Course Outcome (CO) of BBA (Hospital Management)

Name of the Subject - Principles of Management
Subject Code – BHM 101
Credits - 4

CO 1	Understanding the concept of concept, evolution of management and different school of thoughts.
CO 2	Understanding the concept and process of planning, organizing, staffing directing, controlling in administration.
CO3	Developing the concept of social responsibility of the management and ethics (Management ethics).

Name of the Subject - English Language & Communication
Subject Code – BHM 102
Credits – 4

CO 1	Developing the Concept of communication and its impact in the organization including different models and types of communication.
CO 2	Concept of grammar associated with the English language.
CO3	How to write essay, letter, report, and proposal and how to make a CV.

Name of the Subject - Medical Terminology –I
Subject Code – BHM 103
Credits - 4

CO 1	Introduction of medical terminology Word formation & syntax.
CO 2	Commonly used prefixes and suffixes in medical terminology and common Latin term used in the prescription, standard abbreviations commonly used medical terms.

Name of the Subject – Accounts
Subject Code – BHM 104
Credits - 4

CO 1	Concept of Financial accounting.
CO 2	Concept and principles of accounting postulates, journal, ledger posting, trial balance profit and Loss AC, balance sheet.
CO3	Concept of cost, Cost Determination Process Costing for materials, labor and overheads.

Name of the Subject - Hospital & Health System -I (History & Evolution)
Subject Code – BHM 105
Credits - 4

CO 1	Developing knowledge on Concept of health, Holistic approach to health, Basic information relating to Health.

CO 2	Understanding the historical development of hospitals, grown of hospital in India, Definition and meaning of hospital, The modern hospital, Hospital viewed as a system, Role of Hospitals, Hospital Viewed as a Social system, Peculiarities of hospital systems, Changing concept of hospital during 1900-2003. Present status of hospitals in India, Present State of Govt. hospital. Understanding the why hospital is A complex entity.
CO3	Developing the knowledge on National Health policy, Goals for Health for all by 2000 AD and beyond, Health committee and their recommendation, Health plan outlay during 1951-2003, benefits to the Health Care systems, Overview of Health Care delivery system.

Name of the Subject - Hospital Operation Management I
Subject Code – BHM 201
Credits - 4

CO 1	Understanding the base of healthcare management according to epidemiology.
CO 2	Developing knowledge of management development towards development of professional management of Indian Hospitals. Getting knowledge regarding, the Modern Techniques of hospital management and different models of operation of hospitals.
CO3	Understanding the Health services research & formalized managerial methods.

Name of the Subject - Bio-Statistics- I
Subject Code – BHM 202
Credits - 4

CO 1	Understanding the concept of Statistics & Samples.
CO 2	Developing concept of Handling & Presenting Numerical Information.
CO3	Understanding the concept of Pie-Diagram, Bar Diagram, histogram, frequency polygon, scatter diagram, measures of central tendency, measures of dispersion or variability, The Normal Distribution and Student's 't' distribution.
CO 4	understanding the concept of Data Collection for Vital Statistics including birth, death and fetal death

Name of the Subject - Medical Terminology II
Subject Code – BHM 203
Credits - 4

CO 1	Learning different medical terminology used in different disciplines like cardiology, neurology, nephrology, gastro intestine, ENT, dentistry, orthopoedcs, gynecology, oncology, dermatology and endocrinology

Name of the Subject - Marketing Management
Subject Code – BHM 204
Credits - 4

CO 1	Understanding the concept, scope and importance of marketing, to learn about the concept of marketing concepts and consumers.

CO 2	It is focused on the Consumer and marketing i.e. Consumer behavior and motivation-stages and participation in buying process. It helps to gather knowledge on product and pricing.
CO3	Understand the concept of Channels of distribution, concept of promotion.
CO 4	Understanding the concept of marketing research, service marketing and marketing organization.

Name of the Subject - Hospital & health system -II (History & Evolution)
Subject Code – BHM 205
Credits - 4

CO 1	Learning about the Health care system of different counties like UK, USA, Canada, Srilanka and China. Understanding the concept of international Health under United Nations.
CO 2	Learning about the future of health care system.
CO3	Learning about the concept of man power of planning, evolution of health systems.
CO 4	Understanding the role of hospitals in primary health care, administration of rural hospitals and cost benefit analysis.
CO 5	Understanding the health program of India and managerial process in National Health Developments.

Name of the Subject - Hospital Operations Management- II
Subject Code – BHM 301
Credits - 4

CO 1	Understanding the hospital planning covering the Guiding principles in planning hospital facilities & services, Planning the hospital building i.e. Stages in planning, Finance, Location, Need assessment survey of community, factors determining site, legal requirements, design consideration, Project management & implementation, Gantt Chart Planning the operational units, engineering, lighting etc.
CO 2	Learning the concept of Organization of the hospital which covers Management structure i.e. types of hospitals, Governing body, Hospital committee and hospital functionaries and Duties and responsibilities of various positions.
CO3	Understanding the concept of Hospital Operational management including Management of Quality Assured services of professional service units of hospital. Function, location, flow chart of operation, design based on flow chart, organization, physical facilities and space requirements, statutory requirements, special features, problem situation, Staff requirement, Auxiliary requirements, Work load estimation, Documentation, Equipment & supplies. Emergency services.
CO 4	Learning the concept of outpatient & Inpatient services of Radiotherapy Nuclear medicine Surgical units and OT Medical units Gynae & Obstratic units & LR Paediatric, neonatal units Critical care units Physical medicine & Rehabilitation Skin Eye ENT Neurology Dental Gastroenterology Endoscopy Pulmonology Cardiology, Cath lab Nephrology & Dialysis Urology Orthopedics Transplant units Burn Unit.
CO 5	Learning the concept of Disaster and mass casualty management covering Classification of disasters, Principle of disaster management plan. Plan for disaster management, Specific problems of disaster management.

Name of the Subject - Bio-statistics-II
Subject Code – BHM 302

Credits – 4

CO 1	Understanding about Health Information. It covers the concept of Data & Information, Health Information System- components, uses, source Basic Descriptive methods, Distribution table, Frequency distribution, Presentation of statistical data, Measure of central tendency and location, Measures of dispersion
CO 2	Learning about the concept of probability. It covers Introduction, Measurement, Frequency, Laws for independent events, Conditional events, Bayes' Theorem and its application in community screening program.
CO3	Understanding the Decision analysis, Normal distribution, 't' distribution Sampling variation and Bias, method of sampling, sampling & non sampling errors. Test of significance, Standard errors, Chi- Square test, Correlation & Regression

Name of the Subject - Health Economics
Subject Code – BHM 303
Credits – 4

CO 1	Learning the concept of Fundamentals of Economics. It covers the area of Scope & coverage of Health Economics, demand for Health Sciences; Health as an investment, population, Health & Economic Development. Some Basic Graphical & Mathematical Techniques. Functions –Linear & non-linear. Straight Lines & Slopes, Marginal values & Incremental Ratios. Tools of Economics-Concepts of need, demand, supply & price in Health Services.
CO 2	Understanding the concept of methods and techniques of Economic Evaluation of Health Program. It also covers the Cost benefit & cost effective methods-output & input analysis. To learn regarding the Market, monopoly, perfect & imperfect competition. Health Financing from various sources such as Public, Private, TPA.

CO3	Learning the concept of Economics of Health Programs for Nutrition, diet & population control, economics of abuse of tobacco & alcohol, environmental influences on health & its economic impact, economics of breast feeding.
CO 4	Understanding the concept of Economics of Communicable (STDs & Malaria) & non-communicable (IHD & Cancers) diseases.
CO 5	Learning the concept of Health Care Budget: purpose, types & practices in Indian context.

Name of the Subject - Medical Record Science-I
Subject Code – BHM 304
Credits – 4

CO 1	Understanding the definition and Types and importance of medical record including the Flow chart of function.
CO 2	Understanding the Statutory requirements of maintenance, coding, indexing and filing, Computerization of record.
CO3	Understanding the concept of Report and returns by the record department, Statistical information and ICD.

Name of the Subject - Inventory Control & Purchase Management
Subject Code – BHM 305
Credits – 4

CO 1	Understanding the meaning and significance of Inventory Control & Purchase Management.
CO 2	Learning the concept of Purchasing & procurement. It covers the principles of sourcing, purchase methods & procedures, legal

	aspects of purchasing. Apart from that it also covers reference to Contract Act, Sale of Goods Act, drug Control Act in respect to purchase activities. Import substitution
CO3	Understanding the concept of Quality Control & quality management and it also covers Principles & methods.
CO 4	Learning the Principles of storage & stores accounting-types of storage care & preservation of materials & equipments in inventory control.
CO 5	Understanding the concept of Distribution management (logistics Management)-distribution of materials to various departments & auxiliary services.
CO 6	Understanding the concept of Exceptional management needs in Healthcare Units: Mgmt. of Blood Bank, Donated Organs, Morgues, dispensaries.
CO 7	Understanding the Concept of Contract Administration. It covers the Administration of services obtained through Contract Principles. Model Contract for Laundry, dietary, dispensary, security & Ambulance Services.

Name of the Subject - Epidemiology & Analysis of Health Information Data
Subject Code – BHM 401
Credits - 4

CO 1	Learning the concept of Disease, level of prevention, Rehabilitation
CO 2	Learning the Concept Types of uses of Epidemiology
CO 3	Understanding the concept of different epidemiological studies. It also covers concepts of Epidemic, Endemic, Pandemic, Sporadic Investigation of an epidemic
CO 4	Understanding the concept of Mortality, Morbidity, IMR, MMR.

	It covers the different preventive measures for disease Outbreak.
CO 5	Learning the concept of Vaccination, Immunization, Surveillance and monitoring. It also covers the concept of Transmission of Disease including Vehicles of transmission
CO 6	Understanding the concept of Observational, Analytical & Experimental Studies
CO7	Understanding the concept of Communicable and non-communicable diseases)
CO 8	Learn the epidemics of different Communicable Diseases such as Influenza Food poisoning, Filaria, Plague and Tetanus
CO 9	Learn regarding different epidemics of non communicable diseases such as Alcoholism, Smoking, Rheumatic Heart Diseases and stroke

Name of the Subject - Support & Utility Services-I
Subject Code – BHM 402
Credits - 4

CO 1	Learning the concept and meaning of support and utility service.
CO 2	Understanding the details of Nursing Services, Pathology lab / Diagnostic Units (Radiology, Scan Centre), Blood Bank, Diet Services, Linen Laundry Services, CSSD (Central Sterile Supply Department.), Housekeeping, Control of Hospital Infection and Transport Services (Ambulance), Security Services, Maintenance Services, Office Administration, Hospital Information System and Computer Application
CO 3	Understanding the concept of disposal of medical waste.

Name of the Subject - Environment & Ecology

Subject Code – BHM 403
Credits – 3

CO 1	Understanding the concept and Meaning of Environment & relevance of the subject Environment & Ecology for Hospital Administrators. It also covers the brief outline of the Environment (Protection) Act 1986 & its importance for Hospital Administration; Legislation vs. Social obligation of Hospitals; Role of NGO's like green peace in Environmental protection.
CO 2	Learning the concept of outline on Elements of Ecology; It also covers about the brief discussion on Ecological balance and consequences of change, principles of environmental impact assessment. Environmental Impact Assessment report (EIA).
CO 3	Understanding the concept of Factors responsible for causing Air Pollution in Hospitals and the sources & effects of Air pollutants in the Hospital context. It also covers Primary & Secondary pollutants, Green House Effect, depletion of Ozone Layer and a Brief discussion on the air including prevention & control of pollution act,1989.
CO 4	Learning the concept of Hydrosphere, natural water, pollutants: their origin and effects, river/lake/ground water pollution. It also covers the financial implication of water pollution control and steps required to be taken e.g. Sewerage treatment plant, water treatment plant. Standards and control in relation to the effect of legislation by Central and State Boards for prevention and control of Water Pollution.
CO 5	Learning the concept of lithosphere, pollutants (municipal, industrial, commercial, agricultural, hospital, hazardous solid waste); their original effects, collection and disposal of solid waste, recovery & conversion methods in relation to a hospital enterprise with discussion about the financial implication.
CO 6	Learning the concept of noise pollution. It also covers the sources, effects, standards & control

Name of the Subject - Medical Record Science-II
Subject Code – BHM 404
Credits - 4

CO 1	Understanding the concept of Utility & functions of Medical Records in Health care delivery System.
CO 2	Understanding the concept of Organizations & management of Medical Records Department.
CO 3	Understanding the concept of Role of Hospital managers & MRD personnel in Medical record keeping.
CO 4	Learning the concept of Reports & returns in Medical Record System.
CO 5	Learning the concept of legal aspects of Medical Records including Factories Act, Workmen Compensation Act & Consumer Protection Act.
CO 6	Understanding the concept of Procedures of Medical Auditing & its importance.
CO 7	Learning the concept of Government Regulations & requirements.

Name of the Subject - Management Information System
Subject Code – BHM 405
Credits - 3

CO 1	Understand the concept of information, data & its role in decision-making, system and its model. It also covers the Information System (IS) which deals with operating elements, process , function, layout of information flow in an organization, classification of IS, executive Support System (ESS).

CO 2	Learning the concept of Managerial process, managerial decision making, approaches to management decision making, implication for information systems.
CO 3	Learning the concept of Hospital Information System. It also covers the area of Genesis, scope, basic management cycles in hospitals, categories of information system in hospitals, sources of health information, uses of health and hospital data, managing information system, and need of information in hospital.

Name of the Subject - Quality in Health Care
Subject Code – BHM 501
Credits - 4

CO 1	Understanding the concept of Fundamentals of Quality Management. It also covers Introduction , Objectives; Historical Back Ground which covers concept of Quality Care and Quality Management – ISO 9000 Quality Management System - Effects and Benefits of ISO 9000 management System – Present Indian Scenario –Organization of quality Management System – Approaches to measurement of Quality.
CO 2	Understanding the concept of Techniques of Quality Management: Improving Hospital Performance – Patient Participation – Quality Health Care through Patience Satisfaction – Conceptual model of potential Contribution in quality in the health care system.
CO 3	Understanding the concept of Organization wide Quality Improvement in Health Care. It covers the Introduction of the organizing for Quality Assessment; Deming's Contribution and his 14 management guideline – Organization wide Quality Improvement fundamentals A Quality Improvement model of daily Patient Care – Quality Assurance and Quality improvement.
CO 4	Learning the concept of assessment of Quality Health Care. It covers attributes of Quality in Health Care; The measurement of

	Quality – Procedure for formulating explicit Criteria and standards – Determinates of Quality – Structure – Process – Outcome.
CO 5	Learning the concept of the implementation of Total Quality. It also covers the Planning organizing and Evaluating the Quality. It shows the Transforming organizations to a Total Quality Philosophy and Culture.
CO 6	Understanding the concept of Outcome Management and Total Quality. It covers the background of Quality outcome and outcome Management.

Name of the Subject - Support & Utility Services-II
Subject Code – BHM 502
Credits - 4

CO 1	Learning the Introduction, Role and Function, Planning Construction, Physical facilities, Equipment, Staffing, Policies and Procedures and Monitoring of mortuary department
CO 2	Learning the introduction, Definition, Purpose, Planning organizing and Staffing and Physical facilities of Medical Records. It also covers the Processing of Records and their flow, Coding and Indexing, storage and Retrieval process and Reports and Returns. It covers the concept of Medico legal aspect of medical Records.
CO 3	Understanding the Introduction, definition, Brief History, Role, function and types, Planning Consideration, Policies and Procedures, Management issues, Control and evaluation of Pharmacy Services. It also covers the concept of computerization in Pharmacy Services.
CO 4	Understanding the Introduction of Fire Hazards and Fire Manual Guideline, Elements of fire and its Fire hazard, Cause of Hospital Fire. It also covers Classification of fire, Fire protection, Fire points and Escape Route, Risk evaluation, meaning of fire manual, Guideline, Elements of Fire safety, Fire safety training, Do's and

	Don’ts for electrical fire prevention, Action to be taken in case of fire in a Hospital.
CO 5	Understanding the concept of Integrated Hospital and Patient Care Information System and its meaning, objectives, need, design Application of HIS, stages of computerization. It covers HIS Design objectives and consideration, conceptual Database Design, meaning of Patient Care information System –elements of Patient Care information System – Direct Care Process - Efficiency of care providers – Improved information access – in Patient Care.
CO 6	Understanding the Introduction, stages of disaster Management. It also covers the disaster Planning, disaster operating procedure, disaster manual. It covers the lesson from Japan, recent trends, the action Plan.

