Administration.

2. Will be able to explain the functioning of constitutional administrative bodies.

MIPAD06-CT-06- Governance and Administration

1. Will be able to describe the concept and importance of the state, democracy, good governance and participatory governance.
2. Will be able to analyze the impact of ICT and digital revolution over public administration working.

Second Semester

M2PAD01-CT-07 - Indian Administrative System- I

1. Will be able to discuss the evolution, basic features and functioning of Indian Union executive and some ministries with centre-state relationships.
2. Will be able to describe the role of civil services in the betterment of a developing society.

M2PAD02-CT-08- Administrative Law

1. Will be able to discuss the concept of natural justice, administrative law, administrative adjudication and delegated legislation.
2. Will be able to explain the concept and functioning of administrative tribunals.

M2PAD03-CT-09- State Administration

1. Will be able describe basic features, importance of the state administration and its political and administrative executive machinery at state and regional levels.
2. Will be able to describe the importance and personnel system of state civil services.

M2PAD04-CT-10-Development Administration

1. Will be able to describe the basic ideas behind development administration and administrative development.
2. Will be able to analyze the role of citizens in development administration, sustainable development and SDG.

M2PAD05-CT-11-Urban Governance

1. Will be able to explain the concept of urban governance and urban planning with its entrusted machinery.
2. Will be able to describe the functioning of municipal bodies of various types.

M2PAD06-CT-12- International Organizations

1. Will be able to describe the concept of international administration, international disputes and negotiations, pacts and agreements.
2. Will be able to explain the importance, evolution, functioning and role of United Nations and its agencies.

M2PAD01-Skill- 01- Office Administration

1. Will be able to describe conceptual aspects of office administration and its utility.
2. Will be able to demonstrate the basic skills required as an assistant in dealing a modern administrative office.

Third Semester***M3PAD01-CT-13-Indian Administrative System-II***

1. Will be able to describe various constitutional obligations, value premises, transparency measures and problematic issues of Indian administration.
2. Will be able to analyze the issues and challenges before Indian administration emerged due to LPG era.

M3PAD02-CT-14-Economic Policy and Administration

1. Will be able to discuss main features of a developing economy, economic development and planning process in India and Rajasthan.
2. Will be able to explain various economic policies of the country and impact of globalization.

M3PAD- A1 -ET-15- Public Policy

1. Will be able to explain the meaning, concept, importance, formulation, implementation and evaluation processes of public policies.
2. Will be able to describe theories and approaches of public policy analysis.

M3PAD- A2 -ET-16--Social Administration

1. Will be able to explain the concepts of social welfare, social change, social justice and social administration.
2. Will be able to describe the machinery working of social administration and civil society's efforts for welfare activities.
3. Will be able to discuss social welfare and development programmes, schemes and policies in India.

M3PAD- A3-ET-17-Health Administration

1. Will be able to explain the concept, evolution and scope of health administration discipline in India.
2. Will be able to describe public policy and machinery working at union and state level.

M3PAD- A4- ET-18-Environment Policy and Administration

1. Will be able to describe basics of environment, eco-system and biodiversity with the role of judiciary, civil and common man in environment protection.
2. Will be able explain environment policies and administrative machinery working for the environment in India.

M3PAD- B1- ET-15-Disaster Management

1. Will be able to analyze the natural and manmade disasters and need of a sound disaster management system
2. Will be able to explain the legislation and machinery working for disaster control, preparedness and management and also the disaster awareness.

M3PAD- B2- ET-16- Rural Governance

1. Will be able to describe the evolution, concept and importance of democratic decentralization.
2. Will be able the three tier system of panchayati raj institutions and their financial, personnel and control mechanism.

M3PAD- B3- ET-17-Police Administration

1. Will be able to describe the need and concept of police administration in India.
2. Will be able to explain police administration machinery working at union, state and district level.

M3PAD- B4- ET-18-Educational Administration

1. Will be able to describe the concept and importance of educational administration in India.
2. Will be able to explain the education policy, administrative machinery, problems, innovations and reports of various commissions and committees on education.

Fourth Semester***M4PAD01-CT-19-Research Methodology in Public Administration***

1. Will be able to explain the concept and importance of social research and scientific method.

2. Will be able to describe hypothesis, variables, data collection and analysis techniques, processing of data and hypothesis testing tools.

M4PAD01-CT-20- Project work- Dissertation

1. Will be able to select a theme for administrative research and write a project report or dissertation on it.

M4PAD- A1 -ET-21- Financial Administration

1. Will be able to describe the basics and concept of financial administration in various types of economies.
2. Will be able to explain the budget preparation, approval, execution and control mechanism in India.

M4PAD- A2 -ET-22- Public Sector Administration

1. Will be able to discuss the evolution, need and importance of nationalization and public sector enterprises in India.
2. Will be able to explain various types, their functioning and control mechanism of PSUs in India.

M4PAD- A3 -ET-23- Values and Ethics in Administration

1. Will be able to describe the values, ethics, public interests and philosophical aspects of values in administration.
2. Will be able to discuss the need of training for administrative values and role of each stakeholder.

M4PAD- A4 -ET-24- Administrative Reforms and Innovations

1. Will be able to explain the concept, tools and need of administrative reforms and innovations in India.
2. Will be able to describe the reports of commissions and committees constituted for the administrative reforms in India after independence.

M4PAD- B1 -ET-21-E. governance

1. Will be able to describe the concept and importance of e.governance with its recent trends and implementation plan and policy of the government.
2. Will be able to analyze the role of citizens in e.governance and mobile governance process.

M4PAD- B2 -ET-22-Administrative Control and Accountability

1. Will be able to define meaning and tools of control over administration and its applications.
2. Will be able to describe the role of media, social media and civil society in controlling administrative malpractices and utility of public interest litigations.

M4PAD- B3 -ET-23- Public Grievances Redressal Mechanism

1. Will be able to discuss the concept of public complaints and grievances and its redressal machinery in India.

2. Will be able to analyze the processes and importance of public portals, Lokpal, RTI,CVC, CBI and other agencies.

M4PAD- B4 -ET-24-Administration of Public Distribution System

1. Will be able to describe the importance of public distribution system, food supply and security, food supply policy and its concerned administrative mechanism in India.
2. Will be able to explain the accountability, responsiveness, food safety standards and related poverty alleviation issues.

M4PAD01-Skill- 02- Office Automation

1. Will be able to describe the basics, tools, techniques, conceptual framework and importance of office automation in modern world.
2. Will be able to demonstrate the technology driven automation of various office activities.





DEPARTMENT OF ECONOMICS
UNIVERSITY COLLEGE OF SOCIAL SCIENCES AND HUMANITIES
MOHANLAL SUKHADIA UNIVERSITY : UDAIPUR

Programme Specific Outcomes of MA Economics (CBCS)

PSO1: This programme will develop conceptual clarity of economic phenomena among students.

PSO2: The students will be able to discuss and explain theories related to Economics.

PSO3: This programme is designed to develop critical thinking skills among students. They will be able to correlate economic theory with everyday problems in real world.

PSO4: This programme will enable the students to apply the mathematical and statistical techniques to evaluate the validity of an economic argument.

PSO5: The students will be able to discuss the current economic issues and problems with the clear understanding of theoretical framework.

PSO6: This programme will provide the students a well structured learning framework and environment for Economics.

PSO7: Through this programme students will be well acquainted with the core branches of Economics.

PSO8: This programme provides an opportunity to the students to be specialized in a particular branch of Economics.

PSO9: This programme opens job avenues for students especially in economic data analysis and jobs required understanding and application of Economics

PSO10: This programme gives a thorough exposure about Indian Economy and Economy of Rajasthan as well as Global Economic Scenario. So students will be able to compare the economic aggregates in national and international perspective.

Course Outcomes: SEMESTER I

CORE PAPER- I -MICRO ECONOMICS

CO1: This course develops the basic idea of fundamentals of Micro Economics and market mechanism.

CO2: It enhances the ability of students to discuss economic concepts in an articulate manner in a classroom.

CO3: It develops the reasoning ability of the students to understand the consumer behaviour and producers' behaviour in real market situation market.

CORE PAPER – II- MACRO ECONOMICS

CO1: This course enables the students to learn about the development of various theories and approaches of macro economics like classical, Keynesian, Monetarist, New classical theories and New Keynesian theory.

CO2: Macro economics deals with the study of economic aggregates like income, employment, interest rates and the price level. It analyses various theories of determination of National Income in greater detail.

CO3: It covers various theories related to consumption and investment.

CO4: It also introduces students to concept of inflation, its relationship with unemployment and some basic concepts related to it.

CORE PAPER-III-PUBLIC ECONOMICS

CO1: To make students understand the theories and concepts of Public Economics.

CO2: To understand the Government Economic Policy's Goals, Targets and Mechanism

CO3: To understand the Importance and Uses of Government Economic Policy Instruments and their Effects on Economy.

CO4: To understand the Interdependency between Public and Private sector.

CORE PAPER- IV -MATHEMATICAL METHODS FOR ECONOMICS

CO1: This course imparts the knowledge of various mathematical techniques used for economic analysis.

CO2: It train the students to apply these techniques to economic theory in general like, explaining the relationship among economics variables, calculating maxima and minima, explaining the time path of variables etc.

CO3: It also develops the skill of students to use matrix algebra in solution of economic models.

CORE PAPER- V-GROWTH AND DEVELOPMENT ECONOMICS

CO1: The students will be able to understand the theories of growth and development, difference between the two and importance of both in current scenario.

CO2: It explains the social and institutional aspects of development and infrastructure-linkages.

CO3: It helps them to understand the importance of domestic macroeconomic policies importance of agriculture and the rationale and pattern of industrialization for development in developing countries.

CORE PAPER-VI- HISTORY OF ECONOMIC THOUGHT

CO1: The course develops critical analytical skills and exposes students to understanding the historical perspective on the evolution and process of transformation of economic thought.

CO2: The students learn the major ideas associated with thinker studied, and there by better comprehend the origins of contemporary theory.

CO3: This course allows students to place the theories and ideas studied within the context of the times in which they developed.

SEMESTER II

CORE PAPER- I-ADVANCED MICRO ECONOMICS

CO1: This course will formed the theoretical foundation of the students about pricing in imperfect market conditions and enable them to apply in real market situations.

CO2: This paper enhanced the understanding of various concepts and theories of welfare economics.

CO3: The students will be able to demonstrate the theories related to factor market and its equilibrium .

CORE PAPER – II- ADVANCED MACRO ECONOMICS

CO1: The present course is designed to acquaint the students with the functioning of the monetary and financial sector in India.

CO2: It covers different approaches and theories related to demand for and supply of money and rate of interest.

CO3: It also deals with the Concept and various theories of business cycles..

CO4: The operation of financial markets and their regulation are to be studied to appreciate their key role in an economy, especially after the far-reaching financial sector reforms in India.

CORE PAPER-III- INDIAN PUBLIC FINANCE

CO1: To understand the Federal Economic System of Indian Government and its component.

CO2: To Understand the Economic Resource of Indian government institutions and Distribution's criteria.

CO3: To Understand the Taxation, Debt and Expenditure Policies and Problems of Indian Government Institutions.

CO4: To Understand the Budget, Finance Commission Report and Fiscal Policy their role in economy.

CORE PAPER – IV ELEMENTARY STATISTICS AND ECONOMETRICS

CO1: The basic aim of this course is to acquaint the students with various Statistical Methods (techniques) and basic econometrics.

CO2: This Paper covers those statistical tools which are frequently used in social sciences research such as estimation, hypothesis testing, Regression & correlation, concept and use of probability theory

CO3: The Econometrics part covers the basic concept and estimation of ordinary least square method which is essential for practical understanding of economic relations and framing economic models

CORE PAPER- V- ECONOMICS OF DEVELOPMENT AND PLANNING

CO1: This course enables students to understand the models of economic development and their application for underdeveloped or developing economies.

CO2: It discuss important issues in the context of development such as, role of Population, International Trade, importance of domestic macroeconomic policies, investment criteria, and theory of economic planning.

