### LIST OF OPEN ELECTIVES
TO BE OFFERED IN THE EVEN SEMESTER (CEG / ACT CAMPUS)

#### Faculty of Civil Engineering

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#### B.E. Civil Engineering (Tamil Medium)

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#### Department of Industrial Engineering

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OBJECTIVES:

- To understand the dynamics of earth and its response, effect on different earth structures and measures to mitigate the effects.

UNIT I SEISMOLOGY AND EARTHQUAKE

UNIT II BASICS OF VIBRATION

UNIT III WAVE PROPAGATION AND DYNAMIC SOIL PROPERTIES

UNIT IV STRONG GROUND MOTION AND SEISMIC HAZARD ANALYSIS
Strong Motion measurement – Ground Motion parameters – Estimation of ground motion parameters - Spatial variability of ground motion - Identification and evaluation of earthquake sources – Deterministic Seismic Hazard Analysis - Probabilistic Seismic Hazard analysis.

UNIT V DESIGN GROUND MOTION
One dimensional ground response analysis – Two and three dimensional analysis – Effect of local site condition on ground motion – Design parameters – Development of design parameters – Development ground motion time histories – Application of software package – Codal recommendations .

OUTCOME:

- Students are able to develop the design ground motion for an area based on bed rock motion and types of soils, so that the effects of earthquakes can be mitigated.

REFERENCES:

OBJECTIVES

- This course gives an opportunity for the students to know the various optimization techniques which can be adopted in design, construction and maintenance of any engineering system. Linear Programming, Non Linear Programming, Dynamic Programming techniques are explained in detail. Advanced optimization techniques such as Genetic algorithm, Evolutionary search algorithm, Simulated Annealing and Ant Colony Optimization are briefly introduced.

UNIT I INTRODUCTION


UNIT II LINEAR PROGRAMMING (LP)


UNIT III NONLINEAR PROGRAMMING


UNIT IV DYNAMIC PROGRAMMING AND NETWORK ANALYSIS


UNIT V NON-TRADITIONAL METHODS


TOTAL: 45 PERIODS

OUTCOMES:

- Upon completion of the course, the student will be able to understand importance of optimization of industrial process management, apply basic concepts of mathematics to formulate an optimization problem analyze and appreciate variety of performance measures for various optimization problems.

TEXT BOOK:


REFERENCES:

OBJECTIVE:
- To introduce students about the basic construction practices such as construction materials, metals, construction methods, modern materials and service requirements commonly used in buildings.

UNIT I CONSTRUCTION MATERIALS
Stone as building material - Criteria for selection - Bricks - Classification - Bricks for special use - Cement - Ingredients - Types and Grades - Aggregates - Light weight concrete blocks - Concrete - Ingredients - Other types of Concrete - Durability of Concrete.

UNIT II METALS
Steel and Cast Iron- Composition - Market forms - Aluminum and its alloys - Composition - Aluminium composite panel - Uses - Market forms - Copper and its alloys - Zinc and other metals.

UNIT III CONSTRUCTION TECHNIQUES
Types of Foundations - Stones masonry - Brick masonry - Composite masonry - Cavity walls - Formwork - Shoring – Scaffolding - Selection of construction equipment for various works.

UNIT IV MODERN MATERIALS
Glass - Ceramics - Fibre glass reinforced plastic - Fibre textiles - Composite materials - Geomembranes and Geotextiles for earth reinforcement - floor finish materials for residential/industrial buildings

UNIT V SERVICE REQUIREMENTS
Painting, Distempering and white washing - Fire Protection - Thermal insulation - Ventilation and air conditioning - Acoustics and Sound insulation - Damp proofing - Termite proofing.

OUTCOMES:
- Students completing the course will have understanding about the basic building materials and different construction techniques and practices. They will be able to plan the requirements of any construction project.

TEXTBOOKS:

REFERENCES:
OBJECTIVE

- To understand the basics of traffic engineering, planning, operation and its latest development.

UNIT I TRAFFIC CHARACTERISTICS 9
Classification of Urban and Rural roads - overall view of road geometric elements -Characteristics of Road user, Vehicle, Environment – traffic parameters-Fundamental diagram of traffic flow- Traffic Ethics

UNIT II TRAFFIC MANAGEMENT 9
Traffic signs and Markings -Priority rules - One way street system, exclusive traffic lanes, tidal flow operation, Transport System Management (TSM) and Transport Demand Management (TDM)- Traffic Impact Assessment

UNIT III ROAD ACCIDENTS 9
Road accidents statistics and scenarios- cause, effect, prevention and cost- accident data collection- Road safety audit and Its importance –case study

UNIT IV DRIVER TRAINING 9
Role of Drivers in safe driving -Driver training methods - Driving Simulator- Re-training for accident prone drivers- Introduction to Motor Vehicle Act- Amendments

UNIT V INTELLIGENT TRANSPORTATION SYSTEM 9
Introduction to ITS- Advanced Traveler Information system- - Electronic toll collection- Case study

TOTAL: 45 PEIRODS

TEXT BOOK:

REFERENCES:
UNIT II  Transformations 9
Coordinate systems for Photogrammetry - Map projections, Datum and conversions- 2D
Coordinate transformations-Collinearity and Space resection-Analytical stereomodel and relative
orientation- Three dimensional Coordinate transformations

UNIT III  Mapping 9
Concepts of interior, relative, absolute orientation – direct georeferencing – object, image relation -
collinearity and coplanarity conditions – effect of orientation elements - Elements and principles of
Aerotriangulation – Independent Models-Simultaneous bundle adjustment - ortho mosaic

UNIT IV  Digital Image Handling 9
Digital cameras- CCD camera- full frame, frame transfer, interline CCD camera - Time delay
integration- spectral sensitivity of CCD sensor – geometry and radiometry problem of CCD image -
Image Generation - Data Compression - formats – Georeferencing - Stereo viewing - Display
modes - image matching techniques - Image measurements.

UNIT V  Applications 9
Review of space resection & intersection - Automatic tie point generation - Automatic Block
triangulation, feature collection and plotting—DEM Generation - accuracy of DEMs, Orthorectification - regular & irregular data collection methods - contour generation - watershed
delineation - Satellite Photogrammetry principles – missions - stereo image products.

Total: 45 Periods

Outcomes:
On completion of this course, the student shall
• Acquire knowledge about photogrammetry principles, methods and products generation
strategies in both Analytical and digital photogrammetry system.
• Understand the problem related to generation of products and solving them.

References:
0070713464, 9780070713468
2. Karl Kraus, Photogrammetry, Fundamentals and standard processes, Dümmler, 2000,
ISBN 978 3 11019007 6
0 748 40944 0
4. Francis h. Moffitt, Edward M. Mikhail, Photogrammetry, TBS The Book Service Ltd, 1968,
ISBN 13: 9780700221370

GI7692  TOTAL STATION AND GPS SURVEYING  L T P C
3 0 0 3

Objectives:
To understand the working of Total Station and GPS equipment and solve the surveying
problems.