Name of the Subject - Law
Subject Code – BHM 503
Credits - 4

CO 1	Gathering the concept of General Law of Contract covering Essentials of a Contract, Offer and acceptance, Capacity of Parties - Free Consent, Consideration and legality of object, Void argument and Contingent Contract.
CO 2	Learning the concept of Legal Aspect and Consumers Protection Act covering Introduction, Medico–Legal Aspect on Clinical practice, Duties and Responsibilities of Doctors, Professional Secrets and Privileged Communication, Consent, Implied Consent and Expressed Consent.
CO 3	Learning the concept and definition of Consumer Protection Act, Consumer Protection Council. It covers the Consumer Disputes Redressal Agencies, Other Salient features, Application of C.P Act in Hospital. It also covers the recent judgment of Supreme Court – Implication for Health Professionals.

CO 4	Learning the concept of W.B Clinical Establishment Act 2000.
CO 5	Understanding the concept of Biomedical Waste Management and Handling Rule – 1998. It covers the meaning, Classification of Bio-medical waste, Treatment and disposal, Color Coding and type of Container for Disposal of Bio-medical wastes, Biomedical waste Management Rule, Annexure of Ministry of Environment and Forest Notification in regard to Bio-Medical Waste Management and Handling Rule 1998(Schedule I-VI).
CO 6	Understanding the concept of Shops and Establishment Act.

Name of the Subject - Financial Management.
Subject Code – BHM 504
Credits - 4

CO 1	Learning the concept of Financial Management and the Modern Approaches to FM. It also covers the objectives, scope, function and importance of Financial Management.
CO 2	Learning the concept of Financial Statement Analysis. It covers the meaning of Financial Statement, different types of F.S viz Income Statement, Balance Sheet, Statement of Retained earnings, Fund Flow Statement. It also covers the Cash Flow Statement including definition, significance and limitations.
CO 3	Understanding the concept of Fund Flow Statement and Practical Problems; Cash Flow Statement and Practical problems.
CO 4	Understanding the concept of Ratio Analysis covering the meaning of Ratio Analysis, different types of ratios, their meaning and importance of Practical problems on Ratio Analysis. It also covers the limitation of Ratio Analysis.
CO 5	Understanding the concept of Break–Even and CPV Analysis. It also covers the Meaning, importance, Uses, Significance of Practical Problems.

CO 6	Understanding the concept of accounting for Non- Profit Seeking Concern and Hospital Accountings and Hospital Costing.
CO 7	Understanding the concept of Working Capital Management covering the Definition, Components of W.C.M, Factors affecting working Capital, Classification of Working Capital, Practical Problem on Working Capital requirement.
CO 8	Understanding the concept of Capital Budgeting and its Definition, Techniques of Capital Budgeting –NPV, IRR, ARR, Payback-period, Profitability Index – Practical Problem on Capital Budgeting.
CO 9	Learning the concept of Sources of Short term and long term finance.

Name of the Subject – Human Resource Management
Subject Code – BHM 505
Credits – 4

CO 1	Learning the meaning of HRM. Learning the role in an organization, difference with personnel mgmt. HR planning, concept & methods, Recruitment, selection & placement, Sources of recruitment, methods of Selection, Promotion & transfer, Implementation of selection methods in hospitals. Transfer & Promotion in Hospitals.
CO 2	Understanding the concept, importance of training and development. It also covers the organization of training and development.
CO 3	Understanding the concept of programs & evaluation including the System of training & development in hospitals. It also covers the Performance appraisal including the meaning, objective, different theories in PA.

CO 4	Learning the concept of Wage & salary Administration, principles in determining enrolment techniques Work Environment-Fatigue, monotony & Boredom (Reference to Hospital concept)
CO 5	Understanding the concept of Morale and its importance. It also covers the factors influencing morale-Impact of Morale on employees in an organization.
CO 6	It helps to develop the concept on Safety and its importance It covers the legal provisions for safety in an organization including Hospitals. It also covers the concept of Trade Union including the impact on functioning of an organization, role of Trade Union in Hospital functioning.

Name of the Subject – Public Relation
Subject Code – BHM 601
Credits - 4

CO 1	Understanding the Definition of PR & Advertising. It covers the concept of PR & Propaganda
CO 2	Learning the History of PR. It also covers the area which is discussing on PR- as a management function. It also covers the Principles, planning, implementation of PR.
CO 3	It helps to gather knowledge on PRO and its required qualities and its Functions. It also covers the PR in Hospitals including Organization, Role and Implementation Mechanism
CO 4	It helps to develop the knowledge of Importance of PR in Hospital Environment Management covering the Media, Government, Patients & Their Relations, Employee Relations and Political Parties
CO 5	It helps to gain knowledge on PR in Crisis Management, Event Management in Hospitals It also covers the concept of PR

	Counseling, PR- Agencies and Ethics in PR, PR Laws and Emerging Trends in PR

Name of the Subject - Medical Ethics
Subject Code – BHM 602
Credits - 4

CO 1	Helps to develop concept of ethics and Ethical Principles & rules covering core concepts.
CO 2	Understand the concept of Law & ethics, Law in relation to medical profession including Indian medical degree; Act 1916, IMC act & State medical act; Declaration of Geneva; Disciplinary control-professional misconduct; Compulsory & voluntary duties of a medical practitioner towards the state & the patient.
CO 3	To learn regarding the concept of Doctor patient relationship, Professional secrets & privileged communication including births, deaths, abortion, MTP, C.S, communicable diseases. It covers the Helsinki declaration on medical research, ICMR guidelines of medical research including death, dying & incurable ill patient. It also covers the concept of Euthanasia and its ethical framework on decision making.

Name of the Subject - Organizational Behavior
Subject Code – BHM 602
Credits - 4

CO 1	Learning the meaning overview importance field challenges and opportunities of OB, How its contribution in different disciplines. It also covers the OB Models including the S-O-B-C model, contingency O-B model.

CO2	Understanding the concept of Individual Behavior covering Biographical characteristics Learning, Value, and Attitudes. It helps to develop the knowledge of Personality: Meaning of including its Determinants, Theories of Personality, Management and Development. It also covers the Process of Perception covering the Process and Principles, Factors influencing it, Perceptional Selectivity, Making Judgments, and social Perception.
CO3	Understanding the concept of Interpersonal Behavior including the nature of Interpersonal Behavior, Transactional Analysis, Johari Window, Benefits and uses of TA. It also covers the concept of Group Dynamics & Behavior including the Concepts, Types, Stages, Development and Structure of Group. It also covers the concept of Intergroup Relationship.
CO4	Learning the concept and approaches of Motivation. It also covers the Theories of Motivation including Maslow's Hierarchy of Need theory, Alderfer's ERG theory, Herzberg's two factor Motivation theory, Mclelland's Achievement Motivation Theory.
CO 5	It helps to develop knowledge of Leadership regarding its Meaning, Styles, Theories including Managerial Grid, Fiedler Model.

Name of the Subject - Elective-I (Occupational Health)
Subject Code – BHM 603 A
Credits - 4

CO 1	Learning the concept of Occupational environment and its impact by -man & physical, chemical & biological agents.
CO2	Developing the knowledge on Occupational hazards including physical, chemical, mechanical, and psychological and the different Occupational diseases. It also covers the Accidents & injury, Radiation hazards and its Control of hazards in industries.
CO3	Developing the concept of Indian Factories Act 1948, ESI Act 1948, and Workman's Compensation Act 1952.

Name of the Subject - Elective-III (Nutrition)
Subject Code – BHM 603 C
Credits - 4

CO 1	Developing the basic concept of human anatomy and physiology including cell.
CO2	Learning the concept of Human Nutrition-Functional anatomy, Nutritional Physiology & Biochemistry. Requirements of: adults, children, pregnant women. Food-the source of energy including carbohydrates, Monosaccharide's, Disaccarides, Polisaccarides It also covers the Enzymes, digestion.
CO3	It helps to gain knowledge on Nutritional requirements including carbohydrates, Fat, Minerals. It covers the concept of Malnutrition including its classification & control. It also covers the Obesity & its control, Nutritional factors in disease, Iron deficiency and National programs on diet & nutrition.

Program Outcome (PO) of BBA (Hospital Management)

PO 1 – Able to apply knowledge on different departments of hospitals including support and utility service of hospitals. Every detail of functions, locations, staffing pattern, designing, organization of every department is known by the students. For that reason they can easily utilize this knowledge in the industries. The students are

totally aware of the enormity and complexity of the hospitals. They know how hospitals are changing time to time. They are totally aware that how hospital industries are different than other industries.

PO 2 – The students are able to apply knowledge on healthcare system of India and other countries. They can utilize they knowledge on national and international healthcare program.

PO3 – Able to apply knowledge on existing and future healthcare systems in India and other countries. The students are able to apply knowledge on health and disease. Having clear idea regarding the distribution and magnitude of health and disease problems in human population Have clear idea regarding the etiological factor or the risk factor. The students are Knowledgeable enough to plan implement and evaluate the healthcare service.

PO 4 - The students can utilize their knowledge on disease and its impact on the human life. They will be totally aware of things which are mostly related to the public health like – vaccine, immunity. They are enough knowledgeable to measure the health condition in a community with the help of different epidemiological studies. They are aware and can utilize their knowledge on epidemiological impact by different communicable and non communicable diseases.

PO 5 – The students are having clear idea regarding the basics of human anatomy, physiology and medical terminology and common and scientific terms used in the medical field.

PO 6 – The students are able to apply knowledge on communication. They have clear idea regarding the way to improve the communication.

PO 7 - The students are able to apply knowledge on principals of management. By that they have clear idea regarding the concept and importance of administration and management. They know the process of planning organizing, staffing, directing, controlling process. They also can utilize their knowledge on managerial ethics.

PO 8 – The students are able to utilize the knowledge on accounts. They will have clear basic idea regarding the journal, ledger, profit and loss etc of accounts department. They also have clear idea regarding costing.

PO 9 – The students can utilize their knowledge on marketing management. It covers the concept of marketing, product, price, distribution promotion in the business world. The students can also be able to utilize their knowledge on marketing research.

PO 10 – The knowledge on statistics and probability has a tremendous positive impact on the industry and education sectors. With help of enough knowledge on statistics and probability the students will be able to analyse the current scenario and can predict the future outcome. They also have clear idea regarding health care statistics and they can do statistical analysis of healthcare outcome.

PO 11 – The students can utilize their knowledge on medical record system. They are totally aware of the importance and process of medical record system. They also can utilize their skill and knowledge in the way to improve the medical record systems as they have clear idea regarding future medical record system and legal claws associated with medical records. The students can also utilize their skills on ICD coding system.

PO 12 – The student can utilize their knowledge on economics. They have clear idea about the health economics. They can utilize their knowledge in the field of health on health economical impact by different diseases in the community like malaria, dengue, STD and may more. They are also knowledgeable enough to assess the impact of tobacco and alcohol in the community. With this knowledge they can service the health care industries to a great extent than any other person from different discipline.

PO 13 – They are able to utilize their knowledge on the inventory control and purchase management which is including every details of purchasing, maintaining the stocks, quality control and the way of distribution of the items. They are also aware of various rules and regulation associated with this process.

PO 14 – The student can utilize their knowledge on environment and ecology. They are totally aware of the impact of different pollution including air, sound, soil, water, land. They are also aware of the different rules and regulation associated with the environment and ecology.

PO 15 – They can utilize their knowledge on management information system. With the help of the subject knowledge, they can utilize their skills on Information

systems, Executive support system, management process, hospital information systems.

PO 16 – The students have in depth knowledge on the quality. They are totally aware of the different accreditation of process of healthcare like ISO , NABH, JCI etc and other service industries. They are knowledgeable enough to utilize their knowledge on the way of measuring the expectation and perception of the delivered service. They will know how to perform gap analysis. Apart from that they will have knowledge on Total quality management, different theories of quality, outcome management.

PO 17 – The knowledge on different law associated with the health care industries and other industries will have huge carrier prospect for them. Different laws like consumer protect act, WB clinical establishment act, biomedical waste management act, shops and establishment act –are all thought in this course.

PO 18 – The students will have enough knowledge and can utilize their skills on Human resource management. They will be aware of the concept of recruitment, training and development, selection, placement. Apart from that they will also have knowledge on the different issues of work environments. So they will be knowledgeable enough to solve and manage those issues. They will know the impact of trade unions.

PO 19 – The students will have clear idea about the public relation and the organizational behavior. They will have clear idea about the concept of personality, perception, group dynamics, motivation and leadership. These are supremely important to create a healthy environment in the community. They will have knowledge and they will be trained enough to create good public relations. They know how make relation with every stake holder of the hospitals like patients and their relatives, media, governments, political parties etc.

PO 20 – The students will have enough knowledge on the occupational health. They will be knowledgeable enough to utilize their skills on way to prevent different occupational hazard in deferent business sectors. They will have enough knowledge on the rules and regulations associated with the occupational health.

Program Specific Outcome (PO) of BBA (Hospital Management)

PSO 1 – Ability to utilize their knowledge on health, health care systems and health care industries of Indian and other countries.

PSO2 – Ability to utilize their knowledge on pure management and administration of any industry including healthcare sectors.

PSO 3 – Ability to utilize their skills and knowledge on statistics, economics and accounts.

Course Outcome (CO) of MHA (Masters of Hospital Administration)

Name of the Subject – Basic Concept of Health
Subject Code – MHA 101
Credits - 3

CO 1	Understanding the concept of health disease wellbeing, changing pattern of disease and health care sectors.
CO 2	Learning the concept of anatomy and physiology of human body.
CO 3	Learning the concept of medical sociology covering its concept, perspective of health illness healing, health seeking behavior of different community.

Name of the Subject – Health care service
Subject Code – MHA 102
Credits - 3

CO 1	Learning the concept of demography, vital statistics, and census.
CO 2	Understanding the concept of different national health policy including national population policy, national five years plan, National health policy and different national health program.
CO 3	Understanding the concept of health care system in India including the community participation in the health care industries.

Name of the Subject – Epidemiology and healthcare in its changing scenario

Subject Code – MHA 103
Credits - 3

CO 1	Learning the concept of Disease, level of prevention, Rehabilitation, epidemiological tried.
CO 2	Learning the Concept Types of uses of Epidemiology. Host defense including immunoglobulin.
CO 3	Understanding the concept of different epidemiological studies. It also covers concepts of Epidemic, Endemic, Pandemic, Sporadic Investigation of an epidemic
CO 4	Understanding the concept of Observational, Analytical & Experimental Studies, Surveillance and monitoring, screening and survey.
CO5	Understanding the concept of Communicable and non-communicable diseases)
CO 6	Learn the changing scenario of healthcare sectors, corporate hospitals, globalization, modern hospitals

Name of the Subject – Health Education and Health communication
Subject Code – MHA 104
Credits - 3

CO 1	Learning the aims, principals, evaluations, practice of health education including the way of healthcare reporting and its role of NIC.
CO 2	Learning the definition, purpose, and process of communication including one way and two way communications.
CO 3	Understanding the direction, models, factors, principals and barriers of communication. It includes the concept of media and mass communication and IEC activities in the health care sectors.

Name of the Subject – Information Technology
Subject Code – MHA 105
Credits - 3

CO 1	Learning the concept of IT, data, software including system software and application software.
CO 2	Learning the components, interference, boundaries and types of systems.
CO 3	Understanding the Data communication and network including LAN, WAN, PAN. It also covers the need components of communication and networking system in the business and society.
CO 4	Understanding the overview, definition, advantage and disadvantage of E business.
CO5	Understanding the concept, objectives, components and application of Decision support system. It covers how DSS is in relation to MIS.
CO 6	Learning the concept use of database Management systems. It also includes SQL.
CO 7	Learning the concept of outsourcing. It covered BPO, KPO, data warehousing, data mart, meta data, multidimensional modeling, OLAP and OLTP.