CO3: It explains the project evaluation techniques, which will enable them to evaluate the profitability of projects.

CORE PAPER –VI -INDIAN ECONOMY

CO1: The objective of the paper would be to sharpen the analytical faculty of the students by highlighting on broad overview of the Indian economy.

CO2: The paper also emphasis on social and economic infrastructure; Natural resources of India.

CO3: To get familiar with the issues related to agriculture, industry, foreign trade and Economic Planning in India.

CO4: The course is expected to enable the student to appreciate the evaluation of the economy, its institutional frame work and various problems associated with it, for analysing public policy.

SKILL COURSE PAPER-01 -BASIC ECONOMIC ANALYSIS WITH SPSS

CO1: A Student of Economics must have knowledge of data analysis through software. This course aims at giving the exposure of data analysis package SPSS and make students familiar with its applications .

CO2: This paper aims to skill them in analysing the data with the help of SPSS by providing hands on experience.

SEMESTER III

CORE PAPER I- INTERNATIONAL ECONOMICS

CO1: The paper presents clear comprehensive exposition of the theories of international economics.

CO2: The paper aims at developing the understanding and analytical skill of the students of international trade in real and complex situations.

CO3: It will greatly help the students to examine the impact of the trade policies on gains from trade and terms of trade of a country.

CORE PAPER-II- RESEARCH METHODOLOGY

CO1: This course has an objective of explaining the theoretical framework and concepts of research to students.

CO2: It make them understand and use the various data collection and analysis tools for research.

CO3: Students will be skilled to frame a good research proposal and write its report.

Group A: Elective Paper – A1- BASIC ECONOMETRICS

CO1 : Econometrics is a very powerful tool for understanding of applied economic relationships and for meaningful research in economics.

CO2: This paper is designed to equip the students with the basic theories and assumptions of econometrics.

CO3: Student will learn how to construct econometric models, estimate the parameters of these models (in case of quantitative and qualitative data) and interpret the parameters estimates

GROUP A: Elective Paper –A2- MATHEMATICAL APPROACH TO MICRO ECONOMICS

CO1: This course is designed to equip students to apply mathematical tools and techniques to understand and elaborate the concepts and theories related to Micro Economics.

CO2: It will enable students to elaborate Micro Economic theories and Models with mathematical derivations.

CO3: It develops the quantitative reasoning among the students regarding behavior of consumers and producers in market and market mechanism.

GROUP A: ELECTIVE PAPER- A3-AGRICULTURAL ECONOMICS

CO1: To understand the theories and Principles of Agriculture Economics.

CO2: To understand input–output of agriculture sector and their inter relationship with Economy.

CO3: To understanding the models of agricultural development.

CO4: To understand the farm management and agriculture marketing system.

GROUP –A ELECTIVE PAPER-A4 -LABOR ECONOMICS

CO1: To understand the main features, problems and mechanism of the labour market

CO2: To understand the theory and concept of productivity, unemployment and migration.

CO3: To understand man power planning and resources management.

CO4: To explain wage theory and related issues.

GROUP –B ELECIIVE PAPER-B1-INDUSTRIAL ECONOMICS

CO1: To understand the concepts of industrialization and related issues.

CO2: To understand the theories and concepts related to firm and markets.

CO3: To understand the process of growth, merger and settlement of firm in different market conditions.

CO4: To understand the product pricing, balance sheet statements and related issues.

GROUP – B ELECTIVE PAPER-B2- FINANCIAL ECONOMICS

CO1: This course introduces students to the economics of finance.

CO2: This course enables students to know the operation of the Indian Financial System and activities in the financial markets.

CO3: The students will understand how the theoretical concepts learned in the class apply to the real world through interpretation of real world events.

Group B: Elective Paper –B3-MANAGERIAL ECONOMICS

CO1: This course introduces students to the role and importance of Managerial Economics.

CO2: The students will understand the internal and external decisions to be made by managers.

CO3: The students will understand the importance of economic approaches in managerial decision making.

CO4: The students will be able to use theoretical knowledge of economic theories to analyse real-world business problems.

GROUP –B ELECTIVE PAPER-B4-HUMAN RESOURCE MANAGEMENT (HRM)

CO1: The course is designed to make student understand the significance and problems of Human Resource Management in constituting economic growth.

CO2: This course will explain basic principles of strategic human resource management and the various aspects of human resource planning.

SEMESTER IV

CORE PAPER I- INTERNATIONAL TRADE AND COMMERCIAL POLICIES

CO1: This course enables students to understand how restrictions to international trade would be used for the nation's development and how it limits the same.

CO2: This course explains the importance of maintaining equilibrium in the balance of payments and suggests suitable measures to correct disequilibrium as well.

CO3 : It develops a complete understanding of role of international economic institutions in present global scenario.

CORE PAPER – IIA- PROJECT WORK- DISSERTATION

CO1: This course is introduced to develop the understanding of practical problems one has to face during research and how to overcome it.

CO2 : It will enhance the ability of students to conduct surveys and analysing the data collected. They will choose the topic of their interest under the guidance of faculty members which has some relevance to economic issues.

CO3: It aims to make student familiar with economic issues of local communities and surroundings and to study in depth with practical application on any economic phenomenon.

CORE PAPER – IIB-PUBLIC POLICY IN INDIA

CO1: To enable students to learn about the economic aspects of various public policies related to Indian Economy, which are directly and indirectly affecting the economic welfare of the people.

CO2: Student will have the knowledge about the formulation, implementation, monitoring, evaluation, analysis and limitations of public policies in India.

GROUP A: ELECTIVE PAPER – A1 -ADVANCED ECONOMETRICS

CO1: A primary objective of teaching this course is to engage students in active learning and critical thinking about econometrics using advanced tools.

CO2: This course introduces the theory and application of time series techniques which is crucial for the economic and financial research.

CO3: Another objective of this course is to relate economic questions to empirical observations and try to select those econometric models which are best suited.

GROUP A: ELECTIVE PAPER –A 2 - MATHEMATICAL ECONOMICS

CO1: This course aims to develop understanding of the economic concepts and theories using mathematical tools and techniques to refine the verbal logic.

CO2: It helps student to use modern algebraic tools which allow convenient handling of simultaneous equations in the context of linear programming, game theory and input-output analysis.

CO3: This course covers important aspects of microeconomics, macroeconomics and development theory to elaborate with mathematical explanation.

GROUP A: ELECTIVE PAPER- A3-ISSUES IN INDIAN AGRICULTURE

CO1: To understand the main features, trends and problems of indian agriculture.

CO2: To understand the agriculture finance, marketing, capital formation in india.

CO3: To understand the policies of government and other institutions in indian agriculture.

CO4: To understand the changes and new innovations in Indian Agriculture.

GROUP –A ELECTIVE PAPER-A4- ISSUES OF LABOUR IN INDIA

CO1: To understand the wage and bonus policies of industrial labour in India.

CO2: To understand the role trade union, collective bargaining and industrial peace in India

CO3: To understand concept of social security, welfare policies and programmes for labour.

CO4: To understand the specific problem of social groups and effect of changing economic scenario.

GROUP –B ELECTIVE PAPER-B1-INDIAN INDUSTRIAL ECONOMICS

CO1: To understand the industrialization process in India and related issues.

CO2: To understand the role of public sector, effect of LPG policy, requirement to change in policies and measures taken by government for industrial development.

CO3: To understand the role of foreign capital and MNCs in industrial development.

CO4: To understand the sources of industrial finance and growth of main industries in india.

GROUP B: ELECTIVE PAPER – B2-DEMOGRAPHY

CO1: The basic aim of this paper is to understand the demographic trends and issues in India.

CO2: The study theories of population and structure of population in India.

CO3: Basic concepts related to demography like fertility, Mortality and Migration in population will be discussed.

CO4: Student will also be acquainted with the various methods related to population projections and implications of changing composition population on labour force.

GROUP B: ELECTIVE PAPER – B3-ECONOMY OF RAJASTHAN

CO1: The objective of the paper would be to make analytical study on Rajasthan Economy and its position and contribution in Indian economy.

CO2: The paper emphasis on major issues related to agriculture, industry and tourism sector of Rajasthan.

CO3: The course is expected to enable the student to appreciate the evaluation of the Rajasthan economy, its institutional frame work for analysing public policy, and to get familiar with the current issues and challenges of Rajasthan economy.

GROUP B–ELECTIVE PAPER – B4-ENVIRONMENTAL ECONOMICS

CO1: This course introduces students to concepts, methods and policy options in managing the environment using tools of economic analysis

CO2: This course intends to expose the student with practical applications of methods for valuation of environmental goods and services and quantification of environmental risk and damages.

CO3: Paper also discusses the various theories for managing the natural resources. It also highlights the concept and indicators for measuring sustainable development

CO4: Environment economics also brings insight the various issues and problems associated with the environment degradation in Indian and international context. Along with that, the policy measures adopted are also discussed.

SKILL COURSE PAPER-02-ADVANCE ECONOMIC ANALYSIS WITH SPSS

CO1: The paper will equipped students with practical applications of SPSS for advanced economic analysis.

CO2: The students will develop a strong theoretical framework of advanced statistical technique of data analysis with hands on training on SPSS

Programme Specific Outcome of BA Honours (Economics)

2019-20 Onwards

PSO1: This course will form the basic theoretical foundation of Economics.

PSO2: Through this programme students will be well acquainted with the core branches of Economics

PSO3: The objective of the course is to sharpen the analytical skills of the students.

PSO4: This programme will enable the students to apply the mathematical and statistical techniques to evaluate the validity of an economic argument.

PSO5: It will provide the students a well structured learning framework and environment for Economics.

PSO6: This programme will open the job avenues for students especially where the knowledge of Economics is a prerequisite.

PSO7: This programme will help the students in their progression towards Higher Education in Economics.

Course Outcomes

FIRST YEAR HONOURS

Paper – I MICRO ECONOMICS

CO1: This course enables students to understand the basic concepts and principles of Micro

Economics and to apply them to the real world

CO2: It will develop the understanding of behaviours of consumers and producers in the market, price determination in commodity and factor market and criteria of welfare in Economics.

CO3: Theories and diagrammatical representations are the most important tools that will aid students to understand and grasp the subject.

Paper –II -PUBLIC ECONOMICS

CO1: The course will provide basic information to students on the scope of Public Economics.

CO2: The students will be able to understand the significance of government and its functions, governmental finance and its impacts on economic development.

Paper – III- QUANTITATIVE TECHNIQUES

CO1: This course provides basic knowledge of mathematical technique which are frequently used in economic analysis.

CO2: This course will enable the students to use elementary statistical techniques for data analysis in social researches.

CO2: Being combination of basic mathematical and statistical techniques, this course will enable students to use these techniques to understand the economic theories.

Paper – IV-HISTORY OF ECONOMIC THOUGHT

CO1: The paper will make students aware of the economic history.

CO2: It will also provide a historical perspective on the evolution and process of transformation of economic thought.

Paper – V MACRO ECONOMICS

CO1: This course will make the learners familiar with the economic aggregates and their role in economy.

CO2: It also covers various theories related to consumption and basic concept of investment.

CO3: Students will also get familiar with the Concept and various theories of business cycles.

SECOND YEAR HONOURS

PAPER – VI MONEY AND FINANCIAL MARKETS

CO1: The course will provide the basic information to students about the concepts, theories and scope of financial sector.

CO2: The students will understand the significance and functions of short term and long term financial markets, Exchange Rate and their impact on economic indicators.

Paper – VII MATHEMATICAL ECONOMICS

CO1: This course will equip students to understand the economic concepts and theories with the use of mathematical tools and techniques to refine the verbal logic.

CO2: The Modern algebraic tools will allow convenient handling of simultaneous equations in the context of linear programming and input-output analysis.

Paper – VIII INTERNATIONAL ECONOMICS

CO1: This paper will develop the understanding of theories of International Trade which explain the reasons, composition and impacts of international trade to students.

CO2: It will also build the understanding of trade policy and exchange rate system.

