# R19 COURSE STRUCTURE AND SYLLABUS

## I Year I Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>Professional Core - I</td>
<td>Advanced Computer Aided Design</td>
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<td>Professional Core - II</td>
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<td>Professional Elective- II</td>
<td>2. Theory of Elasticity &amp; Plasticity</td>
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## I Year II Semester

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Audit Course I & II:
1. English for Research Paper Writing
2. Disaster Management
3. Sanskrit for Technical Knowledge
4. Value Education
5. Constitution of India
6. Pedagogy Studies
7. Stress Management by Yoga
8. Personality Development through Life Enlightenment Skills
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M. TECH. I Year I Sem. (DESIGN FOR MANUFACTURING/ DESIGN AND MANUFACTURING)

ADVANCED COMPUTER AIDED DESIGN (Professional Core - I)

UNIT I:
Principles of Computer Graphics: Introduction, graphic primitives, point plotting, lines, Bresenham’s circle algorithm, ellipse, transformation in graphics, coordinate systems, view port, 2D and 3D transformation, hidden surface removal, reflection, shading and generation of characters.

UNIT II:
Cad Tools: Definition of CAD Tools, Types of system, CAD/CAM system evaluation criteria, brief treatment of input and output devices. Graphics standard, functional areas of CAD, Modeling and viewing, software documentation, efficient use of CAD software.
Geometric modelling: Types of mathematical representation of curves, wire frame models wire frame entities parametric representation of synthetic curves her mite cubic splines Bezier curves B-splines rational curves.

UNIT III:
Surface Modeling: Mathematical representation surfaces, Surface model, Surface entities surface representation, parametric representation of surfaces, plane surface, rule surface, surface of revolution, Tabulated Cylinder.

UNIT IV:
Parametric Representation of Synthetic Surfaces: Hermite Bicubic surface, Bezier surface, B-Spline surface, COONs surface, Blending surface Sculptured surface, Surface manipulation — Displaying, Segmentation, Trimming, Intersection, Transformations (both 2D and 3D).

UNIT V:
Geometricmodelling-3D: Solid modeling, Solid Representation, Boundary Representation (13-rep), Constructive Solid Geometry (CSG).

TEXT BOOKS:
1. CAD/CAM Concepts and Applications/ Alavala/ PHI
2. CAD/CAM /Groover M.P./ Pearson education
4. CAD/CAM Principles and Applications/ P.N. Rao/TMH/3rd Edition

REFERENCES:
1. CAD / CAM / CIM, Radhakrishnan and Subramanian/ New Age
2. Principles of Computer Aided Design and Manufacturing/ Farid Amirouche/ Pearson
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD  
M. TECH. I Year I Sem. (DESIGN FOR MANUFACTURING/ DESIGN AND MANUFACTURING)

DESIGN FOR MANUFACTURING AND ASSEMBLY (Professional Core - II)

**Prerequisites:** Manufacturing Processes, Engineering Materials

**Course Objectives:** The objective of course is to identify the manufacturing constraints that influence the design of parts and part systems. Students will be introduced to the Design for Manufacturability (DFM) methodology, and will be motivated to understand infeasible or impractical designs.

**Course Outcomes:** At the end of the course, the student will be able to:
- Understand the quality aspects of design for manufacture and assembly
- Apply Boothroyd method of DFM for product design and assembly
- Apply the concept of DFM for casting, welding, forming and assembly
- Identify the design factors and processes as per customer specifications
- Apply the DFM method for a given product

**UNIT - I:**
**Introduction:** Design philosophy steps in Design process - General Design rules for manufacturability - basic principles of design for economical production - creativity in design. Materials: Selection of Materials for design Development in Material technology - criteria for material selection - Material selection interrelationship with process selection.

**UNIT - II:**
**Machining Process:** Overview of various machining processes - general design rules for machining - Dimensional tolerance and surface roughness - Design for machining - Ease - Redesigning of components for machining ease with suitable examples. General design recommendations for machined parts. **Metal Casting:** Appraisal of various casting processes, selection of casting process.
- General design considerations for casting - casting tolerances - use of solidification simulation in casting design - product design rules for sand casting.

**UNIT - III:**
**Metal Joining:** Appraisal of various welding processes, Factors in design of weldments - general design guidelines - pre and post treatment of welds - effects of thermal stresses in weld joints - design of brazed joints. Forging - Design factors for Forging - Closed dies forging design - parting lines of dies drop forging die design - general design recommendations. Extrusion & Sheet Metal Work: Design guidelines for extruded sections - design principles for Punching, Blanking, Bending, Deep Drawing - Keeler Goodman Forming Line Diagram - Component Design for Blanking.
**Plastics:** Viscoelastic and Creep behavior in plastics – Design guidelines for Plastic components – Design considerations for Injection Moulding.

**UNIT-IV**
**Assemble Advantages:** Development of the assemble process, choice of assemble method assemble advantages social effects of automation.
**Automatic Assembly Transfer Systems:** Continuous transfer, intermittent transfer, indexing mechanisms, and operator - paced free – transfer machine.

**UNIT-V:**
**Design of Manual Assembly:** Design for assembly fits in the design process, general design guidelines for manual assembly, development of the systematic DFA methodology, assembly efficiency, classification system for manual handling, classification system for manual insertion and
fastening, effect of part symmetry on handling time, effect of part thickness and size on handling time, 
effect of weight on handling time, parts requiring two hands for manipulation, effects of combinations 
of factors, effect of symmetry effect of chamfer design on insertion operations, estimation of insertion 
time.