Name of the Subject – Principals of Management
Subject Code – MHA 106
Credits – 3

CO 1	Understanding the concept of concept, evolution and characteristics of management and different school of thoughts. Develop the knowledge of productivity, effectiveness of management.

CO 2	Understanding different theories of evaluation including classical and non classical theories. Apart from that modern theories are also developed.
CO 3	Understanding the concept and process of planning, organizing, staffing directing, controlling in administration.
CO4	Developing the concept of social responsibility of the management and ethics (Management ethics).
CO 5	Developing the concept of MBO, MBR, Management skills and different management techniques
CO 6	Learning the concept of organization, including formal and informal types of organization, organizational shuetures. It also covers the modern management concept and its implication in the healthcare sectors.

Name of the Subject – Organizational Behavior
Subject Code – MHA 107
Credits - 3

CO 1	Learning the meaning overview importance field challenges and opportunities of OB, How its contribution in different disciplines. It also covers the OB Models including the S-O-B-C model, contingency O-B model.
CO2	Understanding the concept of Individual Behavior covering Biographical characteristics Learning, Value, and Attitudes. It helps to develop the knowledge of Personality: Meaning of including its Determinants, Theories of Personality, Management and Development. It also covers the Process of Perception covering the Process and Principles, Factors influencing it, Perceptional Selectivity, Making Judgments, and social Perception.
CO 3	Developing the concept of personality including theories and measurement of personality.

CO 4	Developing the concept of group dynamics including types, stages of group dynamics.
CO 5	Understanding the concept of conflict management, including the causes and way to prevent the conflict in the management.
CO6	Understanding the concept of Interpersonal Behavior including the nature of Interpersonal Behavior, Transactional Analysis, Johari Window, Benefits and uses of TA. It also covers the concept of Group Dynamics & Behavior including the Concepts, Types, Stages, Development and Structure of Group. It also covers the concept of Intergroup Relationship.
CO7	Learning the concept and approaches of Motivation. It also covers the Theories of Motivation including Maslow's Hierarchy of Need theory, Alderfer's ERG theory, Herzberg's two factor Motivation theory, Mclelland's Achievement Motivation Theory.
CO 8	It helps to develop knowledge of Leadership regarding its Meaning, Styles, Theories including Managerial Grid, Fiedler Model.

Name of the Subject – Quantitative Management
Subject Code – MHA 108
Credits - 3

CO 1	Learning the roles scope of statistics and its implication in the healthcare industry.
CO 2	Understanding the concept of Collection and presentation of both the primary and secondary data. It covers the tabular and diagrammatic presentation including pie chart, bar diagram, histogram etc.
CO 3	Acquiring knowledge of central tendency including mean, median, mode and percentile.

CO 4	Understanding the concepts, measurements of probability. It covers the probability distribution, Binomial, poison population. It also covers the population, sampling process, sample size, sample distribution and errors including type I and type II.

Name of the Subject – Hospital Support Services
Subject Code – MHA 201
Credits – 3

CO 1	Learning about the overview, function location, designing organizing the department of clinical laboratories including its facilities and space requirement.
CO 2	Learning the overview, function location, designing organizing the department of Diagnostic Radiology including its facilities and space requirement.
CO 3	Learning the overview, function location, designing organizing the department of Hospital Laundry including its facilities and space requirement as well as the problem solutions.
CO 4	Learning the overview, function location, designing organizing the department of Central Sterilization and supply department (CSSD) including its facilities and space requirement.
CO5	Understanding the overview of safety of the hospitals, hospitals rules, good posture, Internal control.
CO 6	Understanding the concept of planning, function, designing and general consideration of blood bank. It also covers the national blood program and national blood policy.
CO7	Understanding the location, administration, space requirement of blood bank and it also covers the concept of bleeding complexity.
CO 8	Understanding the overview, functions, locations, designing, organizing, problem solutions space and other requirements of

	Nursing service and administration unit. It also covers the relation with computers.
CO 9	Understanding the overview, functions, locations, designing, organizing, problem solutions space and other requirements of Medical Record Department.
CO 10	Understanding the overview, functions, locations, designing, organizing, problem solutions space and other requirements of Outpatient service.
CO 11	Understanding the overview, functions, locations, designing, organizing, problem solutions space and other requirements of Day care service.
CO 12	Understanding the overview, functions, locations, designing, organizing, problem solutions space and other requirements of Food Service Department.

Name of the Subject – Material Management
Subject Code – MHA 202
Credits – 3

CO 1	Understanding the need scope advantages of materials management including the planning, budgeting and controlling process. It covers the principals, components and importance of logistics in the healthcare sectors. It also covers the area of purchasing cycle.
CO 2	Understanding the concepts of EOQ models, ABC, FSN, VED classification, Gantt Chart, Johnson Rule. It also covers the concept of contract sale of Good acts, Drug control act and general features act.
CO 3	Learning the overview, principals and types of storage including inspection and quality control, contract administrative models, annual maintenance contract.

Name of the Subject – Human Resource Management
Subject Code – MHA 203
Credits – 3

CO 1	Learning the meaning of HRM. Learning the role in an organization, difference with personnel mgmt. HR planning, concept & methods, Recruitment, selection & placement, Sources of recruitment, methods of Selection, Promotion & transfer, Implementation of selection methods in hospitals. Transfer & Promotion in Hospitals. It also covers the climate, goal functions of Human resource department.
CO 2	Learning the concept of personal management and its goal in the organization. It also covers the role of personal manager in the organization.
CO 3	Understanding the concept, importance of training and development. It also covers the organization of training and development.
CO 4	Understanding the concept of programs & evaluation including the System of training & development in hospitals. It also covers the Performance appraisal including the meaning, objective, different theories in PA.
CO 5	Learning the concept of Wage & salary Administration, principles in determining enrolment techniques Work Environment-Fatigue, monotony & Boredom (Reference to Hospital concept)
CO 6	Understanding the concept of Morale and its importance. It also covers the factors influencing morale-Impact of Morale on employees in an organization.

CO 7	Understanding the concept of fringe benefit and the retirement benefit in the organization.
CO 8	Understanding the concept of Appraisal management systems.

Name of the Subject – Bio Medical Waste Management
Subject Code – MHA 204
Credits – 3

CO 1	Understanding the concept, perception definition, treatment, principals of biomedical waste management. It covers the population who are potentially involved with bio medical waste and communicable and infectious agents associated with the bio medical waste management. It also covers the occupational safety and health issue and technologies.
CO 2	Understanding the objective, management, factors, goals components of bio medical waste management.
CO 3	Understanding the importance, steps, methodology, issues of survey in case of BMWM. It also includes categories of bio medical waste, steps of auditing, training to the healthcare personnel.
CO 4	Learning the policies and procedure of BMWM including the elements, cost and policies. It also includes the legal aspect of it.

Name of the Subject – Financial Management I
Subject Code – MHA 205
Credits – 3

CO 1	Learning the concept of golden rules, classification of accounts, accounting standers, journal, ledger, trial balance, profit, loss accounts and balance sheet.

CO 2	Learning the concept of introduction, objectives of financial management. It also covers role, issues and challenges of financial manager, profit.
CO 3	Learning the concept of cash flow, fund flow, ROI, RI, overhead distribution.

Name of the Subject – Financial Management II
Subject Code – MHA 206
Credits – 3

CO 1	Learning the elements and methods of cost. It covers the costing in healthcare industries, marginal costing, CVP analysis, ZBB, Cost containments, resource mobilization including queing and transportation model.
CO 2	Learning the concept of cash budgeting, money market, capital market and M & A.

Name of the Subject – Health Management Information System
Subject Code – MHA 207
Credits – 3

CO 1	Learning the introduction, benefit of health information management. It covers ratio analysis, health system research, and source information.
CO 2	Understanding the introduction, purpose, organization, staffing functioning and forms of medical record department. It also covers the introduction, definition, importance and methodology of medical audit.
CO 3	Understanding the introduction, utilities, advantages, disadvantages of computerization of hospital information system.

Name of the Subject – Marketing Management I
Subject Code – MHA 208
Credits – 3

CO 1	Learning the concept of need, demand, want, 4 Ps of marketing. It covers the definition, nature, characteristics of service. It also covers the service quality dimensions, service marketing and zone of tolerance.
CO 2	Learning the definition, methods of promotion. It covers the marketing communication, ward communication, advertisement, and publicity. It also covers the promotional methods in service sectors.
CO 3	Learning the concept of pricing, cost value and factors affecting the pricing. It also covers the concept of social aspect of marketing.

Name of the Subject – Health Economics
Subject Code – MHA 301
Credits – 3

CO 1	Learning the meaning, nature, scope of managerial economics. It covers the elasticity of demand, business decision making, and supply and demand. It also covers the concept of cost pricing and demand – supply relation.
CO 2	Learning the concept of market, profit, CBA and CFA. It also covers the concept of national income, microeconomics, business cycle, and macroeconomics.

Name of the Subject – Managerial Accounting
Subject Code – MHA 302
Credits – 3

CO 1	Understanding the overview of managerial economics. It covers the nature, scope, purpose, tools, and techniques of managerial accounting.
CO 2	Understanding the receivable management including tools. It also covers the working capitals corporate governance.

Name of the Subject – Healthcare Industries
Subject Code – MHA 303
Credits – 3

CO 1	Learning the concept of healthcare process, service, function, components, models and laws associated with hospitals.
CO 2	Understanding the details of changing scenario of healthcare administration, latest development of health care sectors, third party administrator, and outsourcing of health care.
CO 3	Learning the details of medical tourism, Telemedicine, Public Private partnership and medical transcription.

Name of the Subject – Legal Aspect of Health
Subject Code – MHA 304
Credits – 3

CO 1	Understanding the details of medico legal case, law of contact and consumer protection act.
CO 2	Understanding the details of law of tort, medical jurisprudence, west Bengal clinical establishment act, organ transplantation act and PNDT act.

Name of the Subject – Operational Research
Subject Code – MHA 305
Credits – 3

CO 1	Learning the details of operational research including evolution, techniques and limitations.
CO 2	Learning the details of linear programming, decision tree analysis, Queuing theory and network models including CPM, PERT

Name of the Subject – Research Methodology
Subject Code – MHA 306
Credits – 3

CO 1	Learning details of meaning, objectives and relevance of research methodology and it also covers how research methodology is applicable to hospital management.
CO 2	Understanding the concept of problems of research, research design, sampling techniques, processing of analyzing the data.

Name of the Subject – Industrial Relation
Subject Code – MHA 307
Credits – 3

CO 1	Understanding the concept, approach, practice and models of industrial relations. It also covers the concept of industrial worker in India.
CO 2	Understanding the concept of trade unions, IR in India, industrial dispute and collective bargaining.
CO 3	Understanding the details of employee discipline, labor welfare, ILO, the factory act, industrial dispute act, trade union act and ILO.

Name of the Subject – Marketing Management II
Subject Code – MHA 308
Credits – 3

CO 1	Understanding the details of marketing research, marketing segmentation, consumer behavior in service.
CO 2	Understanding the details of marketing strategy, consumer relationship management and medical Tourism.

Name of the Subject – Utility Service Area
Subject Code – MHA 401
Credits – 3

CO 1	Understanding the concept meaning, importance, roles, responsibility, functions, physical facilities, staffing, management control and features of housekeeping service.
CO 2	Understanding the concept meaning, importance, roles, responsibility, functions, physical facilities, staffing, management control and features of equipment management.
CO 3	Understanding the concept, meaning, importance, roles, responsibility, functions, physical facilities, staffing, management control features of financial administration including billing and discharge.
CO 4	Understanding the concept meaning, importance, roles, responsibility, functions, physical facilities, staffing, management control and features of mortuary including respect to rituals.
CO5	Understanding the concept, meaning, importance, roles, responsibility, functions, physical facilities, staffing, management control features of welfare service including rehabilitation of the patient.

CO 6	Understanding the concept, meaning, importance, roles, responsibility, functions, physical facilities, staffing, and management control features of pharmacy management including drug schedule, drug and cosmetics act, computerization of pharmacy department.

Name of the Subject – Strategic Management
Subject Code – MHA 402
Credits – 3

CO 1	Learning the objective, tools policies, process of strategic management including the concept of balance score card.
CO 2	Learning details on environmental scanning including SWOT analysis, external environment analysis, and internal environment analysis.
CO 3	Learning the details of planning of strategies including different models.
CO 4	Learning the details of formulation of strategies including BCG matrix, portfolio analysis etc.
CO5	Understanding the details of strategic action and evaluation techniques.

Name of the Subject – Medical Equipments Management
Subject Code – MHA 403
Credits – 3

CO 1	Understanding the details of demand estimation process, hospital equipment planning and procurement and list of common medical equipments used in hospitals.
CO 2	Understanding the details of justification of purchase proposal, requirement selection guideline, estimate of cost and QC planning.
CO 3	Understanding the details of purchasing, installation, commissioning of medical equipments, way to replace the old equipments, maintenance of equipments.

Name of the Subject – Clinical Service Areas
Subject Code – MHA 404
Credits – 3

CO 1	Understanding the details of introduction, meaning, importance, function, types, physical facilities, staffing pattern, special feature management and control of ward management.
CO 2	Understanding the details of introduction, meaning, importance, function, types, physical facilities, staffing pattern, special feature management and control of intensive care unit.
CO 3	Understanding the details of introduction, meaning, importance, function, types, physical facilities, staffing pattern, special feature management and control of nuclear medicine department.
CO 4	Understanding the details of introduction, meaning, importance, function, types, physical facilities, staffing pattern, special feature management and control of physical medicine department.
CO5	Understanding the details of introduction, meaning, importance, function, types, physical facilities, staffing pattern, special feature management and control of transplantation unit.

CO 6	Understanding the details of introduction, meaning, importance, function, types, physical facilities, staffing pattern, special feature management and control of operation theatre including zoning and maintenance of cleanliness and hygiene.

Name of the Subject – Health Insurance
Subject Code – MHA 405
Credits – 3

CO 1	Learning the details of risk coverage and insurance including the details of life and non life insurance.
CO 2	Learning the details of health insurance, third party administrator (TPA), IRDA.
CO 3	Learning the details of agreement of insurance, indemnity, premium and factors influencing premium for various policies.

Name of the Subject – Disaster Management
Subject Code – MHA 406
Credits – 3

CO 1	Understanding the details of disaster management and mass casualty including disaster preparedness plan.
CO 2	Understanding the details of disaster management, medical disaster strategic plan and fire safety in health care facilities.
CO 3	Understanding the details of role of various agencies in disaster management, hospital networking in disaster management, different public issues in disaster management, training and mock exercise.

Name of the Subject – Quality Management
Subject Code – MHA 407
Credits – 3

CO 1	Learning the details of fundamentals of quality management including its function, objectives, principals and constraints.
CO 2	Learning the details of quality management program including ISO, quality manual and quality of clinical sources.
CO 3	Learning the details of medical audit including NABH, NABL, JCI, BIS.
CO 4	Learning the details of performance review including assessments, methods and techniques of quality management.
CO5	Learning the details of quality management of diagnostic facilities and quality assurance procedures, denning Principals including Juran's triology, Kiezen, Philip Crosby's principals.
CO 6	Learning the details of quality circle.

Name of the Subject – Hospital Planning
Subject Code – MHA 408
Credits – 3

CO 1	Understanding the details of surveying the community, fundamental planning for hospital construction.
CO 2	Understanding the details of technical analysis, functional hospital organization, positioning of service and manpower planning.

Program Outcome (PO) of MHA (Masters of Hospital Administration)

PO 1 – Able to apply knowledge on different departments of hospitals including support and utility service of hospitals. Every detail of functions, locations, staffing pattern, designing, organization of every department is known by the students. For that reason they can easily utilize this knowledge in the industries. The students are totally aware of the enormity and complexity of the hospitals. They know how hospitals are changing time to time. They are totally aware that how hospital industries are different than other industries.

PO 2 – The students are able to apply knowledge on healthcare system of India and other countries. They can utilize they knowledge on national and international healthcare program.

PO3 – Able to apply knowledge on existing and future healthcare systems in India and other countries. The students are able to apply knowledge on health and disease. Having clear idea regarding the distribution and magnitude of health and disease problems in human population Have clear idea regarding the etiological factor or the risk factor. The students are Knowledgeable enough to plan implement and evaluate the healthcare service.