CO3: The students will have an idea about trends, composition and direction of international trade and trade policy of India.

THIRD YEAR HONOURS

Paper – IX- GROWTH AND DEVELOPMENT ECONOMICS

CO1: The Student will be able to understand the models of Economic Development and their applications for underdeveloped or developing economies.

CO2: This paper will help students to understand the important issues in the context of development.

Paper – X INDIAN ECONOMICS

CO1: The paper will help students to get familiarized with the broad overview of the Indian economy.

CO2: The students will also get familiar with the issues related to agriculture, industry, foreign trade and Economic Planning in India.

CO3: The students will have a broad idea regarding the social and economic infrastructure of India.

THIRD YEAR HONOURS

Paper – XI- ECONOMETRIC METHODS

CO1: This paper will equip the students with basic theories of econometrics.

CO2: Students will learn the construction of econometric models, estimation of parameters of these models and will be able to interpret the parameters estimates.

Paper – X INDIAN ECONOMICS

CO1: The paper will help students to get familiarized with the broad overview of the Indian economy.

CO2: The students will also get familiar with the issues related to agriculture, industry, foreign trade and Economic Planning in India.

CO3: The students will have a broad idea regarding the social and economic infrastructure of India.

Paper – XI- ECONOMETRIC METHODS

CO1: This paper will equip the students with basic theories of econometrics.

CO2: Students will learn the construction of econometric models, estimation of parameters of these models and will be able to interpret the parameters estimates.

Paper – XII COMPREHENSIVE ECONOMICS

CO1: This course will give a comprehensive basic knowledge of Labour, Industrial Agricultural and Environmental Economics to students.

CO2: It will build a theoretical foundation of these broad topics and enable students to discuss the contemporary issues related to them.

UG (Pass Course) –Economics (2019-20 Onwards)

Course Outcomes

First Year T.D.C. Arts

Paper – I-MICRO ECONOMICS

CO1: This course enables students to understand the basic concepts and principles of Micro Economics and to apply them to the real world

CO2: The students will learn how consumers and producers behave in markets and how price is determined in commodity market.

CO3: This paper also enhanced the understanding of students about factor Pricing.

Paper – II- INDIAN ECONOMIC ENVIRONMENT

CO1: The objective of the course is to sharpen the analytical skills of the students by highlighting on broad overview of the Indian economy.

CO2: To get familiar with the issues related to agriculture, industry, foreign trade, Economic Planning and various problems in India.

CO3: Students will also acquaint with the broad overview of Rajasthan economy.

Second Year T.D.C. Arts

Paper – I-MACRO ECONOMICS

CO1 : Macro economics deals with the study of economic aggregates like income, employment, interest rates and the price level. This course will help students analyse and understand these concepts.

CO2: It covers basic concepts related to consumption and investment.

CO3: It also introduces students to the basic theories and concept related to business cycles, economic growth and development.

Paper – II- FINANCIAL ECONOMICS

CO1 : The present course is designed to acquaint the students with the functioning of the monetary and financial sector in India.

CO2 : It also deals with the concepts related to inflation and deflation. It will help students to understand the causes and consequences of inflation and measures to control it.

CO3: It also covers elementary knowledge about the public finance related to the public expenditure and public revenue.

Third Year T.D.C. Arts

Paper –I- QUANTITATIVE TECHNIQUES IN ECONOMICS

CO1: The basic aim of this course is to acquaint the students with sampling techniques and tools of collection.

CO2: This course covers elementary statistical techniques which are frequently used for data analysis in social researches.

CO3: This course also provides basic knowledge of mathematical techniques -Differential and Integration, which are frequently used in economic analysis.

Paper – II- INTERNATIONAL ECONOMICS

CO1: This course aims to develop understanding about basic concepts and theories related to international trade.

CO2: This course will help students to analyse the problems related to the foreign trade and balance of payments and learn about the techniques to overcome them.

CO3: It will greatly help the students to examine the impact of the trade policies on gains from trade and terms of trade of a country.

CO4: The students will have an idea about trends, composition and direction of international trade and trade policy of India.

MASTER OF PHILOSOPHY PROGRAMME

ECONOMICS

Programme Specific Outcomes of M.Phil. Economics

PSO1: This programme is designed to develop critical thinking skills among students. They will be able to correlate economic theory with everyday problems in real world.

PSO2: This programme will enable the students to apply the mathematical and statistical techniques to evaluate the validity of an economic argument.

PSO3: The students will be able to discuss the current economic issues and problems with the clear understanding of theoretical framework.

PSO4: This course has an objective of explaining the theoretical framework and concepts of research to students.

PSO4: Students will be skilled to frame a good research proposal, to conduct research and write its report.

PSO5: This programme opens job avenues for students especially they can serve as project assistants and researchers in research institutes and companies dealing in conducting surveys and data analysis.

Course Outcomes

SEMESTER – I

Paper – I RESEARCH METHODOLOGY

CO1: This course has an objective of explaining the theoretical framework and concepts of research to students.

CO2: It make them understand and use the various data collection and analysis tools for research.

CO3: It imparts basic knowledge of Econometric and Statistical techniques to be used for research.

CO4: Students will be skilled to frame a good research proposal and write its report.

Paper – II - ISSUES IN INDIAN ECONOMY

CO1: The paper will help students to get familiarized with the broad overview of the Indian economy.

CO2: The students will also get familiar with the issues related to agriculture, industry, foreign trade and Economic Planning in India.

CO3: The objective of the course is to sharpen the analytical skills of the students by providing them the opportunity to discuss on the issues and problems related to the Indian economy.

SEMESTER – II

Paper – I A- ADVANCED STUDY OF EVOLUTION OF ECONOMIC DOCTRINES

CO1: The paper will make students aware of the economic history.

CO2: It will also provide a historical perspective on the evolution and process of transformation of economic thought.

Paper – I B- ECONOMICS OF ENVIRONMENT AND CLIMATE CHANGE

CO1: This course introduces students to concepts, methods and policy options in managing the environment using tools of economic analysis

CO2: This course intends to expose the student with practical applications of methods for valuation of environmental goods and services and quantification of environmental risk and damages.

CO3: It also discusses the various theories for managing the natural resources. It also highlights the concept and indicators for measuring sustainable development

CO4: Environment economics also brings insight the various issues and problems associated with the environment degradation in Indian and international context. Along with that, the policy measures adopted are also discussed.

Paper – II A-ADVANCED ECONOMIC THEORY

CO1: This course will formed the theoretical foundation of the students about pricing in imperfect market conditions, general equilibrium theory and enable them to apply in real market situations.

CO2: This paper enhanced the understanding of various concepts and theories of welfare economics.

CO3: It gives exposure to Advanced Macro Economic Theories related to income, employment, inflation and Business cycles.

CO3: It makes students acquainted with new growth models and trade theories.

Paper – II B- ECONOMICS OF HEALTH SECTOR

CO1: This course will help students to understand the interlinkages of health and economic development.

CO2: It will give exposure to status of health and health facilities in India.

CO3: Research in Health Economics is in demand and this course will help students to seek opportunities in this field.

Paper III- Information and Communication Technologies in Research

CO1: This qualifying course is designed to make students well acquainted with Information and Communication Technologies.

CO1: Students will be able to use Information and Communication Technologies in their Research.

SEMESTER – II

Paper I- Dissertation

CO1: This course is introduced to develop the understanding of practical problems one has to face during research and how to overcome it.

CO2 : It will enhance the ability of students to conduct surveys and analysing the data collected. They will choose the topic of their interest under the guidance of faculty members which has some relevance to economic issues.

Program Name	Program outcome
B. Pharmacy (B. Pharm.)	<p data-bbox="440 233 1295 268">On completion of the B. Pharm. program, a student will be able to:</p> <ol data-bbox="440 310 1513 1136" style="list-style-type: none"> <li data-bbox="440 310 1513 384">1. Demonstrate knowledge of the basic pharmaceutical sciences and the ability to acquire, manage and use current information for problem solving. <li data-bbox="440 390 1513 464">2. Describe the synthesis, formulation, analysis and pharmacological aspects of drugs and pharmaceuticals. <li data-bbox="440 470 1513 543">3. Identify the rules and regulations involved in the drug discovery and development, manufacture, distribution and sale of medicines. <li data-bbox="440 550 1513 623">4. Observe record, analyze, criticize, organize, improvise and manage documents, data and information related to pharmaceutical products and practices. <li data-bbox="440 630 1513 703">5. Develop problem-based learning approach and analytical thinking in his/her academic and professional life. <li data-bbox="440 709 1382 745">6. Demonstrate the ability to plan and implement professional activities. <li data-bbox="440 751 1304 787">7. Act efficiently as a leader in the diverse areas of the profession. <li data-bbox="440 793 1300 829">8. Write, interpret and communicate effectively and scientifically. <li data-bbox="440 835 1513 909">9. Apply the knowledge and skills gained through education to gain recognition in professional circle and society. <li data-bbox="440 915 1495 951">10. Partnering with other health care communities to provide innovative solutions. <li data-bbox="440 957 1435 993">11. Create awareness in society about the effective and safe use of medicines. <li data-bbox="440 999 1455 1035">12. Demonstrate eco-friendly products and processes to maintain public health. <li data-bbox="440 1041 1513 1115">13. Imbibe ethical practices and moral values in personal and professional endeavors. <li data-bbox="440 1121 1138 1157">14. Tackle future challenges through lifelong learning.

DEPARTMENT OF GEOGRAPHY
Faculty of Earth Sciences
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(Programme Specific Outcomes and Course Outcomes)

Programme Specific Outcomes: (B.A. Three Year Pass Course)

- PSO 1. To introduce the students to the importance of the discipline to understand the surroundings.
- PSO 2. To understand the fundamental approaches and branches of the discipline.
- PSO 3. To impart comprehensive knowledge of the regional geography of the State, country and the world.
- PSO 4. To enable students to prepare for competitive examinations relevant for graduate students.
- PSO 5. To develop an understanding of the cartographic tools and methods for representation of geographical data, surveying and mapping.

Course Outcomes: B.A. Geography (First Year) – Course – P (I) Physical Geography

- CO 1. To make students understand their immediate surroundings
- CO 2. To develop an understanding of theoretical concepts related with formation of the earth
- CO 3. To create strong foundation of various geomorphological phenomena shaping the earth surface.
- CO 4. To extend knowledge of landform dynamics, atmospheric phenomena and oceanography: three fundamental elements of the earth crust.
- CO 5. To cover basic contents for various competitive examinations such as civil services, state level PSC exams, school education exams and so on.

Course Outcomes: B.A. Geography (First Year) – Course - P (II) Human Geography

- CO 1. To extend knowledge of core concepts, theories and ideologies of Human Geography.
- CO 2. To develop fundamental understanding of evolution of human races and distribution and socio-economic fabric of major tribes in the world and India.
- CO 3. To foster knowledge about distribution of population in the world, fundamental demographic concepts and population challenges with respect to India.
- CO 4. Basic contents for various competitive examinations for civil services, state PSC exams, school education exams, and so on.

Course Outcomes: B.A. Geography (First Year) – Course - Practical: Cartography – I

- CO 1. To develop an understanding of fundamentals of scales.
- CO 2. To develop skills of representing geomorphic features using cartographic methods.
- CO 3. To train students to represent climatic data using various graphs.
- CO 4. To impart sound knowledge of weather symbols and instruments.

Course Outcomes: B.A. Geography (Second Year) – Course - P (I) World Regional Geography

- CO 1. To develop an understanding of terrain, climate, natural vegetation and soil of various continents.
- CO 2. To gain knowledge about demographic and economic aspects of major continents of the world.
- CO 3. To enrich the knowledge of regional geography of various continents.
- CO 4. Basic contents for various competitive examinations for civil services, state level PSC exams, school education exams and so on.

Course Outcomes: B.A. Geography (Second Year) – Course - P (II) Economic & Resource Geography

- CO 1. To enhance spatial knowledge of various economic activities of man in relation to his natural milieu.
- CO 2. To develop an understanding of classification and conservation of natural resources.
- CO 3. To develop insight into distribution, production and status in international trade of selective agricultural and industrial activities.
- CO 4. To develop a comprehensive understanding of international trade and transport activities and trade organizations at world level.