UNIT I  Fundamentals 9
Methods of Measuring Distance, Basic Principles of Total Station, Historical Development,
Classifications, applications and comparison with conventional surveying. Global Navigation
System, Regional Navigation System and SBAS - Basic concepts of GNSS, Glonass,IRNSS -
Historical perspective and development - applications - Geoid and Ellipsoid- satellite orbital motion
- Keplerian motion – Kepler’s Law - Perturbing forces - Geodetic satellite - Doppler effect-
Different Coordinate and Time System.
UNIT II  ELECTROMAGNETIC WAVES  
Classification - applications of Electromagnetic waves, Propagation properties, wave propagation at lower and higher frequencies- Refractive index (RI) - factors affecting RI-Computation of group for light and near infrared waves at standard and ambient conditions-Computation of RI for microwaves at ambient condition - Reference refractive index- Real time application of first velocity correction. Measurement of atmospheric parameters- Mean refractive index- Second velocity correction -Total atmospheric correction- Use of temperature - pressure transducers.

UNIT III  ELECTRO OPTICAL AND MICRO WAVE SYSTEM  

UNIT IV  GPS SATELLITE SYSTEM  
GPS - Different segments - space, control and user segments - satellite configuration - GPS signal structure - Orbit determination and representation - Anti Spoofing and Selective Availability - Task of control segment - GPS receivers.

UNIT V  GPS DATA PROCESSING  
GPS observables - code and carrier phase observation - linear combination and derived observables - concept of parameter estimation – downloading the data -data processing – software modules -solutions of cycle slips, ambiguities, RINEX format. Concepts of rapid, static methods with GPS - semi Kinematic, pure Kinematic and Real time kinematic methods -basic constellation of satellite geometry & accuracy measures - applications- use of different softwares.

TOTAL : 45 PERIODS

OUTCOMES:
On completion of this course students shall be able to
• Understanding the concepts of Electromagnetic waves and impact of Refractive Index.
• Work with Electro optical and microwave Total Station and understand error sources.
• Understand the advantages of electronic surveying over conventional surveying methods
• Understand the working principle of GNSS , it”s components, signal structure, and error sources
• Understand various GNSS surveying methods and processing techniques used in GNSS observations
• Familiarise various areas of GNSS applications and new developments.

REFERENCES:
OBJECTIVES:
At the end of the course the students would be exposed to fundamental knowledge
- In Farm Management, and Basic Concept of Farm Management. Product Relationship and Law of diminishing return
- Type of resource and Investment analysis in agriculture sector
- Farm financial analysis, Investment and Budgeting for farms

UNIT I INTRODUCTION & SCOPE OF FARM MANAGEMENT
Farm Management - definition and scope - relationship between farm management and other sciences - Characteristics and significance. Farm management decision making process. Basic concepts in farm management. Factor and Farm layout - Farm records and Accounts - Farm Appraisal Techniques. Valuation and Depreciation – Factor

UNIT II LAWS OF ECONOMICS

UNIT III COST CURVES

UNIT IV MANAGEMENT OF RESOURCES
Types of uncertainty in agriculture - Managerial decisions to reduce risks in production process. Management of resources - Types of resources - land, labour, capital, and measurement of their efficiencies - mobilization of farm resources. Cost of maintenance of machinery and break even analysis - Estimation of cost of production. Dairy and poultry products - Investment analysis. Undiscounted and Discounted methods.

UNIT V FINANCIAL ANALYSIS

TOTAL: 45 PERIODS

TEXT BOOKS:
REFERENCES:

Dairy Engineering (AI7692)

OBJECTIVES:
At the end of the course the students would be exposed to fundamental knowledge in
- Properties of Milk
- Processing of Milk and Manufacture of dairy products
- Sanitation and effluent treatment in dairy industry

UNIT I  PROPERTIES OF MILK

UNIT II  PROCESSING OF MILK
Processing of Milk-Staining-Filtering and Clarification of Milk-cream separation Pasteurization.-Homogenization-Methods and Equipments-Emulsification-Fortification

UNIT III  DAIRY PRODUCTS
Manufacture of dairy products-Butter properties-Process involved in Manufacture of butter-Market Grades of butter-Manufacturing of Cheese-Classification-Composition Methods and Equipment-Ghee Processing-Methods and Equipments-Processing of ice cream-Classification-Composition-Methods and Equipments.

UNIT IV  MILK POWDER PROCESSING

UNIT V  SANITATION AND EFFLUENT TREATMENT
Processing of Milk Products-Skim milk-Butter milk-Flavoured Milk, whey, casein, yoghurt and panner. Packaging of Milk and Milk Products-Fillers-Cippers-pouch fillers Transporation of Milk-Flexible paucher Milk-Storage Tanks-Storage of icecream etc. in freezers-Cleaning and Sanitation -Importance - Detergents - Properties - Cleaning procedures-Cleaning in place-Sanitation-Dairy effluent treatment and disposal.

TOTAL: 45 PERIODS

TEXT BOOKS:

REFERENCE:
AIM
To introduce Microprocessor Intel 8085, 8086 and the Micro Controller 8051

OBJECTIVES
- To study the Architecture of 8085, 8086 & 8051.
- To study the addressing modes & instruction set of 8085, 8086 & 8051.
- To introduce the need & use of Interrupt structure.
- To develop skill in simple program writing.
- To introduce commonly used peripheral/ interfacing ICs

UNIT I 8085 PROCESSOR

UNIT II PROGRAMMING OF 8085 PROCESSOR
Instruction format and addressing modes – Assembly language format – Data transfer, data manipulation & control instructions – Programming: Loop structure with counting & Indexing - Look up table - Subroutine instructions stack. 16

UNIT III PERIPHERAL INTERFACING
Study of Architecture and programming of ICs: 8255 PPI, 8259 PIC, 8251 USART, 8279 Keyboard display controller and 8253 Timer/ Counter – Interfacing with 8085 - A/D and D/A converter interfacing.

UNIT IV MICRO CONTROLLER 8051

UNIT V MICRO CONTROLLER PROGRAMMING & APPLICATIONS
Data Transfer, Manipulation, Control & I/O instructions – Simple programming exercises key board and display interface – Closed loop control of DC shunt motor- stepper motor control.

TOTAL: 45 PERIODS

TEXT BOOKS:
1. R.S. Gaonkar, ‘Microprocessor Architecture Programming and Application’, Wiley Eastern Ltd., New Delhi,

REFERENCES:
UNIT I  ELECTRIC DRIVES AND TRACTION  9

UNIT II  ILLUMINATION  9

UNIT III  HEATING AND WELDING  9

UNIT IV  REFRIGERATION AND AIR CONDITIONING  9

UNIT V  ECONOMICS OF ELECTRICAL ENERGY UTILIZATION  9

TEXT BOOKS:

REFERENCES:
AIM

- To impart knowledge on basic and advanced concepts of Automobile Engineering.

UNIT I INTRODUCTION
Types of automobiles, vehicle construction and different layouts, chassis, frame and body, resistance to vehicle motion, Specifications, Performance Parameters.