PO 4 - The students can utilize their knowledge on disease and its impact on the human life. They will be totally aware of things which are mostly related to the public health like – vaccine, immunity. They are enough knowledgeable to measure the health condition in a community with the help of different epidemiological studies. They are aware and can utilize their knowledge on epidemiological impact by different communicable and non communicable diseases.

PO 5 – The students are having clear idea regarding the basics of human anatomy, physiology and medical terminology and common and scientific terms used in the medical field.

PO 6 – The students are able to apply knowledge on communication. They have clear idea regarding the way to improve the communication.

PO 7 - The students are able to apply knowledge on principals of management. By that they have clear idea regarding the concept and importance of administration and management. They know the process of planning organizing, staffing, directing, controlling process. They also can utilize their knowledge on managerial ethics.

PO 8 – The students are able to utilize the knowledge on accounts. They will have clear basic idea regarding the journal, ledger, profit and loss etc of accounts department. They also have clear idea regarding costing.

PO 9 – The students can utilize their knowledge on marketing management. It covers the concept of marketing, product, price, distribution promotion in the business world. The students can also be able to utilize their knowledge on marketing research.

PO 10 – The knowledge on statistics and probability has a tremendous positive impact on the industry and education sectors. With help of enough knowledge on statistics and probability the students will be able to analyse the current scenario and can predict the future outcome. They also have clear idea regarding health care statistics and they can do statistical analysis of healthcare outcome.

PO 11 – The students can utilize their knowledge on medical record system. They are totally aware of the importance and process of medical record system. They also can utilize their skill and knowledge in the way to improve the medical record systems as they have clear idea regarding future medical record system and legal claws associated with medical records. The students can also utilize their skills on ICD coding system.

PO 12 – The student can utilize their knowledge on economics. They have clear idea about the health economics. They can utilize their knowledge in the field of health on health economical impact by different diseases in the community like malaria, dengue, STD and may more. They are also knowledgeable enough to assess the impact of tobacco and alcohol in the community. With this knowledge they can service the health care industries to a great extent than any other person from different discipline.

PO 13 – They are able to utilize their knowledge on the inventory control and purchase management which is including every details of purchasing, maintaining

the stocks, quality control and the way of distribution of the items. They are also aware of various rules and regulation associated with this process.

PO 14 – The student can utilize their knowledge on environment and ecology. They are totally aware of the impact of different pollution including air, sound, soil, water, land. They are also aware of the different rules and regulation associated with the environment and ecology.

PO 15 – They can utilize their knowledge on management information system. With the help of the subject knowledge, they can utilize their skills on Information systems, Executive support system, management process, hospital information systems.

PO 16 – The students have in depth knowledge on the quality. They are totally aware of the different accreditation of process of healthcare like ISO , NABH, JCI etc and other service industries. They are knowledgeable enough to utilize their knowledge on the way of measuring the expectation and perception of the delivered service. They will know how to perform gap analysis. Apart from that they will have knowledge on Total quality management, different theories of quality, outcome management.

PO 17 – The knowledge on different law associated with the health care industries and other industries will have huge carrier prospect for them. Different laws like consumer protect act, WB clinical establishment act, biomedical waste management act, shops and establishment act –are all thought in this course.

PO 18 – The students will have enough knowledge and can utilize their skills on Human resource management. They will be aware of the concept of recruitment, training and development, selection, placement. Apart from that they will also have knowledge on the different issues of work environments. So they will be knowledgeable enough to solve and manage those issues. They will know the impact of trade unions.

PO 19 – The students will have clear idea about the public relation and the organizational behavior. They will have clear idea about the concept of personality, perception, group dynamics, motivation and leadership. These are supremely important to create a healthy environment in the community. They will have knowledge and they will be trained enough to create good public relations. They

know how make relation with every stake holder of the hospitals like patients and their relatives, media, governments, political parties etc.

PO 20 – The students will have enough knowledge on the occupational health. They will be knowledgeable enough to utilize their skills on way to prevent different occupational hazard in deferent business sectors. They will have enough knowledge on the rules and regulations associated with the occupational health.

Program Specific Outcome (PO) of MHA (Masters of Hospital Administration)

PSO 1 – Ability to utilize their knowledge on health, health care systems and health care industries of Indian and other countries.

PSO2 – Ability to utilize their knowledge on pure management and administration of any industry including healthcare sectors.

PSO 3 – Ability to utilize their skills and knowledge on statistics, economics and accounts.

Course Outcomes (CO's) of Bachelor of Business Administration (BBA)

Semester I

- **BBA (N) 101: English (Credit Points – 4)**

  CO1: Develops both oral and written communication skills relating to organization and business issues.
  CO2: Initiates confidence in students to face interviews by making them learn various techniques in public speaking.

- **BBA (N) 102: Basics of Mathematics (Credit Points – 4)**

CO1: Demonstrates the understanding of basic mathematics by solving relevant problems, including theories and equations, common factors etc., and their application to real commercial situation.
CO2: Apply and use principles of simple and compound interest to solve relevant problems in financial application.

- **BBA (N) 103: Fundamentals of Statistics (Credit Points – 4)**

CO1: Creates awareness of the process of research, tools and techniques of research and generation of reports.
CO2: Introduces the basics of business research and enhance knowledge skills awareness about research.

- **BBA (N) 104: Economics (Micro) (Credit Points – 4)**

CO1: To help the learners understand the working of a business unit in the economy.
CO2: To help the learners understand the concept of Microeconomics and its application to business.
CO3: To help the learners in decision making process of business.

- **BBA (N) 105: Computer Applications (Credit Points – 4)**

CO1: Helps understand the concept of information system used in business and to know the latest trends in doing business in internet environment.
CO2: Provides knowledge of computers in terms of Microsoft office, data base management systems, accounting software packages like tally, information systems which intern help the organization in its structure and flow of activities.

Semester II

- **BBA (N) 201: Business Communication (Credit Points – 4)**

CO1: To study on concept, channels, methods and modes of communication.

CO2: To study on which obstacles facing while doing communication and how is improving listening skills.
CO3: To study on how to maintain business correspondence, what cares should be taken while writing business letters and personal letters.
CO4: To study on paragraph writing and writing skills.

- **BBA (N) 202: Advanced Mathematics and Statistics (Credit Points – 4)**

CO1: Learners will get an idea of good decision making in case of uncertainty.
CO2: Learners will get knowledge of various statistical techniques which will useful in various business applications.

- **BBA (N) 203: Organisational Behaviour (Credit Points – 4)**

CO1: Helps in understanding the psychological aspect of workers working in an organization and offers knowledge on organizational behaviour, organizational change and dynamism of groups
CO2: Enables students to demonstrate the applicability of the concept of organizational behaviour to understand the behaviour of people in the organization.
CO3: Helps them to analyse the complexities associated with management of the group behaviour in the organization.

- **BBA (N) 204: Economics (Macro) (Credit Points – 4)**

CO1: To introduce the learners to formal modelling of Macroeconomic theory with analytic tools with focus on goods market with fixed exchange rate, the money market, uncovered interest rate parity, benefits and costs of fixed and flexible exchange rates.
CO2: To introduce concept of Macroeconomics and various circular flows of income.
CO3: To make them aware about public finance in depth.
CO4: To Understand various sourced of public revenue and expenditure.

- **BBA (N) 205: Indian Social Structure and Values and Ethics (Credit Points – 4)**

  CO1: To study on business ethics.
  CO2: To understand the pluralistic nature of Indian Society with reference to diversity.
  CO3: To understand the social stratification on the basis of Caste, Class and Estate basis.
  CO4: To understand the Concept of inequality and Intergroup conflicts.
  CO5: To understand the Meaning of Preamble and composition of Indian Constitution.
  CO6: To Understand the demographic composition of India having regard to Language, Religion, and Gender etc.
  CO7: To Understand the fundamental duties of Indian citizen specified in Indian Constitution.

Semester III

- **BBA (N) 301: Principles of Management(Credit Points – 4)**

  CO1: Examines the logic and working of organizations and outlines the major function of management.
  CO2: Enables students to acquire and exhibit knowledge skill and abilities needed to successfully manage the organization.

- **BBA (N) 302: Managerial Economics (Credit Points – 4)**

  CO1: To acquaint the learners about the managerial functions of motivating, directing, coordinating and controlling.
  CO2: To help the learners gain insight into the contemporary issues in management.

- **BBA (N) 303: Business Laws (Credit Points – 4)**

  CO1: Introduces students to several business laws and regulations.

CO2: Makes them understand the importance of implementation of such laws for smooth conduct of business as well as for a better economy.
CO3: Enables the students to get familiar with existing Company Law and Secretarial procedure.
CO4: Helps them in effective planning and in making good decisions while framing policies.

- **BBA (N) 304: Financial Accounting (Credit Points – 4)**

CO1: Exposes students to various aspects of Financial Accounting.
CO2: Enables them to understand accounting concepts, tools and techniques influencing business organizations.

- **BBA (N) 305: Environmental Sciences (Credit Points – 4)**

CO1: Provides basic awareness on environment and its allied fields and also helps to motivate students to find out unique solutions for environmental problems.

Semester IV

- **BBA (N) 401: Production and Materials Management (Credit Points – 4)**

CO1: Familiarizes students with the process of production to be carried out in a business so that there is which satisfies customers and which helps to increase the goodwill of the organization.
CO2: Deals with the selection of the plant location, layout, selection of process, controlling production process and producing quality products.

- **BBA (N) 402: Management Information Systems (Credit Points – 4)**

CO1: To study types of software.
CO2: To study the concept of hardware.
CO3: To study Office automation software.

CO4: To study different web tools.
CO5: To study different internet concepts.
CO6: To study internet security, EDI, legal issues.
CO7: To study E-commerce concept.
CO8: Learn different parts of hardware and different types of software.
CO9: Learn and execute different commands of Ms Word, Ms Excel and Ms PowerPoint.
CO10: Learn Downloading information, creating e-mail ID and sending, receiving emails.
CO11: . Learn legal issues of internet, importance of electronic data interchange and e-commerce.

- **BBA (N) 403: Cost Accounting (Credit Points – 4)**

CO1: Educates students with comprehensive knowledge on provisions of company's act and cost accounting.
CO2: Helps them to prepare company final accounts, holding company accounts, analyse financial statements and value goodwill and shares.

- **BBA (N) 404: Marketing Management (Credit Points – 4)**

CO1: Helps to know about the various trends, segments, strategies which can be used by business men to increase the sales of the product.
CO2: Gives knowledge about marketing mix, fixing of price for a product, select target customers and it helps to produce goods accordingly.

- **BBA (N) 405: Human Resource Management (Credit Points – 4)**

CO1: Familiarizes with concepts of Human Resource and Personnel Management.
CO2: Imparts knowledge on various aspects of Human Resource Management and its relevance in day-to-day business activities.

Semester V

- **BBA (N) 501: Financial Management (Credit Points – 4)**

  CO1: Students comprehend the basic concepts of Financial Management and understands the role of Financial Management in Decision Making.
  CO2: Provides insight on time value of money and various managerial decisions such as financial, investment and dividend decisions and importance of working capital management.

- **BBA (N) 502: Sales and Distribution Management (Credit Points – 4)**

  CO1: Demonstrate how the knowledge of consumer behaviour can be applied to practical life, identify factors affecting consumer behaviour.
  CO2: Helps relate internal dynamics such as personality, perception, learning, etc., to make the choices consumers make.

- **BBA (N) 503: Human Resource Development (Credit Points – 4)**

  CO1: To apply concepts and techniques in marketing so that they become acquainted with the duties of a marketing manager both strategic and managerial.
  CO2: To understand integration of numerous activities and processes to produce products and services in a highly competitive global environment by production management.
  CO3: To help learners become better leaders by enhancing their effectiveness in managing human resources.
  CO4: To learn fundamental HRM frameworks and analyse the overall role of HRM in business.
  CO5: Understand the development, implementation, and evaluation of employee recruitment, selection, and retention plans and processes.
  CO6: Learn administer and contribute to the design and evaluation of the performance management program.
  CO7: Acquired skill to develop, implement, and evaluate employee orientation, training, and development programs.

- **BBA (N) 504: Entrepreneurship Development (Credit Points – 4)**

CO1: Imparts awareness of Entrepreneurial skills that are essential for industrialization and which elevates mass employment and reduces poverty.
CO2: Motivates students to take up the challenges of entrepreneurship themselves so as to become distinguished entrepreneurs.

- **BBA (N) 505: Research Methodology (Credit Points – 4)**

CO1: The learners will develop a positive and inquisitive approach to research.
CO2: Learners will be equipped with theoretical knowledge and practical approach to research.
CO3: They will be able to choose their research projects for and complete the same self-sufficiently with little assistance.

Semester VI

- **BBA (N) 601: Management Accounting (Credit Points – 4)**

CO1: Helps in understanding the concept of Panning, Coordinating, Communicating and Controlling of accounting practices in a business organization.
CO2: Helps understand and analyze the financial statements to prepare financial report.

- **BBA (N) 602: Advertising and Sales Promotion (Credit Points – 4)**

CO1: Helps develop an integrated advertising and media management plan and persuasively present and defend it, evaluate the effectiveness of integrated advertising initiatives.
CO2: Assists in developing creative solutions to address advertising challenges.

- **BBA (N) 603: Industrial Relations (Credit Points – 4)**

CO1: To develop an understanding of the law and social responsibility relevant to managing an organization domestically and internationally.
CO2: To explain the corporate governance system, including the law related to agency.
CO3: To explain how those in control of the organization's assets, operations and management take into consideration the company's local and global impacts on society in their decision making.

- **BBA (N) 604: Public Service Management (Credit Points – 4)**

CO1: Provides basic knowledge about the service sector, it helps to know about service available in market like tourism, hospitality, banking and financial institutions.
CO2: Demonstrates various opportunities available in the service sectors and also teaches about the recent trends in the sector.

- **BBA (N) 605: Project and Viva (Credit Points – 4)**

CO1: To inculcate the element of research analyse and specific temperament challenging the potential of the learner as regard to his/her enquire and ability to interpret particular aspect of the study.
CO2: Learners will plan and manage their project, conduct a critical review of relevant literature, undertake their project work to professional standard and evaluate information to prepare a report on their findings.

Bachelor of Business Administration (BBA)
Program Outcomes (PO's)

⚫**PO1**: Enables students to apply knowledge of management theories and practices to solve business problems.
⚫**PO2**: Encourages analytical and critical thinking abilities for business decision making.

⚫**PO3**: Promotes ethical and value-based leadership ability.
⚫**PO4**: Provides a wide knowledge of all disciplines of the course and training in management of both animate and inanimate entities and develops leadership skills.
⚫**PO5**: Enables students to effectively communicate business issues, management concepts, plans and decisions both in oral and written form using appropriate supportive technologies.
⚫**PO6**: Equips students to demonstrate the capabilities required to apply cross-functional business knowledge and technologies in solving real-world business problems.
⚫**PO7**: Enables students to demonstrate use of appropriate techniques to effectively manage business challenges.
⚫**PO8**: Makes students capable of recognizing and resolving ethical issues.
⚫**PO9**: Helps to prepare students for managerial roles and as entrepreneurs.

Programme Specific Outcomes (PSO's) of Bachelor of Business Administration (BBA)

- **PSO1: Critical Thinking and Problem-solving ability** - Ability to define, analyse and devise solutions for structured and unstructured business problems and issues using cohesive and logical reasoning patterns for evaluating information, materials, and data.

- **PSO2: Skill development** - Apply verbal, reasoning, Data Interpretation, Quantitative and communication skill to solve specified problem.

- **PSO3: Ethics** - Apply ethical principles and commit to professional ethics and responsibility.

- **PSO4: Individual and team work** - Function effectively as a member or leader in diverse team.
- **PSO5: Communication** - Ability to conceptualize a complex issue into a coherent written statement and oral presentation and to communicate effectively on complex activities with technical community.

- **PSO6: Internship and Industrial Visit** - Provides an opportunity for the students to gain practical exposure towards the workplace.

- **PSO7: Entrepreneurship and Innovation** - Promotes an understanding of the fundamentals of creating and managing innovation, new business development, and high-growth potential entities.