Course Outcomes: B.A. Geography (Second Year) – Course – Practical: Cartography-II (Projections and Presentation of socio-economic data)

- CO 1. To develop a fundamental understanding of various types and use of map projections.
- CO 2. To understand the pre-conditions, suitability and limitations of various maps and diagrams.
- CO 3. To learn the various techniques for cartographic representation of socio-economic phenomena using thematic maps, diagrams and graphs.
- CO 4. To learn fundamentals of quantitative techniques.

Course Outcomes: B.A. Geography (Third Year) – Course - P (I) Geography of India

- CO 1. To develop a sound understanding of natural and cultural landscape of India.
- CO 2. To develop comprehensive understanding of the physical, economic and demographic aspects of the country.
- CO 3. To develop an understanding of the planning regions and developmental challenges on regional basis.
- CO 4. To cover the fundamental contents of general studies for various competitive examinations such as civil services, state level PSC exams, school education exams and so on.

Course Outcomes: B.A. Geography (Third Year) – Course - P (II) Geography of Rajasthan

- CO 1. To provide a comprehensive understanding of the geographical landscape of the state including all physical, socio-economic and cultural aspects.
- CO 2. To develop a sound understanding of demographic composition, distribution and their challenges in the state.
- CO 3. To understand the fundamental environmental challenges of the state associated at regional level.
- CO 4. To cover the basic contents for various competitive examinations viz. civil services, state level PSC exams, school education exams and so on.

Course Outcomes: B.A. Geography (Third Year) - Course - Practical: Surveying, Topographical Maps and Remote Sensing

- CO 1. To develop skills to map locations of real-world features.
- CO 2. To develop a sound knowledge of basic surveying techniques and instruments.
- CO 3. To learn fundamentals of studying and interpreting topographic maps with particular reference to Rajasthan.
- CO 4. To understand the fundamentals of aerial photographs and satellite imageries in order to introduce the students to the field of remote sensing.

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(Programme Specific Outcomes and Course Outcomes)

Programme Specific Outcomes: (M.A./M.Sc. (Geography) (CBCS Scheme))

- PSO 1. Developing a strong theoretical foundation and research orientation in the subject covering all major sub-disciplines.
- PSO 2. Training the students in field specific state of the art tools and methodologies to develop vocational skills, and research skills as well.
- PSO 3. Enabling preparation of various competitive examinations- particularly relating to school/higher education and civil services – along with PG studies.
- PSO 4. Developing entrepreneurship skills by imparting quality training in geospatial technology, statistical software based analysis with activities enabling personality development.

M.A. / M.Sc. Geography (Semester I) - Course – P (I) (M1GEOG1-CT01) Geographical Thought

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To develop an understanding of historical and evolutionary perspective of the subject
- CO 2. To make students learn new concepts and recent developments in the subject.
- CO 3. To develop fundamental understanding of various approaches to geographical studies.
- CO 4. Basic contents for various competitive examinations for civil services, lecturership, school education, UGC NET-JRF and so on.

M.A. / M.Sc. Geography (Semester I) - Course – P (II) (M1GEOG2-CT02) Geomorphology

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To develop an understanding of major relief features and process of their formation on the earth surface.
- CO 2. To develop an understanding of landform dynamics and predict their changes on the earth surface.
- CO 3. To develop knowledge and skills to carry out geomorphological mapping and field investigations.
- CO 4. To develop research aptitude in the field of Geomorphology.

CO 5. Basic contents for various competitive examinations for civil services, lecturership, school education, UGC NET-JRF and so on.

M.A. / M.Sc. Geography (Semester I) - Course – P (III) (M1GEOG3-CT03) Economic Geography

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To enhance spatial knowledge of various economic activities of man in relation to his natural milieu.
- CO 2. To develop an understanding of diversified economic regions of the world in context of case studies.
- CO 3. Basic contents for various competitive examinations for civil services, lecturership, school education, UGC NET-JRF and so on.
- CO 4. To develop insight into various issues for applied research in the field of economic geography.
- CO 5. To develop a comprehensive understanding of the agro, economic and industrial landscape at regional level.

M.A. / M.Sc. Geography (Semester I) - Course – P (IV) (M1GEOG4-CT04) Climatology and Oceanography

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To extend knowledge of major climatic and oceanic phenomena and their inert-related processes taking place on the earth surface.
- CO 2. To develop an understanding of applying knowledge of day to day weather and climatic phenomenon which is very significant in everyday life.
- CO 3. To develop a perspective of impact of climatic change on our ecosystem.
- CO 4. Basic contents for various competitive examinations for civil services, lecturership, school education, UGC NET-JRF and so on.

M.A. / M.Sc. Geography (Semester I) - Course – Practical -I (M1GEOG2-CP01): Surveying & Leveling

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To develop skill to map locations of real-world features.
- CO 2. Develops skill to determine the distances on ground and height of various features on the earth.

- CO 3. Develops a sound knowledge of surveying and levelling instruments with focus on improving precision in field measurements.
- CO 4. To develop vocational expertise for work as surveyors, town planners and cartographers.

M.A. / M.Sc. Geography (Semester I) - Course – Practical -II (M1GEOG2-CP02): Air Photo Interpretation

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To understand the basic structure of remote sensing data.
- CO 2. To understand process of acquisition and geometry of remotely sensed data and visualization of various earth features using aerial photos.
- CO 3. Develops skill for use of aerial photographic techniques and instruments.
- CO 4. Develops skill to extract features and create thematic maps using aerial photos.

M.A. / M.Sc. Geography (Semester II) - Course –P (I) (M2GEOG1-CT05) Geography of India

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To develop a sound understanding of natural and cultural landscape of India.
- CO 2. To develop comprehensive understanding of the physical, economic, demographic, social and environmental aspects of the country.
- CO 3. To develop understanding of the resource base and developmental challenges on regional basis.
- CO 4. To cover the fundamental contents of general studies for various competitive examinations.

M.A. / M.Sc. Geography (Semester II) - Course –P (II) (M2GEOG2-CT06) Geography of Resources

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To develop an understanding of distribution of various resources in the world.
- CO 2. To foster knowledge about conservation of resources and their role in regional planning for development.
- CO 3. To develop perspective towards sustainable utilization of resources.
- CO 4. Basic contents for various competitive examinations for lecturership, school education and so on.

M.A. / M.Sc. Geography (Semester II) - Course – P (III) (M2GEOG2-CT07) Regional Development and Planning

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To develop understanding of the fundamentals of regional planning.
- CO 2. To assess the impact of government policies on regional development and planning
- CO 3. To gain knowledge of various schemes and models on regionalization of India.
- CO 4. To impart a strong conceptual base regarding development patterns, disparities, planning, challenges and priorities for students opting for administrative services as career.

M.A. / M.Sc. Geography (Semester II) – Course - P (IV) (M2GEOG4-CT08) Political Geography

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. Helps in understanding the fundamentals of political phenomenon across the world.
- CO 2. To extend knowledge on various Geopolitical models.
- CO 3. To learn electoral behaviour patterns in context of India and Rajasthan.
- CO 4. Basic contents for various competitive examinations for lecturership, UGC NET-JRF and so on.

M.A. / M.Sc. Geography (Semester II) - Course – Practical – I (M2GEOG1-CP03): Cartography-I (Basics of Cartography and Physical Aspects)

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To learn the fundamentals of cartography, manual map-making - the basic element of geographical studies.
- CO 2. To understand the techniques of extraction of geomorphological attributes from base maps and representation of relief.
- CO 3. To learn the techniques of representation of climatic data through diagrams and graphs.
- CO 4. To enhance cartographic skills for applied research.

M.A. / M.Sc. Geography (Semester II) - Course – Practical – II (M2GEOG2-CP04): Basics of Remote Sensing and Image Interpretation

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To understand the fundamentals of Remote Sensing.
- CO 2. To understand various aspects of digital images acquired from satellites.
- CO 3. To develop technical skills to interpret satellite data and extraction of required information in image processing softwares.
- CO 4. To train the students in geospatial technology with state-of-the-art technical, research and professional skills.
- CO 5. To create a strong foundation for students planning to opt for employment as GIS analyst and consultancy as their career.

M.A. / M.Sc. Geography (Semester II) - Course – Skill-I (M2GEOG1-SKILL-01): Digital Cartography

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To create an understanding of handling geographical data in softwares with special focus on cartographic modelling.
- CO 2. To introduce the students to proprietary and open source GIS softwares such as ArcGIS, and QGIS.
- CO 3. To develop preliminary expertise of statistical analysis and representation of geographical data in MS Excel and SPSS.
- CO 4. To learn tools and techniques of digital representation of physical, climatic and socio-economic data in form of maps and diagrams using GIS softwares
- CO 5. Enhancing technical skills for self-employment and job opportunities relating to cartographic services across public and private sector.

M.A. / M.Sc. Geography (Semester III) - Course –P (I) (M3GEOG1-CT09) Agricultural Geography

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To learn fundamentals of agricultural geography
- CO 2. To gain knowledge about world agricultural systems and models of agricultural land use.
- CO 3. To develop sound understanding of the use of quantitative techniques in agricultural studies.
- CO 4. To develop understanding regarding the course of agricultural development in India, problems, policies, planning and agricultural regionalization.
- CO 5. To impart comprehensive theoretical and conceptual understanding for a potential field of applied geographical research.

M.A. / M.Sc. Geography (Semester III) - Course –P (II) (M3GEOG2-CT10) Urban Geography & Planning

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To understand site evolution, growth and classification of cities.
- CO 2. To provide scientific study of urban settlements and morphology.
- CO 3. To understand potential solutions to problems of urbanization.
- CO 4. Focuses on core concepts of town planning, helping students to prepare for better careers in this field.

M.A. / M.Sc. Geography (Semester III) - Course –P (III - A) (M3GEOG3-ET11-A) Environmental Geography

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To develop an understanding of man and environment relationship.
- CO 2. Creating awareness about current environmental issues, related laws and global initiatives to combat environmental degradation.
- CO 3. To study various types of ecosystems.
- CO 4. To provide knowledge regarding tools and methods of environmental management and planning.

M.A. / M.Sc. Geography (Semester III) - Course –P (III - B) (M3GEOG3-ET11-B) Geography of Rajasthan

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To provide a comprehensive understanding of the geographical landscape of the state including all physical, socio-economic and cultural aspects.
- CO 2. To develop a sound understanding of resource base, its distribution and challenges of utilization.
- CO 3. To understand the major developmental and environmental challenges of the state.
- CO 4. To cover the basic contents for various competitive examinations viz. civil services, state level PSC exams, lecturership, school education and so on.

M.A. / M.Sc. Geography (Semester III) - Course –P (IV - A) (M3GEOG4-ET12-A) Cultural Geography

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To understand various cultural realms and cultural regions of the world.
- CO 2. To understand socio-cultural trends of various tribes and human races.
- CO 3. To understand the cultural conflicts in context of globalization.
- CO 4. Basic contents for various competitive examinations for lecturership, UGC NET-JRF and so on.

M.A. / M.Sc. Geography (Semester III) - Course –P (IV - B) (M3GEOG4-ET12-B) Transport Geography

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To understand the movement of people, goods and ideas in transport network.
- CO 2. To understand the concept and models of transport system.
- CO 3. To understand spatial relations in transport network – flow, connectivity and accessibility.
- CO 4. To understand the problems related to urban transportation systems and potential solutions.

M.A. / M.Sc. Geography (Semester III) - Course – Practical – I (M3GEOG1-CP05): Advanced Cartography II (Techniques of Demographic Data Analysis and Projections (Mathematical))

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To develop a thorough understanding of various types and use of map projections.
- CO 2. To learn the various techniques for cartographic representation of socio-economic and demographic phenomena.
- CO 3. To understand the pre-conditions, suitability and limitations of various maps and diagrams.
- CO 4. To cover basic contents for various competitive examinations for lecturership, school education, UGC NET-JRF and so on.