UNIT II POWER SOURCES
Reciprocating Engine systems - classification, SI and CI engines - materials, construction and principle of operation, Performance and emission characteristics. Pollutants - Sources of Carbon Monoxide, unburnt hydrocarbon, Oxides of Nitrogen, Smoke and particulate matter. Control methods - Three way catalyst, Diesel particulate filter and Exhaust gas recirculation technique. Port and direct gasoline injection systems for SI engines, Electronic ignition systems common rail direct injection system, hybrid and electric vehicles

UNIT III TRANSMISSION SYSTEMS
Clutch-types and construction, gear boxes, manual and automatic, propeller shaft, slip joints, universal joints, Differential, and rear axle.

UNIT IV STEERING, BRAKES AND SUSPENSION SYSTEMS

UNIT V SAFETY AND COMFORT SYSTEMS
Engine Cooling system, Airbag System, Reverse parking system, Anti-collision system, Traction control system, cruise control system, driverless cars.

TOTAL:45 PERIODS

OUTCOME:
- On completion of the course, the students will be able to apply their knowledge in the design of automobile systems.

TEXT BOOK:

REFERENCES:
OBJECTIVES:

- To understand the various methods of energy auditing and management.
- To understand the various conservation opportunities of utilities.

UNIT I INTRODUCTION


UNIT II ENERGY COSTING AND ECONOMICS


UNIT III ELECTRICAL SYSTEMS


UNIT IV THERMAL SYSTEMS


UNIT V ENERGY CONSERVATION IN MAJOR UTILITIES


TEXT BOOK:


REFERENCES:

OBJECTIVES:

Train the students
- To classify and identify suitable performance measures for manufacturing systems.
- To model and analyse manufacturing systems in discrete time space.
- To model and analyse manufacturing systems in continuous time space.
- To identify the suitable performance measures in queuing problems in manufacturing systems.
- To model the manufacturing systems using Petri net Models.

UNIT I INTRODUCTION TO AUTOMATED MANUFACTURING SYSTEMS 9

UNIT II DISCRETE TIME MARKOV CHAINS 9

UNIT III CONTINUOUS TIME MARKOV CHAINS 9
Definition and Notation, Sojourn Times in CTMC, Steady State Analysis, Rate Balance Equations, Performance analysis of Manufacturing Cases in CTMC.

UNIT IV QUEUING MODELS 9
Queues- Notations, Performance Measures, Open Queuing Networks- Tandem Queues, Jacksons Network, Closed Queuing Networks- Closed transfer line, Gordon-Newell Networks.

UNIT V PETRI NET MODELS 9
Classical Petri nets- Transition, firing and reachability, Representational powers, properties. Exponential Timed Petri Nets

OUTCOMES
CO1: Ability to classify the type of manufacturing system and identify suitable performance Measure.
CO2: Ability to Model and analyse a manufacturing system using DTMC
CO3: Ability to Model and analyse a manufacturing system using CTMC
CO4: Ability to Analyse Queuing Performance Measures for a manufacturing System.
CO5: Ability to model the manufacturing systems using Petri Net Models

TEXT BOOK
1. Viswanadham and Narahari, “Performance modeling of automated manufacturing systems”, PHI, 2005

REFERENCES:
AIM

- To provide a comprehensive module on the aspects of materials, manufacture and testing of automotive components and subsystems.

OBJECTIVE

- To equip the learners with necessary domain inputs such that they can pursue research, consultancy, academics or other avocation.

UNIT I SELECTION OF AUTOMOTIVE MATERIALS

UNIT II AUTOMOTIVE ENGINE SYSTEM
Manufacturing of Cylinder Block, Cylinder Head, Crankcase and Manifolds, Piston Assembly, Connecting Rod, Crankshaft, Camshaft and Valve Train - Carburettors, fuel injection system - Testing Methodologies.

UNIT III AUTOMOTIVE AUXILIARY SYSTEM - I
Manufacturing of Fuel pumps , radiators, ignition , intake and exhaust systems—Gear Box , clutch system –steering system – braking system - Testing Methodologies

UNIT IV AUTOMOTIVE AUXILIARY SYSTEM - II
Manufacturing of propeller shaft, gear box housing, shock absorbers – wheel housing –Brake shoes, leaf spring, wheel disc, wheel rim – Testing methodologies - usage of non metallic materials for chassis components.

UNIT V COMPUTER INTEGRATED MANUFACTURING AND TESTING
Integration of CAD, CAM and CIM- Networking, CNC programming for machining of Engine Components. TS 16949, ISO and BIS codes for testing. Instrumentation, computer aided engine testing, metrology for manufacture of automotive components.

REFERENCES
OBJECTIVES

The students should be made to:

- Learn the basics of graphic design for printing.
- Be familiar with various printing processes and stages in printing workflow.

UNIT I  PRINCIPLES OF DESIGN

Basic concepts of designing; Visual ingredients of graphic design; Design consideration; Layout – purpose & advantages; layout styles; layout components; stages in preparing a layout; marking-up; Software used; Dummy, Case studies.

UNIT II  DESIGNING FOR PRINT PRODUCTS

Designing for Booklets, Magazines, Business publications, Banners & Posters, Advertising; Case studies; Print buying - Specifications, cost estimation.

UNIT III  PREPRESS

Additive and Subtractive colour theory; Continuous and half-tone; Originals - text, image, graphics; File formats and software; File submission requirements; Stages in prepress.

UNIT IV  PRINTING PROCESSES

Types of process – Letterpress, Offset, Gravure, Flexography, Screen printing, Digital Printing Processes; Selection criteria; Applications.

UNIT V  PRINT FINISHING

Standard Paper sizes; Standard sizes of printed products; Types of finishing process - coating, cutting, folding, binding, hot foil stamping, die-cutting, embossing, pouching; Selection criteria; Applications.

TOTAL: 45 PERIODS

OUTCOMES:

Upon completion of the course, the student should be able to:

- Create layouts and designs for various print products.
- Select suitable printing and finishing process for a given product.

TEXT BOOKS:


REFERENCES:

OBJECTIVES
The students should be made to:

- Learn the principle of screen printing and its applications.
- Gain knowledge on types of machines

UNIT I
INTRODUCTION
Principle; Components – Stencil, fabric, frame, Squeegee, Ink and substrate; Fabric – Terminology, Selection; Squeegee – Components, Selection; Printing factors; Aspects affecting screen printing quality.

UNIT II
STENCIL SYSTEMS
Fabric preparation; Handmade stencils – Hand painted stencils, Knife-cut stencils; Photomechanically made stencils – Indirect photostencils, Direct emulsion photostencils, Direct/Indirect photostencils, Capillary direct film photostencils; Faults and their Causes.

UNIT III
PRINTING ON FLAT AND IRREGULAR SUBSTRATES
Design Considerations; Screen printed products, Flat substrates, Three dimensional objects; Printing factors.

UNIT IV
PRINTING MACHINERY AND EQUIPMENT
Hand-bench Printing Equipment – Flat printing base with a vacuum suction facility, Hinge assembly, Frame counterbalance, Frame clamping system, Front and rear ‘off-contact’ adjustment, Register adjustment; Screen Printing Machines – Flat-bed hinged frame, Flat-bed vertical lift, Cylinder-bed presses, Container printing machines, Rotary screen.