- **PSO8: Business Knowledge** - Demonstrate technical competence in domestic and global business through the study of major disciplines within the fields of business.

Course Outcomes (CO's)

Semester I

- **ENG 101: English (Credit Points – 3)**

  CO1: Develops both oral and written communication skills relating to organization and business issues.

CO2: Initiates confidence in students to face interviews by making them learn various techniques in public speaking.

- **ENS 102: Environmental Studies (Credit Points – 4)**

  CO1: Provides basic awareness on environment and its allied fields and also helps to motivate students to find out unique solutions for environmental problems.

- **PPM 103: Principles and Practices of Management (Credit Points – 4)**

  CO1: Examines the logic and working of organizations and outlines the major function of management.
  CO2: Enables students to acquire and exhibit knowledge skill and abilities needed to successfully manage the organization.

- **QTM 104: Quantitative Techniques for Management I (Credit Points – 4)**

  CO1: The syllabus focuses on maths and statistics concept which helps learners to understands and apply their knowledge in portfolio mgmt. and investment planning.
  CO2: To improve in quantitative aptitude required for various competitive examinations.
  CO3: To create base for financial analysis required for finance related courses.
  CO4: To develop an ability of making appropriate decisions by enumerating feasible and viable alternatives.

- **PAQ 105: Pharmaceutical Analysis and Quality Control (Credit Points – 3)**

  CO1: Learning this subject content will develop the ideas with the fundamental of analytical chemistry among the pupil.
  CO2: It constructs the fundamental methodology to prepare different strength of solutions.

CO3: It facilitate the fellow pupil to predict the sources of mistakes and errors.
CO4: It helps to develop the fundamentals of volumetric analytical skills.
CO5: It peculates the basic knowledge in the principles of electrochemical analytical techniques.
CO6: The student interpretation skills will be improving by the course content in terms of choice of analytical techniques to perform the estimation of different category drugs.

- **PAL 106: Pharmaceutical Analysis Lab (Credit Points – 2)**

CO1: This is a practical paper which prepares the students for an exposure into the practical aspects of pharmaceutical analysis and quality control.

- **CAM 107: Computer applications in Management (Credit Points – 2)**

CO1: This is a practical paper which will help the students to understand the concept of information system used in business and to know the latest trends in doing business in internet environment.
CO2: Provides knowledge of computers in terms of Microsoft office, data base management systems, accounting software packages like tally, information systems which intern help the organization in its structure and flow of activities.

Semester II

- **ANP 201: Anatomy and Physiology (Credit Points – 4)**

CO1: Students would have studied about the gross morphology, structure and functions of cell, skeletal, muscular, cardiovascular system of the human body.
CO2: They would have understood the various homeostatic mechanisms and their imbalances.
CO3: Students would able to identify the different types of bones in human body.
CO4: Students would be able to identify the various tissues of different systems of human body.

CO5: Students would learn about the various experimental techniques related to physiology.
CO6: They would have learnt various techniques like blood group determination, blood pressure measurement, blood cells counting.

- **PHC 202: Pharmaceutical Chemistry I (Credit Points – 3)**

CO1: Well acquainted with the principles of limit tests.
CO2: Familiar with different classes of inorganic pharmaceuticals and their analysis.
CO3: Identification of different anions, cations and different inorganic pharmaceuticals.
CO4: Knowledge about the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals.
CO5: understand the medicinal and pharmaceutical importance of inorganic compounds.
CO6: To have been introduced to a variety of inorganic drug classes.

- **PHR 203: Pharmaceutics I (Credit Points – 3)**

CO1: State the physicochemical properties of drug molecules, pH, and solubility.
CO2: Explain the role of surfactants, interfacial phenomenon and thermodynamics.
CO3: Describe the flow behaviour of fluids and concept of complexation.
CO4: Analyse the chemical stability tests of various drug products.
CO5: Understand the physical properties of solutions, buffers, isotonicity, disperse systems and rheology.
CO6: Understand of physicochemical properties of drugs including solubility, distribution, adsorption, and stability.
CO7: Have basic knowledge of pharmaceutical suspensions and colloids.
CO8: Have basic understanding of the pharmaceutical applications of various physical.
CO9: Principles such as lyophilization, aerosols, condensed systems, and phase diagram.

- **ORB 204: Organisational Behaviour (Credit Points – 4)**

  CO1: Helps in understanding the psychological aspect of workers working in an organization and offers knowledge on organizational behaviour, organizational change and dynamism of groups
  CO2: Enables students to demonstrate the applicability of the concept of organizational behaviour to understand the behaviour of people in the organization.
  CO3: Helps them to analyse the complexities associated with management of the group behaviour in the organization.

- **MGE 205: Managerial Economics (Credit Points – 4)**

  CO1: To acquaint the learners about the managerial functions of motivating, directing, coordinating and controlling.
  CO2: To help the learners gain insight into the contemporary issues in management.

- **PHL 206: Pharmaceutics Lab I (Credit Points – 2)**

  CO1: This is a practical paper which focuses on the practical aspects of Pharmaceutics.

- **PCL 207: Pharmaceutical Chemistry Lab I (Credit Points – 2)**

  CO1: This is a practical paper which focuses on the practical aspects of Pharmaceutical Chemistry.

Semester III

- **PHR 301: Pharmaceutics II (MFG) (Credit Points – 3)**

  CO1: State the physicochemical properties of drug molecules, pH, and solubility
  CO2: Explain the role of surfactants, interfacial phenomenon and thermodynamics.

CO3: Describe the flow behaviour of fluids and concept of complexation.
CO4: Analyse the chemical stability tests of various drug products.
CO5: Understand the physical properties of solutions, buffers, isotonicity, disperse systems and rheology.
CO6: Understand of physicochemical properties of drugs including solubility, distribution, adsorption, and stability.
CO7: Have basic knowledge of pharmaceutical suspensions and colloids.
CO8: Have basic understanding of the pharmaceutical applications of various physical.
CO9: Principles such as lyophilization, aerosols, condensed systems, and phase diagram.

- **FPE 302: Forensic Pharmacy and Ethics (Credit Points – 4)**

  CO1: To acquaint the learners about the Concept of forensic pharmacy.
  CO2: To help the learners gain insight into the contemporary issues ofethics in this field.

- **PHC 303: Pharmaceutical Chemistry II (Credit Points – 3)**

  CO1: Write the structure, name of the organic compound.
  CO2: Knowledge about the type of isomerism.
  CO3: Write the reaction, name the reaction and orientation of reactions.
  CO4: Account for reactivity/stability of compounds.
  CO5: Identify/confirm the unknown organic compound.
  CO6: Knowledge about the naming reactions of carbonyl compounds.
  CO7: To perform common laboratory techniques including reflux, distillation, recrystallization, vacuum filtration, etc.

- **PHE 304: Pharmaceutical Engineering (Credit Points – 4)**

  CO1: To know various unit operations used in pharmaceutical industries.
  CO2: To understand the material handling techniques.

CO3: To perform various processes involved in pharmaceutical manufacturing process.
CO4: To carry out various test to prevent environmental pollution.
CO5: To appreciate and comprehend significance of plant lay out design for optimum.
CO6: To appreciate the various preventive methods used for corrosion control in pharmaceutical industries

- **MNM 305: Manufacturing Management (Credit Points – 4)**

CO1: know the various pharmaceutical dosage forms and their manufacturing techniques.
CO2: know various considerations in development of pharmaceutical dosage forms.
CO3: Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality.

- **PHL 306: Pharmaceutics Lab II (Credit Points – 2)**

CO1: This is a practical paper which focuses on the practical aspects of Pharmaceutics.

- **Pharmaceutical Chemistry Lab II (Credit Points – 2)**

CO1: This is a practical paper which focuses on the practical aspects of Pharmaceutical Chemistry.

Semester IV

- **MEC 401: Medicinal Chemistry I (Credit Points – 3)**

CO1: Helps in correlating between pharmacology of a disease and its mitigation or cure.
CO2: To understand the drug metabolic pathways, adverse effect and therapeutic value of drugs.
CO3: To know the structural activity relationship of different class of drugs.

CO4: Well acquainted with the synthesis of some important class of drugs.
CO5: Knowledge about the mechanism pathways of different class of medicinal compounds.
CO6: To understand the chemistry of drugs with respect to their pharmacological activity.

- **BIS 402: Bio-Statistics (Credit Points – 4)**

CO1: Learners will get an idea of good decision making in case of uncertainty.
CO2: Learners will get knowledge of various statistical techniques which will useful in various business applications.

- **OPR 403: Operations Research (Credit Points – 4)**

CO1: Familiarizes students with the process of production to be carried out in a business so that there is which satisfies customers and which helps to increase the goodwill of the organization.
CO2: Deals with the selection of the plant location, layout, selection of process, controlling production process and producing quality products.

- **FRA 404: Financial Reporting and Analysis (Credit Points – 4)**

CO1: Students comprehend the basic concepts of Financial Management and understands the role of Financial Management in Decision Making.
CO2: Provides insight on time value of money and various managerial decisions such as financial, investment and dividend decisions and importance of working capital management.

- **CSA 405: Cost Accounting (Credit Points – 3)**

CO1: Educates students with comprehensive knowledge on provisions of company's act and cost accounting.

CO2: Helps them to prepare company final accounts, holding company accounts, analyse financial statements and value goodwill and shares.

- **MCL 406: Medicinal Chemistry Lab (Credit Points – 2)**

  CO1: This is a practical based paper which helps the students to explore the practical aspects of medicinal chemistry.

- **HRM 407: Human Resource Management Project (Credit Points – 2)**

  CO1: To apply concepts and techniques in marketing so that they become acquainted with the duties of a marketing manager both strategic and managerial.
  CO2: To understand integration of numerous activities and processes to produce products and services in a highly competitive global environment by production management.
  CO3: To help learners become better leaders by enhancing their effectiveness in managing human resources.
  CO4: To learn fundamental HRM frameworks and analyse the overall role of HRM in business.
  CO5: Understand the development, implementation, and evaluation of employee recruitment, selection, and retention plans and processes.
  CO6: Learn administer and contribute to the design and evaluation of the performance management program.
  CO7: Acquired skill to develop, implement, and evaluate employee orientation, training, and development programs.

Semester V

- **PHA 501: Pharmacology (Credit Points – 4)**

  CO1: Students would have understood the pharmacological actions of different categories of drugs.
  CO2: They would have studied in detailed about mechanism of drug action at organ system/sub cellular/ macromolecular levels.

CO3: They would have understood the application of basic pharmacological knowledge in the prevention and treatment of various diseases.
CO4: They would have observed the effect of drugs on animals by simulated experiments.
CO5: They would get an idea about correlation of pharmacology with other bio medical sciences.
CO6: They would have understood the signal transduction mechanism of various receptors.

- **PSM 502: Pharmaceutical Sales and Marketing Practices (Credit Points – 4)**

CO1: Demonstrate how the knowledge of consumer behaviour can be applied to practical life, identify factors affecting consumer behaviour.
CO2: Helps relate internal dynamics such as personality, perception, learning, etc., to make the choices consumers make.

- **PHR 503: Pharmaceutics III (Credit Points – 3)**

CO1: Students can able to demonstrate an understanding at an advanced level of microbial virulence mechanisms and host response to infection; application of molecular techniques to medical microbiology; microbial susceptibility and resistance to antimicrobial agents; replication of viruses, viral immunology and pathogenesis, detection of viruses.
CO2: Students can able to understanding of various infections (microbial causes, pathogenesis, transmission of infection, diagnosis, prevention and treatment) by being able to identify a unknown organisms in clinical samples, and describe the pathogenesis of important pathogens.
CO3: Students Demonstrate a basic understanding of the pathogenesis of some important fungal infections of humans, and be able to identify and isolate them from clinical samples.
CO4: Students Work cooperatively as part of a small group and critically assess and interpret scientific literature.

CO5: Students can Analyse and report on complex research questions, and solve problems, plan a work program or diagnostic strategy and learn independently.
CO6: Students can able to demonstrate safe working practices in microbiology, adhere to microbiological requirements for safe work procedures.

- **PHP 504: Pharmacognosy and Phytochemistry (Credit Points – 3)**

  CO1: Herbs and their Science.
  CO2: Classification of Medicinal Plants, Phytochemistry, Carbohydrates, Lipids.
  CO3: Terpenes, Polyphenols, Alkaloids, Pharmacology, Toxicity, Formulations and Preparations of Herbal Medicines.
  CO4: How herbs influence our physiology and can be helpful against several disorders.
  CO5: Relations between Phyto-therapy and the Elderly, Phytotherapy and Children, Understanding Herbal Action, and Understanding the Materia Medica.
  CO6: The recognition of medicinal plants, identification of adulteration and Contamination.
  CO7: Ethnobotany & Ethno pharmacology in drug discovery process.

- **PAS 505: Pharmaceutical Advertising and Service Management (Credit Points – 4)**

  CO1: Provides basic knowledge about the service sector, it helps to know about service available in market like tourism, hospitality, banking and financial institutions.
  CO2: Demonstrates various opportunities available in the service sectors and also teaches about the recent trends in the sector.

- **PHL 506: Pharmaceutical Lab III (Credit Points – 2)**

  CO1: This is a practical based paper which showcases the practical aspects of pharmaceutical microbiology.

- **PAL 507: Pharmacognosy Lab (Credit Points – 2)**

CO1: This is a practical paper which deals with various herbs and plants which have certain medicinal properties.

Semester VI

- **MEC 601: Medicinal Chemistry (Credit Points – 4)**

  CO1: Helps in correlating between pharmacology of a disease and its mitigation or cure.
  CO2: To write the chemical synthesis of some drugs.
  CO3: To know the structural activity relationship of different class of drugs.
  CO4: Knowledge about the mechanism pathways of different class of medicinal compounds.
  CO5: To acquire knowledge about the chemotherapy for cancer.
  CO6: To understand the chemistry of drugs with respect to their pharmacological activity.

- **PRS 602: Pharmaceutical Marketing Research and Supply Chain Management (Credit Points – 4)**

  CO1: To provide learners with basic understanding of concepts of logistics and supply chain management.
  CO2: To introduce learners to the key activities performed by the logistics function.
  CO3: To provide an insight into the nature of supply chain, its functions and supply chain system.
  CO4: To understand global trends in logistics and supply chain management.
  CO5: To introduce the concept of Marketing Research to the students.

- **PHL 603: Pharmacology Lab (Credit Points – 2)**

  CO1: This is a practical based paper which highlights the practical aspects of Pharmacology.

- **PSI 604: Project and Seminar (Credit Points – 12)**

CO1: To inculcate the element of research analyse and specific temperament challenging the potential of the learner as regard to his/her enquire and ability to interpret particular aspect of the study.
CO2: Learners will plan and manage their project, conduct a critical review of relevant literature, undertake their project work to professional standard and evaluate information to prepare a report on their findings.

Bachelor of Management Studies (Pharmaceutical Management)
Program Outcomes (PO's)

- **PO1**: **Pharmacy Knowledge -** Possess knowledge and comprehension of the core information associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioural, social, and administrative pharmacy sciences; and manufacturing practices.

- **PO2**: **Thinking Abilities -** Utilise the principles of scientific inquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyse, evaluate and apply information systematically and shall make defensible decisions.

- **PO3**: **Planning Abilities -**Demonstrate effective planning abilities including time management, resource management, delegation skills and organisational skills. Develop and implement plans and organise work to meet deadlines.

- **PO4**: **Leadership skills -** Understand and consider the human reaction to change, motivation issues, leadership and team building when planning changes required for fulfilment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles, whenever appropriate, to facilitate improvement in health and well-being.

⚫**PO5**: **Professional Identity -** Understand, analyse and communicate the value of their professional roles in society (e.g. health care professionals, suppliers of pharmaceuticals, promoters of health, educators, business managers, employers, employees) through consideration of historical, social, economic and political issues.

⚫**PO6**: **Environment and sustainability -** Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

⚫**PO7**: **Ethics -** Honour personal values and apply ethical principles in professional and social contexts. Demonstrate behaviour that recognises cultural and personal variability in values, communication and lifestyles. Use ethical frameworks, apply ethical principles while making decisions, and take responsibility for the outcomes associated with the decisions.

⚫**PO8**: **Communication -** Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions.

⚫**PO9**: **Modern tool usage -** Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations.