M.A. / M.Sc. Geography (Semester III) - Course – Practical – II (M3GEOG2-CP06): Basics of Geographical Information System

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To train the students in state-of-the-art geospatial technology.
- CO 2. To introduce the fundamental concepts of GIS, methods of geospatial data generation and visualization and the vast repository of data available on web-geoportals.
- CO 3. To develop working skills in open source and proprietary GIS softwares.

- CO 4. To create awareness regarding the potential of GIS in decision making and planning.
- CO 5. To foster technical skills for employment opportunities as GIS consultant/analyst/project associates/entrepreneurs across private and public sector.

M.A. / M.Sc. Geography (Semester IV) - Course – P (I) (M4GEOG1-CT13) Industrial Geography

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To impart sound understanding of factors, theories and models of industrial location.
- CO 2. To learn about the distribution of major industries and industrial regions in the world with special reference to India.
- CO 3. To develop proficiency in use of various quantitative techniques in the field.
- CO 4. To develop understanding of various environmental issues related to industrialization.
- CO 5. Basic contents for various competitive examinations for lecturership, school education, UGC NET-JRF and so on.

M.A. / M.Sc. Geography (Semester IV) - Course – P (II) (M4GEOG2-CT14) Population and Settlement Geography

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To understand the world distribution of population, demographic dividend and demography attributes and population policy with special reference to India.
- CO 2. To foster knowledge of trends of population growth and migration patterns.
- CO 3. To understand the development, typology, structure, models and theories of rural and urban settlements.
- CO 4. Basic contents for various competitive examinations for lecturership, school education, UGC NET-JRF and so on.

M.A. / M.Sc. Geography (Semester IV) - Course – P (III - A) (M4GEOG3-ET15 – A) Geographical Research Methodology

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To prepare sound theoretical background for scientific research in the field of Geography.
- CO 2. To introduce the concepts of research problem, hypotheses, research design and methodology.

- CO 3. To impart knowledge regarding various sources of data, methods of data collection, sampling techniques, processing, qualitative and quantitative analysis of data.
- CO 4. To master the skills of literature review and thesis/report writing.
- CO 5. To develop aptitude for applied research with due awareness of research ethics.

M.A. / M.Sc. Geography (Semester IV) - Course – P (III - B) (M4GEOG3 – ET15 – B) Social Geography

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To understand social structure and their spatial attributes.
- CO 2. To understand socio-cultural trends of various tribes and human races of the world.
- CO 3. To understand about social relations, identities and inequalities from geographical perspective.
- CO 4. Basic contents for various competitive examinations for lecturership, UGC NET-JRF and so on.

M.A. / M.Sc. Geography (Semester IV) - Course – P (IV-A) (M4GEOG4-ET16-A) Quantitative Methods in Geography

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To develop an understanding of basic and advanced quantitative methods of data analysis and interpretation.
- CO 2. To provide a thorough understanding of the use, applicability and interpretation of various descriptive and inferential statistical techniques relevant to geographical research.
- CO 3. To implement quantitative analysis in statistical softwares.
- CO 4. To develop statistical skills with software expertise providing an edge for various employment opportunities - UGC NET-JRF, lecturership, research consultants, project associates, public service examinations and avenues for self-employment.

M.A. / M.Sc. Geography (Semester IV) - Course – P (IV-B) (M4GEOG4-ET16-B) World Geography

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To develop an understanding of terrain, climate, natural vegetation and soil of continents.
- CO 2. To gain knowledge about demographic and economic of all continents of the world.
- CO 3. To enrich the knowledge of regional geography of various continents.

- CO 4. Basic contents for various competitive examinations for civil services, lecturership, school education, UGC NET-JRF and so on.

M.A. / M.Sc. Geography (Semester IV) - Course – Practical – I (M4GEOG1-CP07): Geospatial Techniques for Applied Geographical Research

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To learn the various steps of image processing and information extraction workflow from satellite imageries.
- CO 2. To learn the various advanced techniques of GIS based analysis for applied research, decision making and planning.
- CO 3. To develop working skills in various open source and proprietary image processing and GIS softwares - ArcGIS, Erdas Imagine, ENVI, ILWIS, QGIS, SAGA, etc.
- CO 4. To produce professionals with an edge as researchers trained in state-of-the-art technology with sound theoretical base; planners and decision makers with thorough understanding of the capabilities and tools of geospatial technology; and avenues for self-employment as technical/geo-spatial consultants.

M.A. / M.Sc. Geography (Semester IV) - Course – Practical – II (M4GEOG2-CP08): Project Work on Natural Resource Management Using RS-GIS

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To impart practical experience of using geospatial technology for solving real world problems related to various fields viz. natural resource management, urban planning, land-use planning, water resource, agriculture and health management.
- CO 2. To develop an understanding of the work flow of project conceptualization, planning and implementation using geospatial techniques.
- CO 3. To develop presentation skills and defending the work in open viva.
- CO 4. To impart research experience enabling the students to carry out small projects and present their work on various platforms such as conferences/seminars.

M.A. / M.Sc. Geography (Semester IV) - Course – Skill – II (M4GEOG1-Skill-02): Statistical Analysis Using Software

Course outcomes: On the completion of this course students will be able to learn the following:

- CO 1. To develop professional skills of using statistical softwares such as SPSS, MS Excel for quantitative analysis.
- CO 2. To make students learn analysing geographical data using robust statistical tools provided by these softwares.
- CO 3. To develop skills of data handling and manipulation in softwares.
- CO 4. To develop them as professionals capable of working as data analysts across public and private sectors and also self-employment as technical consultants.

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(Programme Specific Outcomes and Course Outcomes)

Programme Specific Outcomes: (Ph.D. Programme in Geography)

- PSO 1. To identify domain specific research problems and finding solutions to the same through scientific research.
- PSO 2. To develop expertise in doctoral candidates in conducting scientific research.
- PSO 3. To develop expertise in use of tools and methods of geospatial technology in applied geographical research.
- PSO 4. To encourage application of software based cartographic and quantitative analysis
- PSO 5. To cater to regional needs with respect to resource management, policy, planning and governance.
- PSO 6. To identify priority areas for planning and management with specific focus on western part of India.

M.A. PSYCHOLOGY

SEMESTER I

M1/ PSY 01- CT01: Theoretical Perspectives of Psychology

Course Outcomes: on the completion of this course students will be able to learn the following:

CO1: Students will understand the Brief history of psychology and will learn application of Freudian and Neo- Freudian approach.

CO2: Students will understand the Behaviouristic perspective and basic concepts of personality

CO3: Students will get a better understanding of Hedonism ,purpovism and implications of Hormic Psychology

CO4: Students will study the theories related to Cognitive balance and dissonance,Brehm Dissonance,Bandura social learning theory and its application.

CO5: Students will understand Humanistic and Existential Perspectives and its application

M1/ PSY 02- CT02: Advanced Experimental Psychology

Course Outcomes: On the completion of this course students will be able to learn the following:

CO1: Students will have the knowledge of procedure of experiment and will develop basic understanding of perception, and determinants of perception.

CO2: Students will be able to understand dynamics of perception

CO3: Students will have understanding of different theories of learning, role of reinforcement in learning, and factors affecting learning.

CO4: Students will understand basic concepts of verbal learning, memory and forgetting and their factors

CO5: Students will understand the concept of motivation and emotion

M1/ PSY 03- CT03: - Biopsychology

Course Outcomes: On the completion of this course students will be able to learn in following:

CO1:Students will understand the concepts of Biopsychology.They will also be able to learn the various research methods used in Biopsychology for assessing various

phenomena. Students will be able to know the detailed knowledge about endocrine glands that is its types and functions and how they affect our behavior.

CO2: This will help students to have a detailed concept clarity about neuron structure, types and functions. They will get an understanding of structure and functions of Central nervous system and peripheral nervous system. They will be able to have the understanding of Synaptic transmission and neurotransmitters.

CO3: Students will have a conceptual clarity neural mechanisms of learning and memory process. They will be studying the various disorders of memory. They will be able to learn about the stages of sleep and various disorders of sleep.

CO4: Students will be able to get a better understanding of cerebral lateralization of Brain. They will learn the functions of left and right hemispheres. They will also learn the cortical localization of language and language disorders.

CO5: Students will learn about the emotions and autonomic nervous system. They will be able to understand the emotions and facial expression. They will be able to understand the mechanisms of human emotion and also the mechanisms of hunger and thirst.

M1/ PSY 04- CT04: Research Methodology

Course Outcomes: On the completion of this course students will be able to learn the following:

CO1: Students will understand fundamental concepts of research and will learn application of scientific research. Students will study different steps involved in research process.

CO2: Students will study basic concepts of variables and hypothesis. Students will understand concept of probability with the normal probability curve

CO3: Students will have conceptual clarity of sample design and different determinants of sample size. Students will understand different data collection methods

CO4: Students will be able to differentiate between different experimental, quasi experimental and non-experimental designs

CO5: Students will get a better understanding of basics of report writing and features of a good report. Conceptual details of APA format of writing report.

M1/ PSY 01- CP01: Practical- I: Experimental Psychology

CO1: Students will be able to design and conduct experiments on perception, motivation, learning, emotions, memory, forgetting

CO2: Students will be able to observe different phenomena of perception, motivation, learning and memory

M1/ PSY 02- CP02: Practical- II: Research Methods

CO1: Students will be able to identify and formulate problems, hypothesis and variables.

CO2: Students will be able to plan research having experimental designs ,factorial design etc.

CO3: Students will be able to prepare synopsis.

CO4: Students will learn to write research reports.

CO5: Students will learn to used different techniques of data collection.

SEMESTER II

M2/PSY 01- CT05: Cognitive Psychology

Course Outcomes: On the completion of this course students will be able to learn the following:

CO1: Students will understand the fundamental concepts of attention and perception

CO2: Students will understand the concepts of intelligence and creativity and their theories

CO3: Students will develop understanding regarding consciousness and its functions

CO4: Students will have theoretical and practical knowledge of Language and Executive processes.

CO5: Students will have a better understanding and Practical applications of Problem solving, Reasoning and Decision Making.

M2/PSY 02- CT06: Applied Social Psychology

Course Outcomes: On the completion of this course students will be able to learn the following:

CO1: Students will have theoretical and practical knowledge of social psychology fundamental concepts. Students will study different research methods in social psychology

CO2: Students will have knowledge of developmental views of eminent researchers and a deep understanding of attribution. Students will develop understanding regarding establishing new relationship and impression formation

CO3: Students will have orientation towards theoretical and practical framework of leadership styles. Dimensions of violence and maintenance of relationship.

CO4: Students will be able to apply different strategies of Anger Management. Students will understand structural and functional characteristics of a group.

CO5: Students would gain basic understanding of origin and maintenance of prejudice. Students will understand theoretical and practical framework of attitude.

M2/ PSY 03- CT07: Psychological Testing

Course Outcomes: On the completion of this course students will be able to learn the following:

CO1: Students will learn the meaning, types, uses and ethical issues of psychological testing

CO2: Students will understand the procedure of construction and standardization of psychological tests

CO3: Students will develop understanding of reliability, validity and norms

CO4: Students will have knowledge of different intelligence, aptitude, interest and achievement tests

CO5: Students will become aware of different personality tests.

M2/ PSY 04- CT08: Psychological Statistics

Course Outcomes: On the completion of this course students will be able to learn in following:

CO1: Students will be able to learn about the normal distribution, its properties and its importance. They will also be able to learn about the Normal probability distribution, skewness and kurtosis.

CO2: Students will be able to understand the concept of correlation and types of correlation. They will also be able to calculate some advanced correlation.

CO3: Students will be able to learn about the Analysis of Variance, its general uses and limitations. They will be able to learn the F test, t test and z test and interpretation.

CO4: Students will be understand the difference between non parametric and parametric statistics. They will also be able to learn types of non-parametric tests.

CO5: Students will be able to learn about the regression, its types and uses. They will also be understanding Factor analysis, its types and uses.