UNIT V
PROCESS PRINTING
Colour theory, Colour Separation, Printing sequence, Carousel Machines, Health and Safety issues, Troubleshooting

OUTCOMES:
Upon completion of the course the student will be able to:

- Select the type of fabric and machine based on product requirements.
- Enumerate the sequences of operation in screen printing

TEXTBOOKS:

REFERENCES:
UNIT I AUTOMOTIVE AND ELECTRONICS FUNDAMENTALS

UNIT II MICROCOMPUTER INSTRUMENTATION AND ELECTRONICS ENGINE CONTROL

UNIT III SENSORS AND ACTUATORS

UNIT IV MOTION CONTROL, INSTRUMENTATION AND TELEMATICS

UNIT V DIAGNOSIS AND FUTURE AUTOMOTIVE SYSTEMS

TEXTBOOKS:

TOTAL : 45 PERIODS
UNIT I  ELECTRONIC COMPONENTS  
History, Evolution and Inventors of Electronic Components - Resistors, Capacitors and Inductors - Types, Construction and Functions, Cables - Construction, Characteristics, Types - High Impedance, Low Impedance, Ribbon, High Temperature, Flat Twin, RF, Telephone, Optical Fiber, Connectors, Switches, Relays, Displays -LED, Alphanumeric, LCD, LASER.

UNIT II  DEVICES AND APPLICATIONS  

UNIT III  DIGITAL ELECTRONICS  

UNIT IV  INTEGRATED CIRCUITS AND SMD  
Evolution and Inventors of Integrated Circuits - Structure, Scale/Level, Classification, Surface Mount Devices and Surface Mount Technology, Printed Circuit Boards, Semiconductor Manufacturing Case Study and Industrial Visit.

UNIT V  ELECTRONICS SYSTEMS  

TOTAL:45 PERIODS

TEXT BOOK:

REFERENCES:
5. V. R. Deo, Electronic Components and Applications, Ane Books Pvt. Ltd.,
7. Make Electronics - Learning by Discovery by Charles Platt
BM7691  MANAGEMENT OF WASTES IN HOSPITALS  L T P C  3 0 0 3

OBJECTIVES:
- To understand the importance of handling wastes and proper disposal.
- To teach the students about regulatory requirements of waste management.

UNIT I  INTRODUCTION TO WASTES
Hospital waste, types of medical waste, hazardous waste, infectious waste, Microbial and pathological wastes, Elements of waste management, hospital waste categorization.

UNIT II  WASTE REGULATION IN INDIA
Environment protection Act and rules, Regulation and control rules, Management, handling and transboundary movements.

UNIT III  STERILIZATION TECHNIQUES
Transmission of disease, related pathogens, infections and disinfectants, steam sterilization, microwave sterilization, EtO/EO sterilization and dry heat techniques.

UNIT IV  WASTE DISPOSAL METHODS
Solid waste disposal, liquid waste disposal, hazardous and radioactive wastes destruction, waste reduction methods, incinerator, crematories.

UNIT IV  SAFETY AND RISK ASSESSMENT
Risk management in hospitals, hazard identification and risk assessment, Environmental issues in hospitals and safety issues, Risk analysis.

TOTAL: 45 PERIODS

OUTCOMES:
Awareness of hospital wastes
- Challenges against the infectious waste
- Knowledge about disposal of wastes.

REFERENCES:
2. Tarannum Dana, Medical Waste Management, July 2012.

BM7692  INTRODUCTION TO BIOMATERIALS  L T P C  3 0 0 3

OBJECTIVES:
The student should be made to:
- Learn the classification and characteristics of Biomaterials.
- Understand different types of materials used as biomaterials.
- Learn the standards and rules involved in developing biomaterials.

UNIT I  DEFINITIONS AND PROPERTIES
Definition for biomaterials- biocompatibility-biodegradation- criteria for choosing a biomaterial- use of biomaterials in medicine-physical and chemical properties, surface properties and surface characterization.
UNIT II  CLASS OF MATERIALS  

UNIT III  RESPONSE TO MATERIALS  

UNIT IV  APPLICATIONS OF BIOMATERIALS  
Cardiacassit device- non thrombogenic treatments- dental implants- orthopedic applications-dermal treatments- ocular and extracorporeal implants.

UNIT V  STANDARDS AND NEW PRODUCTS  
Rules and regulations for developing medical products- standards- material evaluation- legal aspects of biomaterials- ethical issues in developing biomaterials.

OUTCOMES:  
At the end of the course, the student should be able to:  
• Analyze different types of Biomaterials and its classification.  
• Perform combinations of materials that could be used as implants.

TEXT BOOKS:  

REFERENCES:  
5. Materials Science and Technology: Volume 14, Medical and Dental Materials: A comprehensive Treatment Volume Editor D F Williams, VCH Publishers 1992  

IT7691  DATABASE SYSTEMS  
L T P C  
3 0 0 3  
OBJECTIVES:  
• To understand the basic database concepts, data models including the architecture and operation of the relational data model.  
• To make a study of Structured Query Language (SQL) and construct simple and moderately advanced database queries using SQL.  
• To conceptualize relational database design and depict a database system using ER diagram.  
• To know the fundamental concepts of transaction processing- concurrency control techniques and recovery procedure.  
• To develop a database application using commercial databases.
### UNIT I  RELATIONAL DATABASES
9
File System vs. Database System — Data Models — Database System Architecture — Introduction to Relational Databases - Relational Model - Keys -- Integrity Constraints - Relational Algebra

### UNIT II  SQL FUNDAMENTALS
9
SQL fundamentals - SQL Data Definition - Basic Structure of SQL Queries - Additional Basic Operations - Set Operations - Aggregate Functions - Nested Subqueries - Join Operations - Views

### UNIT III  DATABASE DESIGN
9
Entity-Relationship Model – ER Diagrams - Mapping ER Model to Relational Model - Functional Dependencies –Normalization - First Normal Form - Second Normal Form - Third Normal Form

### UNIT IV  TRANSACTION MANAGEMENT
9

### UNIT V  APPLICATION DEVELOPMENT
9
Commercial Databases - Oracle/MySQL - PL/SQL - Stored Procedures - Functions - Triggers - Database Security using SQL commands

**TOTAL : 45 PERIODS**

**OUTCOMES:**
Upon completion of the course, the students will be able to
- List and explain the fundamental concepts of a relational database system.
- Understand and use DML, DDL and DCL to query, update, and manage a database.
- Convert the ER-model to relational tables, populate relational database and formulate SQL queries on data.
- Design database using E-R modeling and apply normalization techniques over it.
- Manage the transactions that happens in a database.
- Design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS.

**TEXT BOOK:**

**REFERENCES:**
UNIT I PROTEINS AND NUCLEIC ACID & ENZYMOLGY

UNIT II GENETIC ENGINEERING (RECOMBINANT DNA TECHNOLOGY)
Principles and methods, Essentials of biotechnology-products of biotechnology, Restriction enzymes, vectors, DNA cloning strategies.

UNIT III BIOTECHNOLOGY FOR HIDES/SKINS IMPROVEMENT

UNIT IV WASTE MANAGEMENT
General features of the organic and inorganic pollutants of tannery. Stabilisation and disposal of organic and chemical wastes and their biological treatment. Possible energy generation from wastes.