⚫**PO10:Life-long learning -** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self-assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.

Programme Specific Outcomes (PSO's)

- **PSO1: Scientific and Technical intellect** - Extensive learning of the basics and focusing on the trivial area of pharmaceutical science and technology and applying this scientific knowledge in the technical areas for the formulation of medicaments, R& D, designing of new drugs from nature and other sources.
- **PSO2: Analytical and Research Curiosity** - Developing expertise and competence in analysis of problems and inquisitiveness to innovate methodologies to handle problems and projects.
- **PSO3: Communication Capability** - Demonstrating the art of excellence in developing the effective communication skills in English and evolving the personality of the students suitable to the dynamic industrial needs.
- **PSO4: Professional competence** - Adopting the characteristics of technical excellence through systematically organized pedagogical practices in equipping the students with knowledge and practice for competing in the global competitive environment.
- **PSO5: Social Consciousness** - Developing consciousness in the issues of social concerns and enabling students to upgrade their personality and experience through community services to have a meaningful linkage between the institution and society.

Course Outcome of BSc Gaming and Mobile Application

FIRST SEMESTER

Subject name - English
Code - ENG 101

CO1: Enable to understand the proper way of letter writing. Comprehension, Passage reading and question answer handling.

CO2: Can Understanding the proper way to utilize punctuation and spelling Pitfalls.

CO3: Able to understand the importance of communication. Communication is an organization and types of communication.

CO4: Enable to develop reading skills**,** Skimming and scanning**,** Predicting**,** Inferring**,** Reading critically, Reading passages, comprehension and letters.

Subject name - Engineering Math
Code - EMA 102

CO1: The idea of complex numbers and infinite series.

CO2: The basic idea of calculus including Reduction Formulae for evaluating. Finding area under the curves, Length of the curves, volume and surface of solids of revolution.

CO3: The basic idea of Linear Algebra including Rank of matrix, Linear transformations, Hermitian and skeew – Hermitian forms, Inverse of matrix by elementary operations.

CO4: The Ideas of Ordinary Differential Equations including First order differential equations – exact and reducible to exact form. Linear differential equations of higher order with constant coefficients.

Subject name - Computer Architecture
Code - CMA 103

CO1: Able to learnbasic computer architecture , Quantitative techniques in computer design, measuring and reporting performance .

CO2: To understand the Hierarchical memory technology including Inclusion, Coherence and locality properties; Cache memory organizations, Techniques for reducing cache misses; Virtual memory organization, mapping.

CO3: Enable to understand basic concepts, techniques for increasing ILP, superscalar, super pipelined and VLIW processor architectures.

CO4: Can understand taxonomy of parallel architectures; Centralized shared-memory architecture: synchronization, memory consistency, interconnection networks.

Subject name - Environmental Science
Code - ENV 104

CO1: Understand and explain the multidisciplinary dimensions of environmental issues.

CO2: Understand the primary environmental problems and suggest potential solutions.

CO3: Understand and explain about the various groups of pollutions

CO4: Appreciate the principles governing the interactions between social and environmental factor

Subject name - Fundamentals of Programming
Code - FPR 105

CO1: To understand the Concept of algorithms, Flow Charts, Data Flow diagrams
CO2: Understand and learn basic programming techniques.

CO3: Learn the Concept of loops, example of loops in C using for, while and do-while.

CO4: Understand the basic concept of Pointers and Strings Pointers, relationship between arrays and pointers Argument passing using pointers Array of pointers.

Subject name - C Programming
Code - CPR 106

CO1: Idea about basic programming
CO2: Learns towrite a menu driven program for searching and sorting

Introduction to Linux Programming (LPR 107)

CO1: Learn to write shell script

SECOND SEMESTER

Subject name - Advanced Engineering Math
Code - AEM 201

CO1: The Idea of Calculus of Several Variables

CO2: The Idea of Functions of Complex Variables including Derivatives of complex functions, Analytic functions, Cauchy-Riemann equations, Harmonic

Conjugates, Conformal mapping, Standard mappings – linear, square, inverse and bilinear.

CO3: The Idea of Vector Calculus including Scalar and Vector point functions, Gradient, Divergence, Curl with geometrical physical interpretations, Directional: derivatives, Properties.

CO4: The Idea of Laplace Transformation including existence condition, Laplace transform of standard functions, Properties, Inverse Laplace transform of functions using partial fractions, Convolution and convolution theorem.

Subject name - Fundamentals of Game Physics
Code - NAS 202

CO1: To Learn demonstrate knowledge of linear algebra applied to computer games and graphics

CO2: The idea of Demonstrate a basic understanding of mechanics sufficient to understand and solve problems

CO3: To understand and to construct discrete implementations from continuous mathematical models demonstrating knowledge of numerical methods and programming paradigms

CO4: Learn to demonstrate competency in the writing and testing of math and physics-related code for computer games.

Subject name - Network Fundamentals
Code - NWF 203

CO1: The basic idea of Networking Connectivity, Network Extension, Network Topologies, Protocols, Programs and Processes, Protocol Layering Concepts, Encapsulation and Decapsulation, Summary, Assessments

CO2: Understand the idea of OSI layers and LAN Architecture.

CO3: Basic idea of Personal Computers, Workstations, Midrange Computers, Mainframe Computers, Summary, Assessments

CO4: The Idea of System Architectures, Internetworking, Telecommunications Overview

Subject name - Object Oriented Programming
Code - OOP204

CO1: Learn about Object oriented thinking

CO2: To understand the basic idea of inheritance, Packages and Interfaces

CO3: The idea of exception handling and multithreading.

CO4: Learn about event handling and applet

Subject name - Operating System Concepts
Code - OSC 205

CO1: Understand the concept of Operating system and functions, Classification of Operating systems- Batch, Interactive, Time sharing, Real Time System, Multiprocessor Systems, Multiuser Systems, Multiprocessor Systems

CO2: The basic idea of Concurrent Processes: Process Concept, Principle of Concurrency, Producer / Consumer Problem, Mutual Exclusion, Critical Section Problem, Dekker's solution, Peterson's solution, Semaphores, Test and Set operation

CO3: To understand CPU Scheduling

CO4: Basic idea of Memory Management, I/O Management and Disk Scheduling

Subject name - OOP through C++/JAVA
Code - OPR 206

CO1: Understand object oriented thinking and java basic

CO2: Learn about Hierarchical abstractions, Base class object, subclass, subtype, substitutability, forms of inheritance- specialization, specification, construction, extension, limitation, combination, benefits of inheritance, costs of inheritance.

CO3: Learn about Concepts of exception handling, benefits of exception handling, Termination or resumptive models, exception hierarchy, usage of try, catch, throw, throws and finally, built in exceptions, creating own exception sub classes.

CO4: Understand Events, Event sources, Event classes, Event Listeners, Delegation event model, handling mouse and keyboard events, Adapter classes.

Subject name - Advanced Linux Programming & Networking
Code - ALP 207

CO1: The idea of Linux Utilities-File handling utilities, Security by file permissions, Process utilities, Disk utilities, Networking commands, Filters, Text processing utilities and Backup utilities.

CO2: Understand the basic idea of File Concept, File types, File System Structure, file metadata-Inodes, kernel support for files, system calls for file I/O operations-open, create, read, write, close, lseek, dup2, file status information-stat family, file and record locking- FCNTL function, file permissions - chmod, fchmod, file ownership-chown, lchown, links-soft and hard links - symlink, link, unlink.

CO3: The idea of process concept, Layout of a C program image in main memory

CO4: Understand the basic idea of to IPC, IPC between processes on a single computer system, IPC between processes on different systems, pies-creation, IPC between related processes using unnamed pipes, FIFOs- creation, IPC between unrelated processes using FIFOs(Named pipes), differences between unnamed and named PIPES,POPEN and PCLOSE library functions.

THIRD SEMESTER

Subject name - Fundamentals of Data Structure

Code - DSP 301

CO1: Idea about linear data structure

CO2: Understand theStack and its implementations (using array, using linked list), applications. Queue, circular queue, dequeues.

CO3: Able to understand Nonlinear Data structures Trees

CO4: Able to understand Searching, Sorting: Sorting Algorithms : Bubble sort and its optimizations, insertion sort, shell sort, selection sort, merge sort, quick sort, heap sort (concept of max heap, application – priority queue), radix sort.

Subject name - FUNDAMENTALS OF DBMS
Code - FDB 302

CO1: Basic idea of Concept & Overview of DBMS, Data Models, Database Languages, Database Administrator, Database Users, Three Schema architecture of DBMS. Entity-Relationship

CO2: Understand the Model Structure of relational Databases, Relational Algebra, Relational Calculus, Extended Relational Algebra Operations, Views, Modifications Of the Database. SQL and Integrity Constraints Concept of DDL, DML, DCL. Basic Structure, Set operations, Aggregate Functions, Null Values, Domain Constraints.

CO3: Able to understand Functional Dependency, Different anamolies in designing a Database., Normalization using funtional dependencies, Decomposition, Boyce-Codd Normal Form, 3NF, Nomalization using multi-valued depedencies, 4NF, 5NF Internals of RDBMS.Physical data structures

CO4: The basic idea of File & Record Concept, Placing file records on Disk, Fixed and Variable sized Records, Types of Single-Level Index, Multilevel Indexes, Dynamic Multilevel Indexes using B tree and B+ tree.

Subject name - DESIGN & ANALYSIS OF ALGORITHM

Code - DAA 303

CO1: Basic idea ofAlgorithms and its importance,

CO2: Understand themathematical foundations INCLUDING growth functions, complexity analysis of algorithms, summations, recurrences, sorting algorithms design and analysis: Insertion sort, divide and conquer, merge sort, heap sort, radix sorting.

CO3: Learn aboutHash table, B trees, Binomial Heaps, Fibonacci Heaps.

CO4: The basic idea of **S**tring matching: Robin – Karp algorithm, Knuth – Morris Pratt algorithm, Algorithm for parallel computers, parallelism, the PRAM models, simple PRAM algorithms.P and NP Class, some NP – complete problems.

Subject name - SYSTEM ANALYSIS & DESIGN
Code - SAD 304

CO1: Basic idea of Knowledge and understanding
CO2: Learn about Cognitive skills (thinking and analysis).

CO3: Able to present projects

CO4: Understand the concept of Practical and subject specific skills (Transferable Skills).

Including Plan and undertake a major individual project, prepare and deliver coherent and

Structured verbal and written technical reports

Subject name - COMPUTER GRAPHICS &ANIMATION
Code - DCM 305

CO1: Learn about basics of computer graphics

CO2: Idea about graphic devices including Introduction Cathode Ray Tube Quality of Phosphors CRTs for Color Display Beam Penetration CRT The Shadow - Mask CRT Direct View Storage Tube Tablets The light Pen Three Dimensional Devices

CO3: Idea of two dimensional transformations, clipping and windowing and graphical input techniques

CO4: Understand three dimensional graphics and solid area scan conversion and hidden surface removal

Subject name - DATA STRUCTURE THROUGH C
Code - DSC 306

CO1: Describe how arrays, linked lists, stacks, queues, trees, and graphs are represented in memory, used by the algorithms and their common applications.

CO2: Discuss the computational efficiency of the sorting and searching algorithms.

CO3: Implementation of Trees and Graphs and perform various operations on these data structure.

CO4: Understanding the concept of recursion, application of recursion and its implementation and removal of recursion. Identify the alternative implementations of data structures with respect to its performance to solve a real world problem

Subject name - GRAPHICS PROGRAMMING USING OPENGL &OTHERS
Code - PHP 307

CO1: Ability to learn about Graphics Systems and Models, Graphics Programming: Getting started with Open GL, Input and Interaction in OpenGL

CO2: Idea of Geometrical Objects and Transformations in 2D and 3D, homogeneous coordinates,matrix representation, windows and viewports,Viewing in 3D, projections, hidden surface removal,Light, shading and materials. Illumination and Shading, light sources

CO3: Able to learn about Vertices to Fragments: modeling, geometry processing, rasterization, fragment processing. Clipping, hidden surface removal, antialiasing.

CO4: Understand the idea of Modelling Techniques, trees, scene graphs, Curve and surface representation, Advanced rendering techniques.

FORTH SEMESTER

Subject name - Advanced Data Structure
Code - ADS 401

CO1 Able to learn basic functions, member class, pointer, friend functions, dynamic memory allocation and deallocation (new and delete), exception handling.
CO2 can learn function and operator overloading, runtime polymorphism using virtual functions, abstract classes, streams I/O.
CO3 Understand the use and needs of Algorithms, performance analysis- time complexity and space complexity. And its applications
CO4 Can understandBinary Search Trees, Definition, ADT, Implementation, Operations- Searching, Insertion and Deletion, AVL Trees, Definition, Height of an AVL Tree, Operations – Insertion, Deletion and Searching.

Introduction to Game Development (DTM 402)
CO1 Introduction to Unity and C#, how to use the Unity editor, and how to work with Unity objects through code.

CO2 Classic Game Project, Structure: Students will work in pairs to create a game prototype.

CO3 Students will create a game like, pressing the jump button for the same amount of time produces the same upward acceleration, jump height, and downward deceleration as seen in the original game.

CO4 Final Game Project for students,Structure: Students will work in pairs to create an original game prototype.

Subject name - Mobile Application Development

Code - CGA 403

CO1 Can learn the basic introduction part of Android Development Environment, . Frameworks and Tools.

CO2 Students can learn Text-to-Speech Techniques Designing the Right UI Multichannel and Multimodal UIs and Services, Successful Mobile Development.
.

CO3 Get idea about Communications Via Network and the Web,

CO4 Understand the Graphics and UI Performance related to android.

Subject name - AI Basics (Problem Solving, Planning, Uncertain Knowledge & Reasoning, Learning)

Code - AIB 404

CO1 what Artificial Intelligence is, and what disciplines it encompasses. The scope, goals, and policies of the course will also be introduced.

CO2 Students will learn Logic Introduction to logic-based problem solving.

CO3,Students will introduce with local search algorithms, and discuss their advantages and drawbacks. We will cover classic local search techniques, as well as some evolutionary computing techniques, focusing on the Genetic Algorithm for search.

CO5 discuss unsupervised and minimally supervised learning, as well as starting to discuss Reinforcement Learning, Uncertainty & Probabilistic Reasoning.

Subject name - Searching & Optimization

Code -ISO 405

CO1 Will learn Basics for SEO, SEO Research & Analysis

CO2 Understand the concepts of On Page and Off Page optimization and Website Design SEO Guidelines.

CO3 Google Analytics and Web Master tools idea and applications.

CO5 Understand SEO Tools, Tracking and Reporting.

Subject name - Advanced data structure programming
Code - ADP 406

CO1 Idea about Abstract data types (ADTs), vector, list, deque, stack, queue, graph, digraph, table, map (associative array), priority queue, sets, trees. Etc.

CO2 Understand different Algorithms for Efficient program design requires good matching of data structure. Algorithm design, complexity analysis and correctness proof form important components in study of algorithms.

CO3 Will learn Generic, which teaches coding for re-use of both data structures and algorithms in C++. Provide a description and rationale for the course indicating where it fits into the overall intellectual area.

Subject name - GAME & MOBILE APPLICATION DEVELOPMENT-1
Code - GMD 407

CO1UnderstandIntroduction and Course Overview**,** Mobile game development overview**,** Play some selected mobile games**,** ·Design Document Overview (Premise, Pitch,Story, Gameplay Breakdown, Critical Functions of play, Level walkthrough, Resources, Asset List)**,** Project Plan/Design finalization etc.

CO2UnderstandStudio Sessions (In studio sessions, student game development teams will develop and implement their game designs.)**S**tudio Sessions (In studio sessions, student game development teams will develop and implement their game designs.)Basic wireless Networking walks through Studio Sessions (In studio sessions, student game development

CO3 Learn Mid-term demo of developed games - all students in all teams must be present for the in-class demonstration

CO4Idea of Reasonable hours of gameplay to be expected from gameStudio Sessions (In studio sessions, student game developmentteams will develop and implement their game designs.)Studio Sessions (In studio sessions, student game development teams will develop and implement their game designs.)

FIFTH SEMESTER

Subject name - Computer Vision & Pattern Recognition (Image Processing)
Code - CVP 501

CO1 Basic idea of Filtering, Image Representations, and Texture Models Color Vision multi-view Geometry.