M2/PSY 01- CP03: Practical – I Social Psychology and Testing

Course Outcomes: on the completion of this course students will be able to learn the following:

CO1: Students will have Practical knowledge of Interpersonal attraction and Impression Formation.

CO2: Students will learn how to control the aggression and release the stress in the circumstances.

CO3: Students will understand the theoretical and practical knowledge of social psychology and its fundamental concepts

CO4: Students will learn how to communicate with other people and to handle the group pressure wherever needed

CO5: Students will learn how to measure the intelligence of an individual by the help of Wechsler intelligence test battery/ Bhatia's battery.

CO6: Students will learn how to behave in social settings and develop a personality.

M2/PSY 01- Skill 01: Understanding Self

Course Outcomes-

CO1: Understand and explore one's own self

CO2: Understanding the self-concept and the factors affecting it

CO3: Measurement of own self-concept

CO4: To understand about various aspect of self through exercises

CO5: To know and understand one's own strengths, weakness, opportunities and threats

CO6: To identify and measure own career preferences and personality

CO7: To understand various aspects of self-concept such as motivation, intelligence

SEMESTER III

M3/ PSY 01- CT09: Personality Theories

Course Outcomes: On the completion of this course students will be able to learn the following:

CO1: Students will understand the Personality theories and current issues in personality theories

CO2: Students will understand concept of personality proposed by Psychoanalytic and Post Freudian theorists

CO3: Students will get a better understanding of personality from Post Neo Freudian and trait theorists' perspectives

CO4: Students will study the personality from behaviourists and socio cognitive perspectives

CO5: Students will understand Humanistic phenomenological theories of personality

M3/ PSY 02- CT10: Positive Psychology

Course Outcomes: On the completion of this course students will be able to learn the following:

CO1: Students will understand goals of positive psychology and western and eastern perspectives on positive psychology

CO2: Students will learn about classification and measures of human strengths

CO3: Students will understand the concepts of positive emotional states and processes.

CO4: Students will develop understanding of positive cognitive states and processes. They will learn about self-efficacy, optimism, hope, mindfulness, wisdom, spirituality

CO5: Students will learn about pro-social behaviour. Students will understand building positive environment and institutions.

M3/ PSY 03-ET11A: Clinical Psychopathology

Course Outcomes: On the completion of this course students will be able to learn in following:

CO1: Students will be able to understand the concepts of normality and pathology. They will be able to understand the paradigm of vulnerability, resilience and coping. They will also learn about the mental health and mental disorder and about various models of abnormality.

CO2: Students will be able to classify the mental disorder according to APA and WHO classification and also the advantages and disadvantages of classification system. They will

also be able to learn about the causal factors like biological, psychosocial and socio cultural factors behind the abnormal behavior.They will also learn the diathesis- stress model.

CO3:Students will gain a knowledge of mood disorders, depression and bipolar disorders.They will also be able to learn about anxiety disorders like panic disorder, phobic disorders, PTSD, Generalized anxiety disorders.

CO4:Students will be able to get a better understanding the psychotic diseases like schizophrenia and its types.They will also be able to learn about the memory related disorders, sleep disorders and personality related disorders.

CO5:Students will be able to get to know about somatoform disorders, substance abuse disorders, learning disorders, eating disorders.They will also be able to learn about the prevention of mental disorders and its levels also the situation focused and competency focused prevention.

M3/ PSY 03- ET11B: Organisational Behaviour

Course Outcomes: On the completion of this course students will be able to learn the following:

CO1 Students will develop general awareness of history, importance, challenges and opportunities of industrial and organizational psychology

CO2 Students will learn about factors, importance & techniques of job satisfaction and measurement and methods of boosting morale

CO3 Students will understand different theories of motivation in reference to employees

CO4 Students will have better understanding of human performance, and accident proneness and prevention

CO5 Students will learn theories of leadership and leadership styles

M3/ PSY 03- ET11C: Educational Psychology

Course Outcomes: On the completion of this course students will be able to learn in following:

CO1:Students will be able to understand the concepts of educational psychology.Students will also be able to learn the importance and developmental characteristics of child development with relation to different aspects.

CO2:Students will be able to understand the concept of learning.They will be able to learn the different approaches of the learning.They will be able to learn the educational concept of motivation.They will be able to learn the motivational devices for classroom teaching.

CO3:Students will have a deep understanding of individual differences in the classroom.They will have a deeper understanding of intelligence and its theories.They will also be able to learn the concept of emotional intelligence and its theories.They will also be able to utilize various psychological test and intelligence test, both verbal, non- verbal and performance test.

CO4:Students will be able to get a better understanding of teaching and learning principles of teaching approaches.

CO5:Students will be able to gain the knowledge regarding the various methods of teaching.They will also be able to understand the differences based on cognitive abilities in children.

M3/ PSY 04- ET12A: Psychological Therapies -I

Course Outcomes: On the completion of this course students will be able to learn the following:

CO1:Students will have theoretical and practical knowledge of psychological intervention. Its professional and ethical issues.Students will get a better understanding regarding characteristics of a good therapist. Students will study different psychotherapeutic development. Yoga and Buddhistic traditions

CO2: Students will have knowledge of psychoanalytical therapies and their evaluation.Students will develop understanding regarding Neo Freudian approach

CO3: Students will have orientation towards Humanistic Existential approach. Dimensions of Rogerian and gestalt.

CO4:Students will be able to apply different group therapy. Students will understand practical issues of family therapy and its types.

CO5:Students would gain basic understanding of community based intervention. Students will understand theoretical and practical framework of crisis intervention and rehabilitation.

M3/ PSY 04- ET12B: Human Resource Management

CO1: Understand the role, importance and functions of human resource management in organizations

CO2: Understanding recruitment and selection processes in organizations

CO3: Understanding the strategies for effective communication in organizational setup

CO4: To know and understand employee management through conflict resolution through effective HR policies

CO5: To understand the techniques of performance appraisal and its implementation

CO6: To understand the concept and types of organizational structure

CO7: To understand and apply psychological tools and techniques for employee selection in organizations

M3/ PSY 04- ET12 C: Disorders of Childhood and adolescents

Course Outcomes: On the completion of this course students will be able to learn about the various disorders including nature, types, clinical picture and causal factors which are mainly occurring in the stage of in childhood and adolescents and the topics are as follows:

CO1:Students will be able to understand about mental retardation.

CO2:Students will be able to understand about learning and motor skills disorders.

CO3:Students will have a conceptual clarity on attention- deficit and disruptive behavior disorders.

CO4:Students will be able to get a better understanding of pervasive developmental and communication disorders.

CO5:Students will also be able to understand about eating disorders and obesity.

CO6:Students will be able to gain the knowledge regarding sexual variants.

M3/PSY 01- CP05: Practical- I

Course Outcomes: on the completion of this course students will be able to learn the following:

CO1: Students will able to assess the strengths of an individual.

CO2: Students learn and develop the self-assessment techniques i.e.self-concept method or bysocial adjustment method.

CO3: Students will learn to measure the creativity by different techniques

CO4: Students will able to understand to behave in social setting and develop a personality andalso can measure the personality by personality assessment techniques.

CO5: students can learn to write the case study of the recently issue highlighted in the media.

M3/ PSY 02- EP06 A: Practical II Clinical Psychology

Course Outcomes: On the completion of this course students will be able to learn the following:

CO1:Students will have practical knowledge of issues related to mental health.

CO2: students will get a better understanding regarding Characteristics of a scientific clinical interview.

CO3: Students will have knowledge of different aspects of health by conducting PGI health scale

CO4:Students will be able to apply progressive muscle relaxation for physical and mental relaxation

CO5: students will have practical knowledge of projective technique like TAT, Rorschach

CO6: students will have practical guide of analyzing biofeedback responses.

CO 7: students will study how to take a detailed case history.

M3/ PSY 02- EP06B: Practical II- Industrial Psychology

Course Outcomes: On the completion of this course students will be able to learn the following:

CO1 Students will develop skills to do job analysis

CO2 Students will learn to assess job satisfaction, and leadership

CO3 Students will learn identification of team role

CO4 Students will learn to measure risk taking behaviour

CO5 Students will learn to do performance appraisal

CO6 Students will be able to study organisational structure in the field

CO7 Students will be able to experience the climate of organisation

M3/PSY 02- EP06C: Practical- II Educational Psychology

CO1:Students will able to assess the social adjustment, emotional adjustment/ emotional quotient, intelligence.

CO2:Students will be able to learn to prepare the case study related to intelligence, aptitude and interest test.

CO3:Students will able to apply the intervention therapies like rational emotive therapy.

CO4:Students will get a better knowledge that is having a different socio cultures background affect the learning of children.

CO5:Students will able to formulate the case study of a child with learning difficulties..

CO6: Students will be able to apply the counseling interview techniques.

SEMESTER IV

M4/PSY 01- CT13: Psychometrics and Scaling

CO1: Understand meaning and application of psychophysics

CO2: Understand basic concepts such as Absolute Limen, Difference Limen, and Point of Subjective Equality etc.

CO3: Understand the various laws of psychophysics

CO4: Understand the types and role of scaling methods in measurement in Psychology

CO5: Understand and differentiate among various methods of classical psychophysics

CO6: Understand various experiments involved in calculation of various human sensitivity measures through classical methods

CO7: To be able to differentiate between classical and modern psychophysical methods

CO8: Understand signal detection theory and its applications

CO9: Understand Likert and Thurston scaling methods

CO10: To be able to apply the principles of scaling in construction of test items

M4/ PSY 02- CT14: Developmental Psychology

Course Outcomes: On the completion of this course students will be able to learn the following:

CO1: Students will understand the scope of developmental psychology, and method of studying developmental behaviour. They will also become aware of influences of development

CO2: Students will learn the concept of self and self-identity

CO3: Students will be able to understand psychoanalytic and psychodynamic theories, social learning and cognitive theories

CO4: Students will understand functions and development of emotional expression and temperament. Students will also learn theories of moral development

CO5: Students will learn different theories of aging and building blocks of successful aging.

M4/ PSY 03- ET 15 A: Clinical Assessment

Course Outcomes: On the completion of this course students will be able to learn in following:

CO1:Students will be able to understand the concepts of clinical assessment and in which scenario there is so much need of clinical assessment.Students will also be able to learn the assessment process and about formal and informal assessment.

CO2:Students will be able to understand the concept of Clinical interview, and the skills needed for the clinical interview and what should be the environment when the interview is taking place.

CO3:Students will have a conceptual clarity on the Projective tools of assessing personality like TAT, Draw a person test, Rorschach test and others.

CO4:Students will be able to get a better understanding neuropsychological assessment. And also how to assess sensory, motor and perceptual problems.Students will also be able to understand about GSR, EEG, ERP, PET and MRI.

CO5:Students will be able to gain the knowledge regarding the objective test and techniques of personality and intelligence.They will also be able to understand about the ethical issues in assessment.They will also be able to understand about the cross cultural tests and child assessment techniques.

M4/ PSY 03- ET15B: Training and Development

CO1: To know and understand the concept, importance, and process of employee training in organizations

CO2: To understand the training needs identification, designing a training program

CO3: To understand and apply various methods of delivering training program and evaluating its effectiveness

CO4: To understand and impart training programs on leadership, emotional intelligence and team work

CO5: To understand the importance of assessment centres

CO6: To learn and administer psychological tools such as MBTI, Big five, 16 PF for assessment purposes

M4/PSY 03- ET15C: Vocational Psychology

Course Outcomes: On the completion of this course students will be able to learn in following:

CO1:Students will be able to understand the concept of vocational psychology including definition, meaning, and subject matter.Students will also be able to learn about vocational choice and what are its determinants.

CO2:Students will be able to understand the theoretical perspectives of vocational psychology.

CO3:Students will have a better understanding of vocational choice and what are the problems faced during vocational choice.They will also learn about the career decision making processes.

CO4:Students will be able to get a better learning to other dimensions of vocational choice.They will be able to learn the systems of defining vocational problems.They will bale to learn about vocational indecision and vocational unrealism.