UNIT V UTILISATION OF COLLAGENOUS TISSUES FOR DIFFERENT APPLICATIONS
Collagen and its application in food, cosmetic and medical fields.

REFERENCES

TOTAL: 45 PERIODS

OBJECTIVES
- To impart knowledge on the machineries and equipments used for garment production
- To instruct on latest developments in the garment production machineries.

UNIT I FABRIC INSPECTION AND SPREADING MACHINES
UNIT II  CUTTING MACHINES  9
Mechanism of straight knife cutting machines, rotary cutting machines, band knife cutting machines, die cutting, laser cutting, plasma cutting, water jet cutting and ultra-sonic cutting; Notches, drills and thread markers; computer interfaced cutting machines.

UNIT III  SEWING MACHINES  9
Lock stitch and chain stitch sewing machine - types, driving arrangement, function of elements, stitch formation, timing, settings and feed mechanism; needles – geometry, types and selection of machine and process parameters for different applications.

UNIT IV  SPECIAL SEWING MACHINES  13
Over lock, flat lock, feed off arm, button fixing and button holing – driving arrangement, stitch formation, timing, settings and feed mechanism.

UNIT V  FINISHING MACHINES  5
Pressing machineries – buck pressing, iron pressing, block or die pressing, form pressing, steamers and advanced pressing machineries; folding and packing machines.

TOTAL: 45 PERIODS

OUTCOMES
After successful completion of this course, the students would understand the,
- Principle and working of machines used for fabric inspection, spreading and cutting
- Working of sewing machine, special sewing machine and finishing machines used for garment manufacture.

REFERENCES

TT7692  TECHNICAL FIBRES  3 0 0 3

OBJECTIVES
- To enable the students to learn about production, properties and application of various technical fibres

UNIT I  9
Introduction: Classification of textile fibres according to their nature and origin, essential and desirable properties of textile fibres, staple fibre and continuous filament, comparison of natural and manmade fibres.

UNIT II  9
Linear polymer fibres, polyaramide fibres, high modulus-high tenacity polyethylene and other such fibres; their structure, properties and applications

UNIT III  9
Carbon fibres, classification – based on raw materials, heat treatment, strength and modulus; physical properties and applications glass fibres, classification, principle of fibre manufacturing, physical properties and applications
UNIT IV
Chemical resistance fibres- their structure, properties and applications; thermal resistance fibres, their structure, properties and applications

UNIT V
Ceramic fibres, classification, effect of heat treatment on properties, physical properties and applications; derivatives of ceramic fibres; hollow and profile fibres- properties and applications

TOTAL : 45 PERIODS

OUTCOMES
Upon the completion of this course, the students will have knowledge on
• Technical fibre production
• Properties and their application.

REFERENCES

CT7691 CERAMIC PROPERTIES L T P C
3 0 0 3

OBJECTIVES
• The course is aimed to impart basic knowledge about the properties of a ceramic material when subjected to various environmental conditions

UNIT I INTRODUCTION
Ceramics - traditional ceramics - classification, manufacturing process, testing and quality control, Advanced ceramics - classification, powder preparation, forming, sintering, properties - density, porosity, microstructure.

UNIT II MECHANICAL PROPERTIES
Elasticity - modulus of elasticity, stiffness, Poisson’s ratio, modulus of rupture, strength - theoretical strength, measurement, fracture - brittle, ductile, fracture toughness - fatigue – creep

UNIT III THERMAL PROPERTIES
Heat capacity - thermal conductivity - thermal expansion - thermal stress - thermal shock resistance

UNIT IV ELECTRICAL AND ELECTRONIC PROPERTIES

UNIT V MAGNETIC AND OPTICAL PROPERTIES
Magnetic properties - fundamentals - classification - hysteresis - super exchange mechanism, Optical properties - fundamentals - interaction with solids - color - opacity - translucency.

TOTAL : 45 PERIODS
OUTCOME
On completion of the course the students are expected to
  • Have a basic knowledge about ceramics and its processing methods
  • Have knowledge about the response of the material to mechanical, thermal, electronic, magnetic and optical changes.

REFERENCES

CT7692 CERAMIC APPLICATIONS L T P C
3 0 0 3

OBJECTIVES
• The course is aimed to impart basic knowledge about the various fields of applications of ceramic materials

UNIT I CERAMICS IN ENERGY AND STORAGE 9
Solid oxide fuel cell - photovoltaic solar cells - DSSC - ceramics in batteries - lithium ion batteries - ultra capacitors - producing and storing hydrogen - energy harvesting - catalyst & catalyst supports

UNIT II CERAMICS IN COATINGS 10

UNIT III CERAMICS IN BIOLOGY AND MEDICINE 9

UNIT IV CERAMICS IN NUCLEAR REACTORS 8
Types of reactors - structure, preparation and properties of oxides, carbides, nitrides and composites used in fission & fusion nuclear reactors.
UNIT V  CERAMICS IN SPACE
Material aspects of missile & satellite re-entry - Ceramic Materials for aerospace propulsion components - auxiliary space powder devices - rocket nozzle technology.

TOTAL : 45 PERIODS

OUTCOME
On completion of the course the students are expected to

- Have a basic knowledge about ceramics materials used in energy applications
- Have knowledge about ceramic materials used in coating applications
- Have knowledge about ceramic materials in biological and medical applications
- Have knowledge about the use of ceramic materials in nuclear and space applications

REFERENCES

PM7691  INTRODUCTION TO DRUG DISCOVERY AND DEVELOPMENT  L T P C
3 0 0 3

UNIT I
Introduction to drug discovery methodologies – conventional drug discovery and rational drug design, structure based drug design and ligand based design, bioinformatics in drug design, sources of drugs/leads – serendipity, random screening, natural sources, target identification and validation molecular modification, lead optimization, preclinical trial and clinical trial.

UNIT II
Physico-chemical properties of drugs and their importance in drug discovery, Lipinsky rule of 5, concepts on pharmacophore and toxicophores, analogues, in-silico log P, log D values calculations, Modification of leads to suite ADMET properties and case studies from recent reviews and literatures, Chemoinformatics in drug discovery process.

UNIT III
Techniques and tools in modern drug discovery - Introduction to QSAR, 2-D and 3-D QSAR, Parameter analysis – lipophilicity and related parameters, electronic parameters, steric parameters, other parameters; Quantitative models – Hansch approach, Free Wilson analysis, the mixed approach; Statistical methods of validation– regression analysis, partial least square Molecular Mechanics, introduction to Molecular dynamics and its application in drug discovery process.
**UNIT IV**
Introduction to *in-vitro* screening methods in drug discovery – HTS (High-Throughput Screening) design of various HTS strategies such as photometry, purification process, electrophoresis, kinetic assay, radioisotopes, immunoassay, miniaturization, Target and endpoint selection, combinatorial drug library screening, Knock-out models in drug screening, RNAi methodologies, Microarray systems in drug discovery process.

**UNIT V**
Introduction to docking strategies in drug discovery and design, drug target databases, graphical representation of ligand and targets (tools such as Pymol, COOT), small molecule databases, conformation and various search methodologies, molecular docking and scoring functions, structure based de novo Ligand design, with emphasis on case study examples.