CO2 Understand Projective Reconstruction, Bayesian Vision; Statistical Classifiers, Clustering & Segmentation; Voting Methods

CO3LearnTracking and Density Propagation **and** Visual Surveillance and Activity Monitoring

CO4Core understanding of Medical Imaging**,** Image Databases**,** Image-Based Rendering

Subject name - Natural Language Understanding

Code - NLU 502

CO1 Introduction of Estimation Techniques, and Language Modeling parsing and Syntax.

CO2 Idea of all algorithms of NLP The EM Algorithm in NLP, Stochastic Tagging, and Log-Linear Models, Probabilistic Similarity Measures and Clustering.

CO3 Understanding of Machine Translation Discourse Processing: Segmentation, Anaphora Resolution, Dialogue Systems.

CO4 Understand basic Natural Language Generation/Summarization Unsupervised Methods in NLP

Subject name - Robotics & Perception

Code - RBP 503

CO1 Understanding the most common techniques used in the field

CO2 -Applying them on a variety of robotic platforms and gain experience

CO3 -Interacting with your peers about the material, polls, quizzes, and assignments

CO4 Evaluating your own progress in the course on a regular basis

Subject name - Knowledge based AI

Code - KAI 504

CO1 Introduction to KBAI and Cognitive Systems.

CO2 Will get idea and application of Common-Sense Reasoning and planning.

CO3 Learn Analogical Reasoning and Learning

CO5 Understand Visuospatial Reasoning,Design & Creativity, Metacognition

Subject name - Game AI
Code - GAI 505

CO1 Evaluate the relative benefits and drawbacks of different artificial intelligence techniques that can be used to solve similar computer game problems.

CO2 •Implement a variety of artificial intelligence and machine learning techniques for traditional and modern computer games.

Subject name - MATLAB PROGRAMMING

Code - MAP 506

CO1MA TLAB as a calculator variables and Functions Branching Statements Loops
Recursion and PlottingReview and Midterm Exam.

CO2 Representation of Numbers and Complexity, Linear Algebra, Least Squares Regression
Spring Break Interpolation and Series

CO3 Root Finding Numerical Differentiation and Integration Numerical Solutions to Ordinary Differential Equations Course Evaluation, Robot Tournament Awards Ceremony

Subject name - GAME & MOBILE APPLICATION DEVELOPMENT-2
Code - GMD 507

CO1Describe the basic components of an Android application

CO2 Define the lifecycle methods of Android application components

CO3 Describe the basics of event handling in Android

CO4 Describe the basics of graphics and multimedia support in Android

CO5 Demonstrate basic skills of using an integrated development environment (Android Studio) and Android Software Development Kit (SDK) for implementing Android applications Demonstrate through a simple application the understanding of the basic concepts of Android

SIXTH SEMESTER

PROJECT: (PRO 601)

CO1 Students have to prepare project on Android or iOS or Game.

CO2 They can prepare any small Game depend on their interested platform.

Program Outcome (PO) of BSc Gaming and Mobile Application

PO1 - BSc Gaming is a course that intends to make outstanding computer professionals. This program aims to organize young minds for the challenging opportunities within the IT industry.

PO 2 - Students will become ready to recognize & appreciate the role of computing during a variety of activities & application in the current society, including commerce, education & communication.

PO 3 - The curriculum prepares students for a career in the software industry by equipping them with the newest revolution in technology.

PO 4 - To develop skilled manpower within the various arenas of the software industry.

PO 5 - To enable students to pursue respectable careers through Executive Employment& Entrepreneurshipwithin the field of service sectors.

PO 6 - To develop the essential programming skills to enable students to create utility programs.

PO 7 - To work effectively both as a member and a team leader on multi-disciplinary projects.

PO 8 - Inculcates the power to research, identify, formulate, and develop computer applications using modern computing tools and techniques.

PO 9 - Improve communication skills in order to effectively present technical information in oral and written reports.

PO 10 - Prepares to design innovative methodologies for solving complex-real life problems for the betterment of the society.

PO 11 - Apply the knowledge of mathematics, science, engineering fundamentals to answer the complex engineering problems.

PO 12 - Design solutions for complex problem and organize the system components or processes that meet the precise needs.

PO 13 - Students can investigate large and sophisticated problems using various investigation techniques.

Program Specific Outcomes of BSc Gaming and Mobile Application

PSO 1 - Students will be prepared to understand, analyze and develop computer programs within the areas associated with algorithm, system software, application designing for efficient design of computer& mobile based system.

PSO 2 - Apply standard software engineering practices and methods in software project development using open-source programming environment to deliver top quality of product for business success.

PSO 3 - Student will be ready to know various issues, latest trends in technology development and there by innovate new ideas and solutions to existing problems.

PSO 4 - To prepare graduates who will have a successful career in software industry, government, academia, research, and other areas where computer& mobile applications are deployed.

PSO 5 - To cultivate an entrepreneurial spirit in the students & facilitate the development of a software entrepreneur.

HALDIA INSTITUTE OF MANAGEMENT, HALDIA, INDIA

DEPARTMENT OF OPTOMETRY

Course Outcome (CO) of Bachelor of Optometry

SYLLABUS: BACHELOR OF OPTOMETRY (1ST YEAR)

FIRST SEM:

Course code	Name of course	Description	Course Outcome
BO-101	Geometric optics (Optics I)	Light, Refraction by different surfaces and by different lens, Prism, Geometrical theory, Photometric quantities and units, Calculation of different optical laws.	1. Knowledge about light, its properties and different theories of it. 2. Understanding different laws of refraction and reflection on different surfaces. 3. Knowledge about different photometric quantities and units. And formulating different optical laws.
BO-102	Physiology (General)	Genetics, Blood vascular system, Cardiovascular system , Renal system, Neuro-physiology, Muscular physiology, Basic principles of Biology (Biophysical) and its application.	1. To understand the physiological circle of the body. 2. To understand and predict the body's responses to stimuli. 3. To understand how the body maintains different conditions within the narrow range of values in the presence of a continually changing environment.
BO-103	Anatomy (General)	Introduction of anatomy- gross human anatomy & their relations, The skeleton, Skull, Anatomy of Muscular system,	1. Providing knowledge in-depth instruction in the organization, structures,

		Anatomy of Nervous system, Embryology, Cell structure, Cell Division.	and functions of the human body. 2. Knowledge about different cells and embryology of human body.
BO-104	Basics of Biochemistry	Carbohydrate and its metabolic pathways, Amino acid, Protein and metabolic pathway, Oxygen transporting protein, Lipid, Hormone.	1. Understand the different biological phenomena at the molecular level. 2. Understand the fundamental chemical principles that govern complex biological systems.
BO-105	Professional Communication in English	• Grammar-structure of sentences etc. • Essay-Descriptive-Comparative-Argumentative etc. • Reading Comprehension from recommended text etc. biodata , Resume-curriculum vitae etc. • Report writing-structure, types of reports etc. • Communication-public speaking skills, features of effective speech etc. • Group discussions-principle-practice etc.	1. Develop knowledge, skills, and judgment around English communication. 2. Understand and apply knowledge of communication English that facilitate their ability to the different platforms.

SECOND SEMESTER

Course code	Name of course	Description	Course outcome

BO-201	Physical optics (optics II)	HUYGENS' principle & group velocity; Interference: Coherence; path and phase difference; • infringes; Young's double slit experiment- Fresnel's' biprism, Lloyds' error experiments; visibility of fringes. Newton's ring experiment; Color of thin films; Thin film antireflection wating and filters. Diffraction: Diffraction grating- reflection, transmission, amplitude & phase gratings (definitions in brief) Grating 10 dispersion & disperse power, spectral resolution; zone plates. Polarization ; Lumen method of lighting design utilization factor, light loss factor, Glare and glare index- disability glare- discomfort glare- control of glare- ; Daylight, its properties, Color lamp – Incandescent .lamps - low pressure Hg-lamps- Low-pressure NA- lamp - Typical applications. Recommended level of luminance for various including those in optometry and ophthalmology driving etc. VDU. Eye Protectors.	1. Knowledge about the efficiency of the lighting fixtures. 2. Conceptualize improvement and control the beam of light towards the place, and learn how to increasing the performance of the lighting fixtures. 3. Knowledge about avoiding the other things, direct glares towards different conditions in unwanted directions.

BO-202	Physiology (Ocular)	1. Cornea: 2. Uveal tissue: 3. Lens: 4. Aqueous humor: 5. Vitreous Humor: 6. Retina: 7. Optic Nerve: 8.Ocular Circulation: 9. Protective Mechanism of the eye 10. Intraocular pressure 11. Pupil 12. Light & Dark adaptation. 13. Accommodation 14. Visual acuity – 15. Color vision. 16. Ocular Nutrition	1. Knowledge in details about the key functions of various ocular structures. 2. Knowledge about different intraocular and extra ocular muscles and their functions. 3. Knowledge about the different mechanisms and visual processing which works behind the colorful vision. 4. Knowledge about the different visual cycles and ocular nutrition.
BO-203	Anatomy(ocular)	1. Embryology – 2. Orbit Bony orbit 3.Uveal Tract & its vascular supply: 4.Vitreous- 5. Sclera –. 6. Anterior chamber and its angle- 7. Retina & its vascular supply 8.The Ocular motor system. 9. The pupillary & ciliary muscle 10.The lachrymal appears 11. Anatomy of the Ocular Adnexa & glands; 12. Conjunctiva.	1. Understand and identify ocular structures around or within the eye. 2. Correctly identify external landmarks on, or around the eye. 3. Knowledge in details about the anatomical sections of different ocular tissues.
BO-204	Environment & Ecology	Module:1 General Introduction & Ecology , Module:2 Air Pollution and Control ,Water Pollution and Control Module:3 Land Pollution , Noise Pollution	1. Understand the distribution and abundance of living things in the physical environment. 2. Understand the environmental efforts on recovery of ecosystem. 3. Knowledge about to develop a population that is aware of and concerned

			about the environment and its associated problems.
BO-205	Computer Fundamentals & Programming	Basic computer Architecture: Fundamentals of Computers, Block diagram of PC, peripheral devices of PC and their functions Input/output : Input Devices, Output devices Processor and memory Storage Devices	1. Understanding the basic operations of computer system and computer application software. 2. Demonstrate a breadth and depth of knowledge in the discipline of computer programming.

Second year

THIRD SEMESTER

Course code	Name of course	Description	Course outcome
BO-301	Visual Optics (Optics III)	Schematic and reduced eyes and their properties. Optical Defects of the Eye. Emmetropia and ametropia. Presbyopia-near vision addition	1. Knowledge about the eye as an optical system. 2. Conceptualization about the different types of refractive error. 3. In depth knowledge about the skills to provide the good quality of optical vision depending on their respective problems.
BO-302	Lighting & The Eye	Eye and Vision. • Photometric quantities and units• Photometry-. • Calculation-Application of inverse square	1. Understanding in details, the relation between the light and vision.

		law and Cosine law- Matt surfaces- Lumen method of lighting. • Lighting Installation• Recommended level of illuminance for various including those in optometry and ophthalmology driving etc. • VDU-. • Eye Protectors	2. Knowledge about the different photometric quantities and units and its applications in daily life. 3. Knowledge about the different eye protectors and the proper applications of it relating to the particular ocular problems.
BO-303	Medical Pathology & Microbiology (General and Ocular)	1.Bacteria 2. Structure and functions of immune system 3. Virus 4.Immunity 5. Graft rejection 6. Inflammation 7. Antimicrobial chemotherapy. 8.Wound healing- 9.Hypersensitivity-Type I, II, III, IV 10.Autoimmunity-mechanism 11.HLA system 12.Disorders of growth-metaplasia,dysplasia,neoplasia 13.Circulatory disturbance Ocular Pathology	1. Knowledge to impart the basic principles of bacteriology, virology, mycology, immunology and parasitology including the nature of pathogenetic microorganisms. 2. Understand the pathogenesis due to different microorganisms, laboratory diagnosis, transmission, prevention and control of diseases common in the country.
BO-304	Pharmacology	Module:1 General Pharmacology: Module:2 Drug action on the nervous system Module:3 Ocular Module:4 Ophthalmic Drugs	1. Knowledge about the proper definition of the drug and its types and the different routes of administration of drugs.

			2. Knowledge about the relation and reaction of different drugs on human body. 3. Knowledge to provide or apply different drug-related information to the patient.
BO-305	Ophthalmic Instrumentation and Procedure –I	Module: 1 Telescopes: Optics & Dispensing, Color Vision Test, Radiuscope, Retinoscope, Module: 2 Standard Tests Charts: Visual Acuity, contrast sensitivity and projection chart, Autorefractometer-subjective and objective types, Ophthalmoscopes- direct and indirect types. Module:3 Slit lamp ,Biomicroscope, Keratometer, Lensometer Module: 4 Trial case lenses-best forms. Trial frame design. Cross cylinder.	1. Knowledge in details about the different ophthalmic instruments. 2. Depth knowledge about soft skills and patient management with the different instruments. 3. In depth knowledge to perform the different visual assessment by the different ophthalmic instruments.

FOURTH SEMESTER

Course code	Name of Course	Description	Crouse outcome
BO-401	Visual Optics (Optics IV)	• Correction of myopia. • Clear and blurred images in the reduced and simplified schematic eyes. Correction of spherical ammetropia	1. Learn the skills of objective measurement of different refractive errors.

		with contact lens. • Ammetropia. • Aphakia. • Astigmatism• Retinoscopy. • Review of subjective refractive methods. • Eye as an imaging instrument. Variation of visual performance with focus. Contrast sensitivity of the eye.	2. Provide the optimum power correction depending on the different refractive errors. 3. Knowledge how to provide clearest, brightest vision to the patient.
BO-402	OPTICAL & OPHTHALMIC INSTRUMENTATION & PROCEDURE –II	Principles, clinical use (methods) & significance of following instruments: • Tonometer –• Pachymeter • Devices for color vision testing. • Ultrasonography –. • F.F.A. • PAM. • Perimeter –. • LASER	1. Knowledge in details how to operate following instrumentation. 2. Application of the following instruments depending on the particular patient concern.
B0-403	Clinical refraction -I	Ophthalmic Case Historian Objective Refraction Subjective Refraction Binocular Distance Vision Near subjective refraction. Correction of Presbyopia Measurement of IPD and significance. Final discussion with the patient. Writing prescription of power and counseling	1. Learn the soft skills to gather optimum information and build adequate relationship with the patient. 2. Learn the subjective and objective processes to correct the different refractive errors. 3. Learn how to prescribe the power or different protective lenses depending on patients concern.

			4. Learn well how to counseling a patient.
BO-404	Ocular Disease I (Anterior Segment Disease)	• Anterior segment ocular diseases. • Disease of the • Diseases of the Lachrymal Apparatus • Disease of the Conjunctiva. • Disease of the Cornea • Disease of the Sclera- • Disease of the Iris. • Disease of the Cilliary Body. • Glaucoma. • Disease of the Lens. Phachoemulsification (ICCE, ECCE, IOL) . Small Incision Cataract Surgery (Manual Phacho).Intraocular Lens Implantation-AC+PC, IOL.	1. Knowledge about different pathological conditions of different eye structures. 2. Identify the causative factors behind the particular diseases. 3. Knowledge how to provide proper treatment and management to the particular problem. 4. Knowledge in details about the different surgeries of anterior chamber.
BO-405	Ophthalmic Lens & Dispensing Optics	. Module:1 Ophthalmic lens : 2.Spectacle lenses: 3.Current materials: Module:2 4.Lens types: 5.Opthalmic lens coating: 6.Absorptive lenses: Module:3 7.Impact resistant lenses: 8.Lens for special uses: 9. Fundamentals of Lens surfacing & quality. Module:4 Basics of dispensing:	1. Knowledge about the different types of lens, lens materials, lens types, lens coating. 2. Learn the uses of the different lenses depending of the respective concern. 3. Knowledge about the dispensing on basic, pediatric, occupational cases. 4. Learn how to give proper management

		Module: 5 4. Pediatric Dispensing & Management 5. Verification of trouble shooting of Lens & Frames 6. Occupational dispensing & its management	depending on the different patient concerns.