CO5:Students will be able to gain the knowledge regarding the clients with special needs that are individuals with disabilities.They will also learn about the clients that are women in workforce, displaced workers and economically disadvantaged group.

CO6:Students will also be able to understand about the ethical issues and competencies needed for career development.They will also be able to understand about the future concerns of vocational development.

M4/PSY 04- ET16A: Psychological Therapies II

Course Outcomes: On the completion of this course students will be able to learn the following:

CO1:Students will understand fundamental concepts of behavior modification and will learn its application. Students will study different operant methods in self-control. By developing different modules they will understand the use of self-control methods in obesity, study behavior

CO2:Students will study basic procedure of aversion therapy. Students will understand its different methods like ECT, covert sensitization. Progressive muscle relaxation will be explained along with its practical therapy sessions

CO3:Students will have conceptual clarity of systematic desensitization. Students will understand its nature, implications and empirical findings.

CO 4: Students will be able to differentiate between different behavior styles and the superiority of Assertive style over the others. Students will understand the basic procedure of Assertive training and behavior rehearsals. Fundamental procedure of modelling will be explained

CO 5:Students will get a better understanding of cognitive therapies like CBT, REBT, Thought Stopping etc.Conceptual details of sex therapy will be explained.

M4/ PSY 04- ET16B: Entrepreneurship Psychology

CO1: To understand the concept, importance and factors of Entrepreneurship Psychology

CO2: To understand the psychological theoretical framework of entrepreneurship

- CO3: To understand the measurement of entrepreneurship skills in an individual
CO4: To understand the psychological characteristics requires for an entrepreneur
CO5: To implement the entrepreneurship education/ development programs to create an entrepreneurial mind-set
CO6: To understand the social responsibility of entrepreneurs
CO7: To understand the concept of tele-preneurship and tech-preneurship
CO8: Understanding skill development challenges and Global entrepreneurship monitor (GEM) in Indian context

M4/PSY 04- ET16C: Counseling Psychology

Course Outcomes: On the completion of this course students will be able to learn in following:

CO1: Students will be able to understand the concepts of counseling. Students will also be able to learn the counsellor's roles and functions. Students will be able to understand the ethics and legal concerns related to the theme.

CO2: Students will be able to understand the broadened perspective of counseling process and skills. Students will be able to learn the counseling relationships. Will be able to learn the counseling interview and about basic communications skills which involves rapport building, assessment of problem, setting goals, selecting and designing interventions. Students will be able to learn when to terminate the counseling process.

CO3: Students will have a conceptual clarity about different theories related to counseling. Students will be able to learn about different therapies related to counseling.

CO4: Students will be able to get a better understanding of group techniques which include group guidance, group counseling. They will be able to learn to deal with many types of groups. They will get a better understanding of group process and group dynamics.

CO5: Students will be able to gain the knowledge regarding the counseling for career planning and decision making. They will get a knowledge about current interest in career planning. They will be able to understand the development of human potential and career planning and decisions making in schools. They will also learn about the career counseling in non-school settings.

M4 /PSY 01 –CP07: Practical I: Psychophysics and Developmental Psychology

Course Outcomes: On the completion of this course students will be able to do the following:

CO1: Students will be able to determine illusion, AL, DL with different psychophysical methods

CO2: Students learn and develop Likert and Thurston type scale

CO3: Students will learn to develop reliability, validity and norms of a psychological test

CO4: Students will be able to understand cognitive development of a child

M4/PSY 02 –EP08A Clinical Practical II

Course Outcomes: on the completion of this course students will be able to learn the following:

CO1: Students will be able to assess the stress/anxiety and will learn the stress management techniques.

CO2: students will learn about the etiology of the Depression and to implement the therapy regarding the Depression

CO3: students will assess the mental health and well-being of general population during COVID-19

CO4: students will understand the theoretical and practical knowledge of about RCBT (Loneliness)

CO5: students will learn the diagnostic features and factors behind anorexia nervosa and also the implications of operant method (Behaviour Therapy).

M4/ PSY 02- EP08B: Industrial Practical II

Course Outcomes: On the completion of this course students will be able to learn the following:

CO1: Students will be able to assess training need

CO2: Students will learn to administer and interpret MBTI/FIRO-B/ 16PF

CO3: Students will understand leadership & entrepreneurship through case study method

CO4: Students will have better understanding of team work exercises

CO5: Students will learn about corporate social responsibility

CO6: Students will to use role play /simulation in training

M4/PSY 02- EP08C: Educational Practical II

CO1: Students will be able to assess the problematic children in classroom and will be able to apply the therapy regarding the problem.

CO2: Students will be able to learn to construct the objective type tests in a school subject.

CO3: Students will be able to give the career counseling according to the assessment of aptitudes and interest in a school.

CO4: Students will get a better knowledge that how by the feedback, rewards, reinforcement and punishment have a proper pace in learning.

CO5: Students will be able to give a personal counseling to adolescent or child for some personal behavioral problem.

CO6: Students will be able to group counsel in school by giving career talks or by implementing the various activities of life skills.

M4 /PSY 01 –Skill 02: Counselling Interview

Course Outcomes: On the completion of this course students will be able to do the following:

CO1: Students will be able to perform attending behaviour in counselling interview

CO2: Students will be able to listen actively and frame right type of questions in counselling interview. They will also learn paraphrasing and summarizing in interview session.

CO3: Students will develop skills of noting and reflecting feeling and conduction of counselling interview

CO4: Students will be able to confront, and eliciting & reflecting meaning

CO5: Students will learn to apply influencing skills and strategies used in counselling interview

Programme Specific Outcomes and Course Outcomes
Department of Mathematics and Statistics

Programme Specific Outcomes	<p>PSOs of B.Sc. Statistics</p> <p>PSO1. Understand the basic concept of descriptive statistics, probability theory along with computational techniques and official statistics.</p> <p>PSO2. Focus on Discrete and continuous probability distribution and density function, also describe.</p> <p>PSO3. Classifications of infermics, concept of design of experiments, quality control and concepts of theory of sample survey.</p> <p>PSOs of M.Sc. Statistics</p> <p>PSO1. Preliminaries of integration and probability distribution.</p> <p>PSO2. Analysis study of different sampling methods and classification of design of experiments.</p> <p>PSO3. Study of multivariate analysis, optimization techniques and different models of stochastic process.</p> <p>PSO4. Advanced study of design, inference and sample survey.</p>
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<p>Course Outcomes</p>	<p>COs of the course “Descriptive Statistics” (B.Sc. I Year)</p> <p>After completion of classes students will be able to learn:-</p> <p>CO1 Describe the concept o statistics, population sample, types of data, method to collect them, their classification, tabulation and presentation with the help of different frequency curves and diagrams.</p> <p>CO2 Learn various measure of location, quartiles deciles and their properties, merits and demerits.</p> <p>CO3 Learn various measure of dispersion, Lorenz curve and requisites to obtain an ideal measure of dispersion.</p> <p>CO4 Understand different types of moments and different measure of Skewness and Kurtosis.</p> <p>CO5 Learn theory of attributes upto three variable, also consistency, association and independence of attributes.</p> <p>COs of the course “ Probability Theory” (B.Sc. I Year)</p> <p>After completion of classes students will be able to learn:-</p> <p>CO1 All the basic term for probability its definition and addition law of probability also solve simple problem of probability.</p> <p>CO2 Conditional and multiplication law of probability and simple applications.</p> <p>CO3 Types o random variable their probability mass function and density functions.</p> <p>CO4 Mathematical expectation its definition, additive and multiplicative law and elementary idea of conditional expectation etc.</p> <p>CO5 Moments and cumulates generating function and their properties.</p> <p>COs of the course “Computational Techniques & Official Statistics” (B.Sc. I Year)</p> <p>After completion of classes students will be able to learn:-</p> <p>CO1 Statistical organization of India, its functions and publication.</p> <p>CO2 Linear programming problem its formulation and presentation by different method.</p>
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CO3 Interpolation formulae, different operators with their properties and estimation of missing value.

CO4 Divided difference formulae and inverse interpolation.

CO5 Numerical integration and related problems.

COs of the course “Statistics Practical” (B.Sc. I Year)

Course outcome:- After completion of classes students will learn:

- * Presentation of raw data.
- * Graphical presentation of frequency polygon, curve and ogives.
- * Diagrammatic representation of Bars and Diagram.
- * Measure of central tendency.
- * Measure of dispersion.
- * Moments and measures of skewness and Kurtosis.
- * Evaluation of probabilities by different method.
- * Association of attributes.
- * Problems based on interpretation.

COs of the course “ Probability Distributions” (B.Sc. II Year)

After completion of classes students will be able to learn:-

CO1 Weal law of large numbers and central limit theorem for i.i.d. random variables.

CO2 Different univariate discrete distribution their properties and application.

CO3 Some other discrete distributions their properties and application like geometric, multinomial and distribution etc.

CO4 Different univariate continuous distribution their properties and application.

CO5 Some more continuous distributions and their properties and application.

COs of the course “Sampling Distributions And Elements Of Estimation”(B.Sc. II Year)

After completion of classes students will be able to learn:-

- CO1 Univariate sampling distribution its concept, properties and concepts of standard error of an estimate. Chi-square distribution its derivation, properties and problems.
- CO2 t, F and Z sampling distribution with their properties.
- CO3 Concept of point estimation and its properties.
- CO4 Bias, Mean square error and variance, MVUE and its properties.
- CO5 Concept of interval estimation and its properties.

COs of the course “Applied Statistics” (B.Sc. II Year)

After completion of classes students will be able to learn:-

- CO1 Method of least square, fitting of polynomial and plausible solution of linear equations.
- CO2 Concept of correlation, regression.
- CO3 Partial and multiple correlation coefficient and multiple regression.
- CO4 Different components of time series and different method to obtain it.
- CO5 Construction of Index numbers types of it and requisites of an ideal index number.

COs of the course “Statistics Practical” (B.Sc. II Year)

After completion of classes students will be able to learn:-

- * Fitting of Binomial, Poisson and Normal distribution.
- * Calculation of area of normal curve.
- * Calculation of correlation coefficient by different method.
- * Fitting of curves.
- * Construction of regression line.
- * Calculation of multiple and partial correlation coefficient and regression equations (for three variables only)
- * Determination of trend line by different method.
- * Determination of seasonal variation by different method.
- * Construction and index method.

COs of the course “Statistical Inference” (B.Sc. III Year)

After completion of classes students will be able to learn:-

- CO1 Procedure of testing hypothesis its terminology and determination of BCR for testing simple v/s simple hypothesis in uniform and normal population.
- CO2 Theory of test of significance for large samples and t-distribution.
- CO3 Test of significance for Chi-square and F-sampling distribution.
- CO4 Different method o estimation with their properties.
- CO5 Elements of Non-parametric inference and sequential analysis.
Construction of O.C. and ASIN function and properties of SPRT.

COs of the course “Design Of Experiments And Statistical Quality Control” (B.Sc. III Year)

After completion of classes students will be able to learn:-

- CO1 ANOVA for one-way and two-way classification. Basic concepts, models and its types in design of experiments.
- CO2 ANOVA for CRD & RBD and its efficiency.
- CO3 Missing plot technique for single value in RBD and ANOVA for LSD.
- CO4 Statistical quality control with different charts for variables and attributes.
- CO5 Principles of acceptance of sampling plan and their functions.

COs of the course “Theory Of Sample Surveys And Vital Statistics” (B.Sc. III Year)

After completion of classes students will be able to learn:-

- CO1 Concepts of sample surveys principle steps in a sample survey, its limitations. Principle of sampling design and procedure of selecting random samples.
- CO2 Simple and stratified random sampling.
- CO3 Cluster and two stage sampling their definition and estimation of mean and variance.
- CO4 Ratio and regression method of estimation and systematic sampling.

CO5 Uses of vital statistics and method to obtaining it and measurements of different components of vital statistics and description and construction of life table.