**TOTAL : 45 PERIODS**

**TEXT BOOKS / REFERENCES:**


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**PM7692**  
**CHEMISTRY OF SYNTHETIC DRUGS**

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**UNIT I**
Introduction to chemistry of medicinally active compounds and their historic development; classification of drugs based on chemical structure and mode of action; Review of chemical bonding, types of organic reactions relevant in drug synthesis, reactive intermediates, inductive, electromeric and mesomeric effects in drug synthesis, role of substitution of functional groups affecting drug action, stereochemistry of drug structure and mechanism.

**UNIT II**
Synthetic Methodologies such as oxidation, reduction, carbon-carbon bond forming reactions including organo-metallic methods, Protection and deprotection methods. Introduction to the theory of drug receptors and classification of receptors; Introduction to the role of drug structure in metabolism and elimination, biotransformation (phase I and phase II reactions) and prodrugs.
UNIT III
Introduction to chemistry, structure and synthesis of heterocyclic compounds such as pyrrol, furan, thiophene, pyridine, pyrimidine, pyrazine, indole, quinoline and Isoquinoline (with prototype drug examples for each category), Structural Activity Relationship (SAR) and mechanism of action and use

UNIT IV
Chemistry of compounds available in nature with biologically active moieties and semisynthetic compounds such as Alicyclic compounds (terpenes, camphor, menthol, carotenes), Alkaloids (Atropine, morphine, codeine, reserpine, ephedrine), Vitamins (water and fat soluble)—their synthesis, mechanism of action and therapeutic uses

UNIT V
Chemistry, structure, mechanism of action, SAR, synthesis and therapeutic uses of—synthetic hormonal drugs and steroids, antiviral agents, anthelmintics, CNS drugs, analgesics, NSAIDS, anti neoplastic agents (with prototype drug examples for each category)

TOTAL: 45 PERIODS

TEXTS/REFERENCES:
UNIT V LAB PRACTICES
Good laboratory practices, quality systems in the laboratory, laboratory controls, safety hazards, documentation.

TOTAL : 45 PERIODS

TEXTBOOKS AND REFERENCES
1. Biosafety in Microbiological and Biomedical Laboratories, 5th ed.
3. Guide For The Care and Use of Laboratory Animals, 8th ed. (National Research Council)
5. Institutional Animal Care and Use Committee Guidebook, 2nd ed.
   NIH Guidelines For Research Involving Recombinant or Synthetic Nucleic Acid Molecules (2013)

IB7692 FORENSIC SCIENCE

UNIT I INTRODUCTION
Forensic science: Definition, History and Development. Types of crime, crime scene management and investigation; Collection, Preservation and forwarding of physical and trace evidences for analysis. Legal and court procedures.

UNIT II BLOOD BASED ANALYSES
Blood based analysis, analysis of body fluids, Disputed paternity and maternity problems. DNA profiling.

UNIT III SAMPLE ANALYSIS
Analysis of liquor; petroleum products; Examination of insecticides and pesticides; Identification of poisons; identification of fibres. Physical analysis of soil, glass, paints, lacquers, cement, inks, paper, and tool marks, foot prints and shoe prints

UNIT IV MATERIAL ANALYSIS
Examination of vehicles, tyre marks, Ballistics, cyber forensics, Identification of handwriting, signatures, anonymous, disguised writings and forgery detection. Age of documents. History, classification, search, lifting and examination of fingerprints.

UNIT V INSTRUMENTATION
Microscopy, spectroscopy, X-rays, NMR, Chromatography, Electrophoresis

TEXTBOOKS:

TOTAL : 45 PERIODS
REFERENCES:
3. Digital forensic for network internet and cloud computing clint garrison
5. Handbook of Fingerprint Recognition, Maltoni, Maio, Jain, Prabhakar, 2005

FT7691 EMERGING TECHNOLOGIES IN FOOD CONTROL

UNIT I LOW TEMPERATURE AND HIGH TEMPERATURE PRESERVATION

UNIT II OSMOTIC DEHYDRATION & FERMENTATION OF FOODS
Principle – Mechanism of osmotic dehydration – Effect of process parameters on mass transfer – Methods to increase the rate of mass transfer – Applications – Limitations of osmotic dehydration – Management of osmotic solutions Fermentation: Applications in preservation of food; yogurt, pickling, curing etc. Probiotics - role- processing - applications - Evaluation of probiotic foods as per international norms.

UNIT III OHMIC, RADIATION AND ULTRASOUND PROCESSING OF FOODS

UNIT IV NON THERMAL PROCESSING OF FOOD

UNIT V HURDLE TECHNOLOGY
Basics of hurdle technology – Mechanism Application to foods - Newer Chemical and Biochemical hurdles- organic acids – Plantderived antimicrobials – Antimicrobial enzymes – bacteriocins – chitin / chitosan (only one representative example for each group of chemical and biochemical hurdle)

TOTAL : 45 PERIODS

TEXT BOOKS
REFERENCE BOOKS
1. Leistner L. and Gould G. Hurdle Technologies – Combination treatments for food stability
2. Novel Food Processing Technologies(Food Science and Technology Series) by Gustavo V.
Barbosa-Canovas, Maria S. Tapia, M. Soledad Tapia, M. Pilar Cano, Publisher: CRC Press,
3. Pulsed electric fields in food processing: Fundamental aspects and applications: a volume
in the Food Preservation Technology series, Edited by G V Barbosa-Cánovas, Washington
State University and Q H Zhang, Ohio State University, USA, Woodhead Publishing
4. Pulsed electric field technology for the food industry: Fundamentals & applications
(Food engineering series) RASO J., HEINZ V, 2006
5. Ohmic Heating: A Value-added Food Processing Tool Marybeth Lima, Tuoxiu Zhong and N.
Rao Lakkakula
6. Thermal Technologies in Food Processing: Edited by P Richardson, Campden and
Chorleywood Food Research Association, UK, Woodhead Publishing Limited, Abington
7. Minimal Processing Technologies in the Food Industry By Thomas Ohlsson, Nils Woodhead
8. Pulsed Electric Fields in Food Processing (1999). Gustava C Barbosa-Canovas, Q Howard
(ISBN 0824704886)
10. Processing of Foods – Quality Optimization and Process Assessment Edited by Fernando

FT7692 CROP PROCESS ENGINEERING

UNIT I INTRODUCTION
Scope and importance of food processing, post harvest losses, principles and methods of food
processing. Principle of size reduction, grain shape, size reduction machines; crushers, grinders,
cutting machines etc. – operation, efficiency and power requirement – Rittinger’s, Kick’s and
Bond’s equation, fineness modulus. Theory of separation, size and unsized separation, types of
separators, size of screens, sieve analysis, capacity and effectiveness of screens, pneumatic
separation.

UNIT II PROCESSING OF RICE AND PULSE
Rice processing – parboiling, drying, dehusking, polishing, modern rice mill machineries
– construction details and adjustments, layout of modern rice mill. Pulse milling – pre-treatments of
pulses, wet and dry method, machinery used for dhal milling.