FIFTH SEMESTER

Course code	Name of Course	Description	Course outcome
BO-501	BINOCULAR VISION & OCULAR MOTALITY	Grades of binocular vision Dichoptic stimulation Binocular defects BINOCULAR VISION TEST Eye movements Physiology of ocular movement – Ocular movements Oculomotor system Converge through a spectacle lens. Prismatic effects in spectacle lenses.	1. Understand the anatomical and physiological relation between two eyes. 2. Learn to perform the different binocular vision test depending on the patient concern. 3. Learn different eye exercise to maintain binocular single vision. 4. Learn different applications of different exercise and management to provide the best vision.
BO-502	Contact Lens- I	Module:1 a) Contact lens history & development. b) Measurement of Contact lens c) Contact lens optics- Module:2 d) Classification of contact lens & its material (soft & RGP. f) Patient selection & prescreening.. Module:3 g) Fitting & Assessment of	1. Understanding the history of contact lens. 2. Knowledge about the advantages and disadvantages of contact lens. 3. Knowledge about the different manufacturing

		soft contact lens & RGP. h) care & maintenance of Soft contact lens and RGP. i) Writing contact lens prescription and order. Module:4 j) Modification of finished RGP lens. k) Checking the parameters	methods of different types of contact lens. 4. Learn how to patient select for contact lens. 5. Learn how to do pre and post screening of different types of contact lens. 6. Learn how to care and maintain the different lens. 7. Knowledge about how to prescribed different types of contact lens depending the parameters and counseling the patient.
BO-503	Clinical Refraction -II	Module:1 a) Assessment of children Vision & Pediatric evaluation, diagnosis & management. b) Amblyopia. c) Neuro-Optometric Rehabilitation. Module:2 d) Evaluation, Diagnosis & Optometric management of special children e) Visual Disorders in senior citizens, evaluation, diagnosis & management. f) Sports vision. Module:3 g) Refraction in special cases h) Behavioral optometry i) Nystagmus and its optometric management	1. Knowledge to neutralization of the individual's refractive errors. 2. Learn to determine and correct the different refractive errors of child. 3. Learn to build relations with special child and give management particularly on their concern. 4. Learn the different soft skills to evaluate and diagnosis the problems depending of the special cases. 5. Learn different management or treatment or counseling procedure depending on the individual concern.

BO-504	Ocular Disease –II (Posterior and Neuro eye disease)	Module: 1 Diseases of the Vitreous Humor-, Methods of clinically assessing the posterior segment. Module: 2 Disease of the Retina, Disease of the Optic Nerve. Module:3 PUPILLARY REACTION Module:4 Visual Pathway defects, Migraine, Myotonic dystrophy, & blepharospasm NEUROFIBROMATOSIS-types and feature	1. Understanding the different pathology of posterior ocular segment. 2. Knowledge to identify the problematic ocular region. 3. Knowledge how to provide proper treatment and management to the particular problem. 4. Knowledge in details about the different surgeries of posterior chamber.
BO-505	Low Vision Aids & Visual Rehabilitation	a) Definition-old, new, proposed b) Grades of low vision c) Statistics/ Epidemiology d) Relation between disorder, impairment & handicapped e) Low vision optics f) Low vision examination: g) Assessment & prescription of low vision devices h) Overview of Rehabilitation Services: Overview of systematic / retinal diseases in relation to low vision: j) Counseling of low vision patient/ parents/ guardians/relatives.	1. Understand the definition of "Low Vision". 2. Knowledge about the leading causes and pathophysiology of visual loss. 3. Learn the soft skills and techniques for preventing and treating the visual loss. 4. Understand the signs of and treatments for common eye disorders in older persons. 5. Learn the skills or techniques for the proper counseling or rehabilitation.

SIXTH SEMESTER

Course code	Name of Course	Description	Course outcome
BO-601	Systemic condition & the eye	Module: 1 1. Arterial Hypertension, 2. Diabetes mellitus, 3. Malignancy. Module: 2 4. Connective Tissue Disease, 5. Thyroid Disease Module: 3 6. Tuberculosis, 7. Tropical Disease and the Eye Module: 4 8. Genetic disorders and the eye. 9. Phacomatoses & the eye.	1. Knowledge about different pathological conditions of different body structures. 2. Identify the causative factors behind the particular diseases. 3. Knowledge how to provide proper treatment and management to the particular problem.
BO-602	Public Health and Community Optometry	Module: 1 1. Concept of public health. 2. Principles of primary, secondary and tertiary care. 3. Planning of health services. Module: 2 4. Health Policies 5. Role of Optometrist in managing eye camps 6. NPCB and refractive blindness – optometrist's role as primary health care provides. 7. Health care's insurance including role of TPA. Module:3 8. Ocular emergencies – a) Foreign body b) Eye Pain c) Watering d) Injuries-perforating, none perforating & chemical 9. Role of International	1. Knowledge about the impact of the healthcare service or intervention on the health status of patients. 2. Understanding about high-level statements of what health and social care partners are attempting to achieve through integration and ultimately through the pursuit of quality improvement across health and community care. 3. Learn how to advise the proper treatment or management to the ocular emergency cases.

		organization and NGOs in eye care	
BO-603	BIOSTATISTICS	Introduction about Biostatistics,. 2. Classification & Presentation of data. 3. Descriptive statistics: 4. Sampling Statistics: 5. Probability Distribution. 6. Experimental Design7. Applications:	1. Knowledge about recognize the definition of statistics, its subject and its relation with the other sciences. 2. Learn to restate the principal concepts about biostatics. 3. Learn how to collect data relating to variable/ variables which will be examined and calculate descriptive statistics from these data. 4. Knowledge to identify the data relating to variable / variables. 5. Knowledge about the field of study that links statistics and biology.
BO-604	Specialized Contact lens	Module: 1 1. Contact lens fitting in astigmatism. 2. Contact lens fitting in keratoconus. 3. Contact lens fitting in children. Module: 2 4. Cosmetic and prosthetic contact lenses. 5. Contact lens – Toric, Bifocal, Multifocal. 6. Therapeutic lenses / Bandage lenses. Module: 3 7. Recent advances in contact lenses. 8. Contact lens complications and	1. Learn how to patient select for specialized contact lens. 2. Learn how to do pre and post screening of different types of contact lens. 3. Learn how to care and maintain the different lens. 4. Knowledge about how to prescribed different types of contact lens depending the

		their management. & conformers.	parameters and counseling the patient. 5. Knowledge about the different lens complications.
BO-605	Professional Practice Management	Module: 1 1. Law & Optometry Module: 2 2. Basic Accountancy Module: 3 3. Public relations. Module: 4 4. Case Study:- (at least ten Cases) as per format	1. Knowledge about the different laws about the optometry. 2. Learn the soft skills to build a good relation with the public or patients. 3. Knowledge in depth, about the management of different types of problem of patient concern. 4. Learn how to reiterate the main argument supported by the findings from the case study.
BO-606	Applied optometry and Orthoptics	Module: 1 1. ORTHOPTIC INSTRUMENTS ♦ Prism Bar ♦ Synoptophore ♦ Maddox Wing 30 ♦ Maddox Rod ♦ Red Green Goggles ♦ Hess Screen ♦ Risley Prisms Module: 2 2. Investigative procedures ♦ Motor signs in squint A) Head position: Face turn, chin position, Head tilt. B) Cover test & cover-uncover tests C) Maddox wing to assess	1. Understand or identify the different type of problems depending on the patient concern. 2. Learn soft skills and patient management. 3. Learn the different soft skills to evaluate and diagnosis the problems depending of the special cases. 4. Learn different management or treatment or counseling

		heterophoria. ♦ Assessment of degree of squint a) Hirschbag test. b) Prism bar test. c) Krimskey test d) Synoptophore test Module:3 ♦ Various Cranial nerve palsy – 3 rd, 4th and 6th ♦ Assessment of ocular motality status a) Hess chart b) Diplopia testing c) Bielschowskys Head tilting test ♦ Assessment of visual sensory status in squint. Amblyopia Suppression Binocular single vision – SMP, Fusion, and Stereopsis. ♦ Mechanisms leading to squint Types of squint – a) latent / manifest b) horizontal / vertical c) paralytic / concomitant Module:4 Orthoptic Treatment Procedures Management of – Convergence insufficiency Amblyopia Suppresion ARC Use of prism - For Exercise & correction Management of AMBLYOPIA . Prosthetic eye fitting procedures	procedure depending on the individual concern. 5. Learn how to perform the different binocular vision test depending on the patient concern. 6. Learn vision therapy to maintain or improve binocular vision. 5. Learn different applications of different exercise or vision therapies and management to provide the best vision.

Program Outcome (PO) of Bachelor of Optometry

The World Council of Optometry which is a member of the World Health Organization defines Optometrists as "the primary healthcare practitioners of the eye and visual system who provide comprehensive eye and vision care, which includes refraction and dispensing, detection/diagnosis and management of disease in the eye, and the rehabilitation of conditions of the visual system."

An optometrist is a primary health care provider that specializes in eye care and visual health.

An optometrist is an essential health care practitioner who plays an important role in preserving eye health& overall well-being of a patient by:

- Diagnosing, treating, and managing disorders of the eye
- Providing pre- and post-operative care to patients undergoing ophthalmological surgery
- Detecting critical health issues like diabetes, hypertension, and even thyroid disease

- Providing visual correction, including glasses or contact lenses
- Diagnosing different binocular anomalies & giving appropriate therapy to cure or control the conditions
- Providing low vision aids & rehabilitation
- Counsel patients concerning surgical and non-surgical options that meet their visual requirements related to their careers, professions and routine.

It is our aim to prepare the students in such a way that after completing the course the students will be able to provide the best possible treatment & service to the society. They should be able to gather a systematic understanding of all necessary theoretical & clinical knowledge so that they can work efficiently in every possible setup, be it hospital, community, retail or commercial set up.

Objectives:-

1. To prepare the students as independent primary eye care professionals efficient enough to provide best clinical services to the society.
2. To create experts in judging, evaluating, planning & providing the eye care requirements of the people.
3. To develop the students' interests in life- long learning for personal & professional improvement.
4. To make leaders& team workers who will work collaboratively with other health care providers for the smooth delivery of treatment procedures for the best interest of the patients.
5. To develop compassionate professionals ready to participate in community optometry programs to play the appropriate part in VISION 2020 program & the National Program for the Prevention of Blindness & take part in community vision screening camps to distinguish the common causes of blindness & to help control blindness in Indian society.
6. To create teachers with profound theoretical & clinical knowledge who will take part in futuristic research programs to develop the science of optometry furthermore.

Program Specific Outcome (PSO) of Bachelor of Optometry

To serve the public and the profession well, the graduate in Bachelor of Optometry must embrace and demonstrate the ethical and professional standards appropriate

to being recognized as a healthcare provider. The Optometry degree program is only the first step in a life-long commitment to self-directed learning and continual professional improvement. The School of Optometry shall ensure that after graduation in Bachelor of Optometry each student will have demonstrated critical professional and personal attributes, including the following:

Personal attributes:

- A commitment to life-long learning and providing the highest standard of care
- The ability to acquire, analyze and apply new information while making reasonable and informed decisions that are consistent with the interests and needs of the patient and broader community.
- Problem-solving and critical-thinking skills that integrate current knowledge, scientific advances and the human/social dimensions of patient care to assure the highest quality of care for each patient.
- The ability to recognize personal limitations regarding optimal patient care and to work with the broader health care community in providing the best care possible.

Professional attributes:

- an understanding of professional ethics and challenges to the optometric profession posed by conflicts of interest inherent in health care delivery, and the ability to incorporate those principles into decisions affecting patient care, always keeping the patient's welfare foremost. Patients should get equal treatment irrespective of any social or socio-economic differences.
- Professionalism, by demonstrating honesty and integrity in all interactions with patients and their families, colleagues, and others with whom the optometrist must engage in his/her professional life.

- Respect for the dignity of every patient and a commitment to empathetic and confidential care.

- A commitment to work as an integral member of the larger inter professional health care team to improve patient care outcomes.

- A commitment to be actively involved in organized optometry and the community.

- To be able to become an entrepreneur as an optometrist.
  The graduate in Bachelor of Optometry must be knowledgeable to provide eye and vision care to their patients, they must have an established knowledge of the basic and clinical sciences. The foundation must be broad and include the biological, medical, vision, and optical sciences, as well as a basic understanding of the health care delivery system. The new post-graduate in Master of Optometry must recognize the dynamic nature of knowledge and possess the commitment and skills needed to responsibly assess and apply new information and treatment strategies throughout his/her career. The school of optometry shall ensure that before graduation each student will have demonstrated knowledge of:

- Basic organ systems, with special emphasis on the ocular and visual system, and their inter-relationships to the body as a whole

- The cellular, the molecular and genetic basis of the development, physiology, pathology, and treatment of eye disease

- The structures and processes contributing to the development of refractive error and other optical and perceptual abnormalities of the visual system (This includes vision function with respect to deviation and enhancement such as, but not limited to, strabismus, amblyopia, oculomotor function, accommodation, and visual perception.)

- The optics of the eye and ophthalmic lens systems (including spectacles, contact lenses and low vision devices) used to correct refractive, oculomotor and other vision disorders

- The various processes and causes that lead to dysfunction and disease, and the effect that these processes can have on the body and its major organ systems, with special emphasis on the ocular and visual systems

- Mechanisms of action of the various classes of pharmaceutical agents, their interactions and their safe and effective use for the treatment of diseases and conditions affecting the eye and visual system

- Vision therapy and other rehabilitative methods used for the management of common visual disorders

- The psychosocial dynamics of the doctor/patient relationship and understanding of the social, psychological and economic forces affecting diverse patient populations social, psychological and economic forces affecting diverse patient populations social, psychological and economic forces affecting diverse patient populations social, psychological and economic forces affecting diverse patient populations

- Community health care resources and delivery systems to improve care

- Practice management structures and strategies as they pertain to the various practice settings.

- The graduate in Bachelor of Optometry must be capable to provide the highest quality of care to all their patients, they must possess appropriate cognitive and motor skills needed to prevent, diagnose, treat and manage clinical conditions that are within the scope of their professional responsibilities. The School of Optometry shall ensure that before post-graduation each student will have demonstrated the following:

- All the skills required for the diagnosis, triage, management and/or treatment of common visual conditions, including or resulting from: -refractive anomalies -abnormalities of accommodation, monocular or binocular vision skills, oculomotor and sensory/perceptual dysfunctions of ocular disease and

trauma -prior ocular surgery and/or laser intervention -systemic disease -environmental or occupational conditions

- The ability to order and interpret frequently needed laboratory and diagnostic procedures

- The critical-thinking skills needed to assess the patient's visual and physical status and to interpret and process the data to formulate and execute effective management plans

- The ability to prescribe or use ophthalmic materials, contact lenses, vision therapy, low vision devices, to treat and manage vision disorders and disease

- An understanding of nutritional influences on ocular physiology and systemic health and disease

- The ability to understand, evaluate and apply the use of contemporary imaging technologies in the provision of eye and vision care

- The ability to recognize and initiate the coordination of patient care requiring advanced medical, systemic, inter-professional or specialty care

- The ability to recognize life-threatening conditions and to initiate immediate intervention

- Effective communication skills, both oral and written, as appropriate for maximizing successful patient care outcomes

- The ability to appropriately use all resources, including the use of ancillary personnel, intra- and inter-professional collaboration, co-management, and referral, in ensuring the best quality patient care

- The ability to access evidence-based knowledge (including through the use of information technology) and manage information, and to apply that information in making decisions about patient care and health care delivery

- The ability to embrace the cultural diversity and individual differences that characterize patients, populations and the health care team

- The ability to work in cooperation with those who receive care, those who provide care, and others who contribute to or support the delivery of prevention and health services by working with interdisciplinary and multidisciplinary sectors. Program structure: Bachelor of Optometry is a four-year course that encourages the students in active learning by involving them in a refresher course, blended course, self-study using library resources, teaching and clinical assignments, patient care, workshops, hands-on training, educational seminars, and industry interactions. For helping the students in deep learning, apart from regular lectures, guest faculties, field experts, and industry officials are invited and they interact with the students. Teaching methodology and research methodology are being taught by expertise.

- Community health care resources and delivery systems to improve care

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