COs of the course “Statistics Practical” (B.Sc. III Year)

After completion of classes students will be able to learn:-

- * Testing of hypothesis for large samples.
- * t-test for the significance of single and difference of mean.
- * F-test for equality of variances.
- * χ^2 - test for specified variance, goodness of fit, independence of attributes and Homogeneity of correlation coefficient.
- * Non-parametric test.
- * ANOVA for one-way classification and two-way classification.
- * ANOVA of CRD, RBD and LSD.
- * Estimation of missing value.
- * statistical quality control.
- * Sample surveys problem by SRS and stratified sampling.
- * Vital statistics.

COs of the course “Measure and Integration” (Sem-I)

Course outcome:- at the end of class students will gain knowledge of

- CO1 Set theory with its limits, classes and functions.
- CO2 Measure and its properties.
- CO3 Probability measure- measurable space.
- CO4 Measurable functions and its properties.
- CO5 Properties of Integral.

COs of the course “Matrices and Linear Algebra” (Sem-I)

Course outcome:- at the end of class students will gain knowledge of

- CO1 Matrices properties, partitioning and universe matrices with linear dependence and independence.
- CO2 Basic and dimension, orthonormal basis.
- CO3 Characteristic equations with Eigen values and vectors.
- CO4 Bilinear and quadratic forms.
- CO5 Singular value and Jordon decomposition.

COs of the course “Probability Theory” (Sem-I)

Course outcome:- at the end of class students will gain knowledge of

- CO1 Axiomatic approach to probability and its application.
- CO2 Independence of experiments and events, Baye’s theorem and its application.
- CO3 Random variables, distribution function and multivariate and frequency function.
- CO4 Mathematical expectation and its properties.
- CO5 WLLN and central limit theorem.

COs of the course “Theoretical Distributions” (Sem-I)

Course outcome:- at the end of class students will gain knowledge of

CO1 Generating functions and their applications.

CO2 Inversion theorem, derivation of distribution function and application of central limit theorem.

CO3 Discrete distributions with their properties and application.

CO4 Continuous distributions with their properties and application.

CO5 Compound distributions, Pearsonian system of frequency curve.

COs of the course “Practicals Based on C-Programming in Computational Statistics” (Sem-I)

Course outcome:- at the end of class students will gain knowledge of

Introduction to computer and its uses. Application of C-programming in various areas of computational statistics. Techniques related to generating random number. Developing algorithm, flow chart and program for some useful statistical data analysis problems.

COs of the course “Practicals Based on CT 03 & CT 04” (Sem-I)

Course outcome:- at the end of class students will gain knowledge of

* Calculation of moments, Skewness and Kurtosis.

* Fitting of Binomial, Poisson and Normal distribution.

* Calculation of area under normal curve.

COs of the course “Sampling Distributions” (Sem-II)

Course outcome:- at the end of class students will gain knowledge of

- CO1 Univariate sampling distributions, Chi-square distribution (central and non-central) and their applications.
- CO2 t- and F distribution (central and non central) and their applications.
- CO3 Orthogonal polynomials, order statistics and their distribution.
- CO4 Sampling distribution of median and range, regression and correlation, null and non-null distribution of sample correlation coefficient.
- CO5 Bivariate distribution (discrete and Continuous)

COs of the course “Statistical Inference-I” (Sem-II)

Course outcome:- at the end of class students will gain knowledge of

- CO1 Elements of statistical decision functions, point estimation and their properties.
- CO2 Minimum mean square, MVU and UMVU estimators, CR bounds.
- CO3 Various method to obtain maximum likelihood estimators (MLE's) interval estimation.
- CO4 Basic concepts of testing hypothesis, two kind of errors, NP Lemma for determination of best critical region.
- CO5 Non-parametric test and sequential analysis its construction and its application.

COs of the course “Design of Experiments-I” (Sem-II)

Course outcome:- at the end of class students will gain knowledge of

- CO1 Analysis of models, orthogonal polynomial, ANCOVA, transformation.
- CO2 Principles of experimentation, CRD, RBD.
- CO3 LSD & BIBD and their analysis.
- CO4 Factorial experiments and confounding.
- CO5 Missing plot technique with reference to RBD and split plot design.

COs of the course “Theory of Sample Surveys-I” (Sem-II)

Course outcome:- at the end of class students will gain knowledge of

- CO1 Planning and execution of analysis of sample survey, simple random sampling.
- CO2 Stratified and cluster sampling.
- CO3 Two stage and systematic sampling.
- CO4 Ratio and regression method of estimation, Double sampling.
- CO5 Elements of unistage sampling with varying probability.

COs of the course “Practicals Based on CT 05 & CT 06” (Sem-II)

Course outcome:- at the end of class students will gain knowledge of

- * Calculate correlation and regression for Bivariate frequency distribution.
- * Large sample test, F-test, Chi-Square test and t-test.
- * Barlet’s test for homogeneity of variance.
- * Power curves for testing simple hypothesis v/s composite hypothesis.
- * Test of significance for simple correlation coefficient.
- * Non-parametric test.
- * SPRT calculations of constants.
- * Fitting of orthogonal polynomials.

COs of the course “Practicals Based on CT 07 & CT 08” (Sem-II)

Course outcome:- at the end of class students will gain knowledge of

- * Analysis of CRD, RBD, LSD and BIBD.
- * Analysis of RBD, LSD with missing observations.
- * Analysis of a factorial experiments confounded factorial experiments.
- * Drawing of random samples from finite populations.
- * Drawing samples from Binomial and normal populations.
- * Estimation of population mean and variance in SRS, stratified sampling.
- * Systematic sampling, cluster sampling, two stage sampling, double sampling and by ratio and regression method of estimation.
- * PPSWR selection of sample and estimation.

COs of the course “Multivariate Analysis” (Sem-III)

Course outcome:- at the end of class students will gain knowledge of

- CO1 Multivariate normal distribution and its properties and distribution of quadratic forms.
- CO2 MLE's of the mean vector and covariance matrix.
- CO3 Hotelling's T^2 its properties and uses, Mahalanobis D^2 .
- CO4 Wishart distribution and its properties classification of observations.
- CO5 Null and non-null distributions of partial and multiple correlation coefficients and multivariate central limit theorem.

COs of the course “Statistical Inference-II” (Sem-III)

Course outcome:- at the end of class students will gain knowledge of

- CO1 Likelihood ratio test and its applications.
- CO2 Properties of MLE's and generalization of CR inequality for multiparametric case.
- CO3 Complete family of probability distributions.
- CO4 UNP test with and more than one parameter.
- CO5 Similar regions and relationship between notions of completeness.

COs of the course “Practicals Based on CT 09” (Sem-III)

Course outcome:- at the end of class students will gain knowledge of

- * Multivariate analysis.
- * Linear combination of correlated normal variates and evaluation of probabilities.
- * Estimation and testing of mean vector, covariance, partial and multiple correlation coefficient.
- * Analysis of discriminate functions. Their software development in C-language.

COs of the course “Operations Research” (Sem-III)

Course outcome:- at the end of class students will gain knowledge of

- CO1 OR definition, scope and nature, transportation and assignment problems.

- CO2 Deterministic, Inventory models with at most one linear restriction and without restriction probabilistic inventory models.
- CO3 Queuing theory and its differ models of process.
- CO4 Simulation, definition, its types uses and limitations.
- CO5 Steady state, solutions of Markovian queuing models.

COs of the course “Stochastic Processes” (Sem-III)

Course outcome:- at the end of class students will gain knowledge of

- CO1 Stochastic process with stationary transition probabilities and its properties.
- CO2 Classification of states stationary distribution of a Markov chain.
- CO3 Markov pure jump process, passion process, birth and death process.
- CO4 Second order processes mean and covariance function.
- CO5 Stochastic differential equations, estimation theory and special distribution.

COs of the course “Practicals Based on DSE 01 & DSE 02” (Sem-III)

Course outcome:- at the end of class students will gain knowledge of

- * OP and stochastic.
- * process and their software developments in C-language.

COs of the course “Design of Experiments-II” (Sem-IV)

Course outcome:- at the end of class students will gain knowledge of

- CO1 Linear estimation of Gauss Markoff theorem, testing of hypothesis and sub hypothesis.
- CO2 Analysis of two way elimination of heterogeneity, orthogonality connectedness and Balancedness, incomplete block designs.

- CO3 Concept of association scheme with two associate classes.
- CO4 Lattice and Linked block designs, MOLS for prime and power of prime, Construction and analysis of Youden square design.
- CO5 Methods of construction of BIBD and SBIBD.

COs of the course “Non-Parametric Inference” (Sem-IV)

Course outcome:- at the end of class students will gain knowledge of

- CO1 Order statistics and their sampling distribution and hypothesis testing for population quantities.
- CO2 Tolerance limits for distribution and coverage's, Chi-square goodness of fit test and signed test.
- CO3 Test for two sample problems comparison and their distributions, Run test, median test and U-test.
- CO4 Linear ranks statistics, Probability distribution and irefulness.
- CO5 Correlation between rank order statistics and variate values. Test based on the total number of runs and the length of the longest run.

COs of the course “Practicals Based on CT 11” (Sem-IV)

Course outcome:- at the end of class students will gain knowledge of

- * Testing of hypothesis for one-way and two-way classification.
- * Analysis of IBD, GDD.
- * Analysis of linked block design.
- * Analysis of simple lattice, youden square etc.

COs of the course “Theory of Sample Surveys” (Sem-IV)

Course outcome:- at the end of class students will gain knowledge of

- CO1 Partition of sample space and definition of T-classes of linear estimators.
- CO2 Quenouille's techniques of bias reduction and its applications, methods of estimation in PPSWR, ratio method of estimation.

CO3 Ratio and regression method of estimation for PPSWR, Variance by HT-estimator and YG-estimators.

CO4 Sen- Midzuno scheme of sampling of inclusion probabilities.

CO5 The theory of multistage sampling with VPWR and VPWOR.

COs of the course “Demography” (Sem-IV)

Course outcome:- at the end of class students will gain knowledge of

CO1 Census and vital data.

CO2 Stationary populations, construction of life table.

CO3 Stable population theory.

CO4 Demographic trends in India

CO5 Bivariate growth models, migration models, fertility and mortality analysis models.

COs of the course “Practicals Based on CT-12” (Sem-IV)

Course outcome:- at the end of class students will gain knowledge of

* Horvitz and Thompson’s procedure of estimating mean of the population.

* Yates and Grundy method, Midzuno’s sampling scheme, Rao-Hartley Cochran schemes.

* Two stage sampling method.

* Ratio and regression method of estimation and software development of above practical in C- language.

Programme and Course Outputs

Dept of Pub. Adm.

Name of Programme -BA- Public Administration, Annual , 3 years.

Programme outputs / aim-

1. After the completion of the programme the students will be able to understand theoretical and in-practice part of existing Public Administration and government mechanism.
2. Will be able to perform in a better way in the competitive examinations especially in civil service exams.

Course or paper –wise outcomes

First year

Paper- I – Elements of Public Administration

1. Will be able to describe basics of Public Administration.
2. Will be able to explain organizational theories and principles.

Paper- II – Public Administration in India

1. Will be able to discuss the historical and present scenario of Indian administration.
2. Will be able to describe organizational structure and functions of various administrative institutions working at union level.

Second Year

Paper- I- Administrative Institutions

1. Will be able to explain the concept of administrative institutions, welfare state, relationship between legislature, executive and judiciary; and pressure groups etc.
2. Will be able to discuss the working and role of various national level administrative institutions.

Paper- II- State Administration in India

1. Will be able to describe the evolution and constitutional aspects of state administration in India.
2. Will be able to assess the roles and responsibilities of state political and administrative executive bodies.

Third Year

Paper- I- Comparative Administrative Systems

1. Will be able to explain the evolution, concept and importance of comparative public administration.
2. Will be able to describe constitutional and administrative working of UK, USA and France.

Paper- II- Local Administration

1. Will be able to discuss the concept and utility of democratic decentralization in India.
2. Will be able to describe structural and functional aspects of Urban and Rural local bodies.