UNIT III PROCESSING OF WHEAT AND MILLETS
Wheat milling – methods, corn milling – wet milling, dry milling, oats processing, Soy bean
processing, Processing of sorghum, ragi, barley – malting of barley. Breakfast cereals. Processed
products. Extruded products.

UNIT IV PROCESSING OF PLANTATION CROPS
Processing of tea and Coffee, instance coffee. Processing of cocoa, cashew nut processing,
Equipment used - processed products.
UNIT V  PROCESSING OF SPICE AND CONDIMENTS
Processing of pepper, chilli, turmeric, cardamom. Tuber crops- tapioca, potato processing – processed products.

TOTAL : 45 PERIODS

TEXT BOOKS:
1. Unit operations in Agricultural Processing by Sahay and Singh.

REFERENCE BOOKS
1. Kent Jones, "Cereal Technology"
2. Kent, "Technology of cereals"
3. Sivetz and Foote, "Coffee processing Technology", AVI publishing Co.,

CH7691  DRYING TECHNOLOGY  L T P C
3 0 0 3

UNIT I
Humidification – Equilibrium, humidity chart, adiabatic and wet bulb temperatures; humidification operations; Drying and dehydration – basics and principles. Mechanism of drying – drying curves, drying rate periods – constant and falling rate periods, effect of drying on water activity, EMC, sorption isotherms.

UNIT II
Classification of dryers – Based on mode of operation, mode of heat transfer – conduction, convection and radiation. Based on feed properties. Selection of dryers - energy costs, safety, and environmental factors. Conventional versus innovative drying techniques. Tray dryer – principle operational aspects and design.

UNIT III

UNIT IV

UNIT V

TOTAL: 45 PERIODS
TEXT BOOKS:

REFERENCE BOOKS:

CH7692 FUNDAMENTALS OF INDUSTRIAL CORROSION

UNIT I GENERAL CORROSION PROCESSES, BASIC PRINCIPLES
Definition of Corrosion, types, different forms of corrosion, uniform, Galvanic, Crevis, pitting, selective leaching, erosion, stress-corrosion, cracking – Cavitation phenomena & their effects – Corrosion testing – Field testing – Electrochemical techniques for measurement of corrosion rates, chemical corrosion, Electrochemical corrosion.

UNIT II CORROSION IN CHEMICAL INDUSTRY
High temperature corrosion, modes of corrosion failures, mechanisms, inspection, monitoring and managing corrosion damage, non destructive evaluation (NDE), cathodic and anodic protection, anodic protection in pulp and paper industry, corrosion resources for the chemical inhibitor industry, Monitoring, above-ground monitoring, in-line monitoring, remote monitoring.

UNIT III CORROSION IN OIL AND GAS INDUSTRY
Types of corrosive environments, pipeline corrosion internal corrosion mitigation and monitoring for pipelines, corrosion and inspection managements in chemical processing and petrochemical industries

UNIT IV CORROSION IN OTHER INDUSTRIES
Corrosion in power equipments industry, corrosion in electrical and electronic industry — corrosion aspects in nuclear power plants – corrosion of surgical implants and prosthetic devices.

UNIT V MANAGEMENT
Risk assessment, risk management, corrosion risks, activities of corrosion management, life cycle cost, corrosion protection management in specific industry.

TOTAL : 45 PERIODS

TEXT BOOKS

REFERENCE
AIM

- To sensitize and create an awakening among the course participants on adhering to principles of healthy living and instilling lifestyle modifications.

OBJECTIVE

- To cause behavioral changes in the learning clientele and creating the necessary psychosociological ramifications, motivating the participants to adopt a healthy lifestyle.

UNIT I  IMPORTANCE OF MICRONUTRIENTS AND ADHERING TO LOW GLYCEMIC INDEX FOODS  9

UNIT II  IMMUNIZATION SCHEDULING – NEED FOR ADHERENCE  9
Protein calorie malnutrition –Importance of intake of folic acid supplements to prevent genital abnormalities –Necessity to avoid early marriage –Need for various immunizations their dosage schedules-Need to immunize adolescent girl children to prevent cervical cancer.

UNIT III  LIFE SAVING CHILD SURVIVAL STRATEGIES  9
Drastically cutting down mortality and morbidity –Causative factors of dehydration –Warning symptoms - Need to administer lifesaving Oral Rehydration Salt solution (ORS) Methodology of preparing ORS solution-Importance of zinc as an additive.

UNIT IV  STRATEGIES FOR INCREASING HDL AND LOWERING LDL CHOLESTEROL  9
Healthy fats –Need to avoid saturated and trans fats - Optimum value of HDL and LDL cholesterol –Need to lower triglycerides - Ways of reducing bad LDL cholesterol –Role of Thyroid Simulating Hormone (TSH) - Importance of mental health –Positive and optimistic outlook on life – Pranic breathing as a stress relief mechanism.

UNIT V  DRINKING WATER STANDARDS  9

REFERENCE

AS7692  BASICS OF BIOCHEMICAL TECHNOLOGY  L T P C  3 0 0 3

OBJECTIVE:

- This course mainly discusses the role of enzymes and microbes in biotechnology sectors.

UNIT I  INDUSTRIAL BIOTECHNOLOGY  9
UNIT II KINETICS OF ENZYME ACTION 6
Kinetics of enzyme catalyzed reaction: the enzyme substrate complex and enzyme action, modulation and regulation of enzyme activity, types of inhibition. Immobilized enzyme technology: enzyme immobilization, Immobilized enzyme kinetics

UNIT III KINETICS OF MICROBIAL GROWTH 9
Kinetics of cellular growth in batch and continuous culture, models for cellular growth unstructured, structured and cybernetic models, medium formulation. Thermal death kinetics of cells and spores, stoichiometry of cell growth and product formation

UNIT IV FERMENTOR 9
Modeling of batch and continuous fermentor. Bioreactor design, mixing phenomena in bioreactors. Sterilization of media and air, sterilization equipment, batch and continuous sterilize design.

UNIT V DOWN STREAM PROCESSING 12
Down stream processing: Strategies to recover and purify products; separation of insoluble products, filtration and centrifugation; cell disruption-mechanical and non-mechanical methods; separation of soluble products: liquid-liquid extractions, membrane separation (dialysis, ultrafiltration and reverse osmosis), chromatographic separation-gel permeation chromatography, electrophoresis, final steps in purification –crystallization and drying.

TOTAL : 45 PERIODS

OUTCOME:
- Upon completion of this course, the students would develop the ability to design novel bioprocesses for their research in various areas. They will have the ability to find solutions to the problems which occur when materials and processes interact with the environment.

TEXT BOOKS:

REFERENCES:

HS7691 ENGLISH FOR COMPETITIVE EXAMINATIONS L T P C 3 0 0 3

Course Description:
Students aspiring to take up competitive exams of which the English language is a vital component will find this course useful. Designed for students in the higher semesters, the course will help students to familiarise themselves with those aspects of English that are tested in these examinations.

Objectives:
- To train the students in the language components essential to face competitive examinations both at the national (UPSC, Banking, Railway, Defence) and the international level (GRE, TOEFL, IELTS).
- To enhance an awareness of the specific patterns in language testing and the respective skills to tackle verbal reasoning and verbal ability tests.
- To inculcate effective practices in language-learning in order to improve accuracy in usage of grammar and coherence in writing.
UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

Teaching Methods:
Instructional methods will involve discussions, taking mock tests on various question papers – Objective, multiple-choice and descriptive. Peer evaluation, self-check on improvement and peer feedback - Practice sessions on speaking assessments, interview and discussion – Using multimedia.

Evaluative Pattern:
Internal Tests – 50%
End Semester Exam - 50%

TOTAL: 45 PERIODS

OUTCOMES:
Students will be able to
• expand their vocabulary and gain practical techniques to read and comprehend a wide range of texts with the emphasis required
• identify errors with precision and write with clarity and coherence
• understand the importance of task fulfilment and the usage of task-appropriate vocabulary.

TEXTBOOK:
REFERENCE BOOK

Websites

HS7692 PROJECT AND PROPOSAL WRITING   L T P C
                                      3 0 0 3
Course Description
This course is designed to help students develop writing skills that will enable them to produce clear and effective scientific and technical documents. Focus will be on basic principles of good technical writing like proposals and projects. While the emphasis will be on writing, oral communication of scientific and technical information will form an important component of the course.

OBJECTIVES
The course will enable students to
• Improve grammar, mechanics and writing style for clarity, concision, coherence and emphasis and increase knowledge of technical communication
• Identify and understand the facets and functions of the primary genres of technical writing, reports, proposals and project reports
• Write and present reports to peers and groups

UNIT I Introduction to Technical Writing
Grammar and writing skills- writing definition- rhetorical awareness-types of technical documents

UNIT II Technical Report Writing and writing Statement of Purpose
Researching and managing information- technical definition/ description-collecting data-interpreting data- documenting- Analytical Reports

UNIT III Project proposal
Identify area of research- research question-Statement of the problem-justification of the problem- identify its feasibility- Objectives- plan of action- theoretical framework-Literature review – research design- data collection and analysis- discussion

UNIT IV Preparing project reports
Research methods- Abstract writing- background knowledge of the research topic- Literature review—Plagiarism- methodology- sampling- data collection and analysis- Integrate tables, figures, and other images into documents -presenting the findings- conclusion- preparing references- Appendices
UNIT V Oral presentation of the Projects (Viva voce)

Presentation and oral communication skills - presenting the findings of research - Maintaining audience control - body language - voice modulation - delivery of ideas etc

Teaching Methods
- Lectures
- Interactive discussions
- Self-study
- Technology enhanced learning

Evaluation pattern
- The students will be expected to write assignments
- Make oral presentation (reviews) of their projects
- Make Group discussions on research areas followed by question and answer section
- Feedback will be given immediately
- Peer Evaluation for Oral presentations

Submitting Assignments Online
Students are required to submit written assignments online

TOTAL: 45 PERIODS

Outcome
- The students will be able to write Technical reports, Project Proposals and Reports and make oral presentation of their findings
- Critique and revise their own documents to ensure they fulfill their purpose
- Develop strategies for addressing multiple audiences, expert and lay audiences.

Text Books

Reference Books
2. Journal of Technical Writing and Communication, An ATTW (Association of Teachers of Technical Writing) publication. Editor: Donna Kain, Associate Professor East Carolina University Department of English Bate 2201 Greenville, NC 27858-4353.

HS7693 ENGLISH THROUGH MEDIA

Course Description:
This course is for students who want to develop their English language skills through exploring different media such as print, electronic and social media. Learning English through media helps students to improve the target language, encourages learner independence, and develops intercultural and communicative skills.
OBJECTIVES:
- To understand and analyze different types of texts used in different media like print, online and social media
- To develop their listening, speaking, reading and writing skills by exploring the language used in media.
- To communicate effectively and persuasively in a variety of mediums, including written essays, micro blogging and live communication.

UNIT I  Reading & Writing Skills
- News Headlines
- News articles
- TV Schedules
- Letters to Editor
- Social media posts and comments – Blogs / Twitter / Facebook or any other social media

UNIT II  Listening & Interviewing Skills
Listening to talks – Conversational strategies – Interviewing skills - Agreeing & Disagreeing – Asserting, Negotiating – Debating – Responding to negative criticism - Writing to instruct and advice – Describing a product & process
- TV Talk shows
- Podcasts
- Radio / TV Interviews
- TV / Radio programmes on new products & Online / Mobile Applications
- Online help sections & user manuals

UNIT III  Presentation skills - Visual & Verbal
Introduction to Phonetics & different accents – Online writing – Netiquette - Objective Reporting – Persuasive writing and speaking – Linguistic devices in Advertisements – Visual, verbal and non verbal cues - Consumer oriented marketing of products Narrating – Writing / Presenting Commentaries
- News reports / Survey reports
- Blog writing / tweeting
- Advertisements
- Documentaries on History/ Social issues
- Sports / Live Commentaries on Radio / TV

UNIT IV  Analyzing & Evaluating Skills
Vocabulary – Collocations & Slangs – Referencing - Welcoming, conducting and concluding programmes - Reviewing – Commenting – Expressing through visual and verbal media – Authentic conversation based on real life situations – Analysing plots, vocabulary & characterization – Use of linguistic devices in broadcast media
- Online Thesaurus / Mobile Dictionary
- Radio / TV anchoring programmes
- Book / Movie Reviews in Radio / TV
- Memes in Social Media
- Cartoons (Newspaper / Magazine/ TV)
- TV sitcoms (Eg. Big Bang Theory, Mind Your Language)
UNIT V Reporting Skills – Oral & Written

Group Discussion on Culture, Tradition & Values – Critical Thinking – Problem Solving skills – Conversation etiquette – Politeness strategies – Speed Reading - Reading subtitles – Analytical Reading – Writing analytical report on websites / apps etc. - Brevity in advertising language – Public Service Announcements (PSA)

TV / Radio dramas – (Eg. Xfiles, CSI)
Reality Shows (Eg. Survivor, Apprentice)
TV News programs
Animated TV series

Teaching Methodology:
This course is delivered through classroom activities, assignments and screenings to develop students’ understanding of language through media. Media content will be widely used for practicing the four language skills – reading, writing, speaking and listening.

Evaluation pattern:
[Written Assignments, New App Presentation, Final Media Project, Internal Assessment] 50%
End Semester Examination 50%

Media Project
Students, in groups of 5-8 can decide on a project on any one of the unit. The requirements for the project will depend on the format / media students choose to work in. They can choose either one of the following:
- A newspaper with at least 8 pages of content.
- A thematic website can be designed which should have at least 6 pages of content.
- A podcast or video can be produced which should have material for minimum of 15 minutes.
- Create a blog, which should include daily posts for two weeks, in addition to linking to and posting on others’ blogs, tagging and networking.
- Making a documentary on socially relevant issues for duration of 20 – 30 minutes.

TOTAL: 45 PERIODS

Outcomes:
By the end of the course students will be able to
- Engage critically and constructively in oral exchanges of ideas
- Improve their reading and writing ability through various texts and articles in different media.
- Write news reports and online writing in electronic/ print media.

Textbook

Reference Books