TEXT BOOKS:
   Ed. 2000.

REFERENCES:
1. Computer Aided Assembly London/ A Delbainbre/.
2. Product Design for Manufacturing and Assembly/ Geoffrey Boothroyd, Peter Dewhurst & 
   Winston Ansthony Knight/CRC Press/2010
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M. TECH. I Year I Sem. (DESIGN FOR MANUFACTURING/DESIGN AND MANUFACTURING)

OPTIMIZATION TECHNIQUES AND APPLICATIONS (Professional Elective - I)

Pre-requisites: Operations Research

Course Objectives: The main objectives of the course are: Learn
- Numerical optimization techniques for single variable and multi variable non-linear optimization problems.
- Sensitivity analysis on LPP queuing
- Simulation of annexing problem & inventory problem.
- Geometry cutting plane method & branch bound method for linear IPP.
- Meaning of stochastic programming problem simple problems for finding mean variance of random variables chance constrained algorithm.
- Formulation of GP model and solving it using arithmetic geometric inequality theorem.
- State of art nontraditional optimization technique, namely genetic algorithm simulated annealing & particle swarm optimization.

Course Outcomes: At the end of the course, the student is able to apply appropriate optimization techniques and solve.
- Based on the type of optimization problem like single variable or multivariable,
- Make sensitivity analysis to study effect of changes in parameters of LPP on the optimal solution without reworking.
- Simulate the system to estimate specified performance measures.
- Solve integer programming problem by either geometry cutting plane algorithm or branch band method.
- Apply chance constrained algorithm and solve stochastic linear programme.
- Formulate GP model and solve it.
- Solve given optimization problem by genetic algorithm or simulated annealing or PSO.

UNIT-I:

UNIT-II:

UNIT-III:

UNIT-IV:
Integer Programming: Introduction – formulation – Geometry cutting plane algorithm – Zero or one algorithm, branch and bound method
**Stochastic Programming:** Basic concepts of probability theory, random variables- distributions-mean, variance, correlation, co variance, joint probability distribution. Stochastic linear programming: Chance constrained algorithm.

**UNIT-V:**

**Geometric Programming:** Posynomials – Arithmetic - Geometric inequality – unconstrained G.P- constrained G.P (≤ type only)

**Non-Traditional Optimization Algorithms:** Genetics Algorithm-Working Principles, Similarities and Differences between Genetic Algorithm & Traditional Methods. Simulated Annealing-Working Principle-Simple Problems. Introduction to Particle Swarm Optimization (PSO) (very brief)

**TEXT BOOKS:**
2. Optimization for Engineering Design by Kalyanmoy Deb, PHI

**REFERENCE BOOKS:**
1. Operations Research by S. D. Sharma
2. Operation Research by H. A. Taha, TMH
3. Optimization in operations research by R. L Rardin
MEMS & MICRO SYSTEMS: DESIGN & MANUFACTURING (Professional Elective - I)

UNIT – I:

UNIT – II:

UNIT – III:
Engineering Mechanics for Microsystems Design: Static Bending of Thin Plates, Mechanical Vibration, Thermo mechanics Fracture Mechanics, Thin-Film Mechanics, Overview of Finite Element Stress Analysis

UNIT – IV:

UNIT – V:
Materials for Mems & Microsystems and Their Fabrication: Substrates and Wafers, Active substrate materials, Silicon as a substrate material, Silicon Compounds, Silicon Piezoresistors, Gallium Arsenide, Quartz, Piezoelectric Crystals and Polymers, Photolithography, Ion implantation, Diffusion and oxidation, Chemical and physical vapor deposition, Etching, Bulk micro manufacturing, Surface Micromachining, The LIGA Process.

REFERENCES:
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M. TECH. I Year I Sem. (DESIGN FOR MANUFACTURING/ DESIGN AND MANUFACTURING)

ADVANCED MANUFACTURING PROCESSES (Professional Elective - I)

Prerequisites: Production Technology, Machine Tools, Metal Cutting, Material Science.

Course Objectives:
- To make acquainted the various unconventional manufacturing processes
- To know about the applications of advanced manufacturing processes (which are exceptional)
- To encourage the students for developing the models of Advanced Manufacturing Processes

Course Outcomes:
- At the end of the course, the student will be able to understand the working principle of Electron beam, laser beam and laser beam processes.
- Able to understand different types of composite material characteristics, types of micro & macro machining processes.
- Understand the e-manufacturing & nano materials.

UNIT-I:
Surface treatment: Scope, Cleaners, Methods of cleaning, Surface coating types, and ceramic and organic methods of coating, economics of coating. Electro forming, Chemical vapour deposition, thermal spraying, Ion implantation, diffusion coating, Diamond coating and cladding.

UNIT-II:

UNIT-III:

UNIT-IV:
Processing of ceramics: Applications, characteristics, classification. Processing of particulate ceramics, Powder preparations, consolidation, Drying, sintering, Hot compaction, Area of application, finishing of ceramics.
Processing of Composites: Composite Layers, Particulate and fiber reinforced composites, Elastomers, Reinforced plastics, MMC, CMC, Polymer matrix composites.

UNIT-V:
Fabrication of Microelectronic devices: Crystal growth and wafer preparation, Film Deposition oxidation, lithography, bonding and packaging, reliability and yield, Printed Circuit boards, computer aided design in microelectronics, surface mount technology, Integrated circuit economics.
E-Manufacturing, nanotechnology, micromachining and High-speed Machining, basic principles, working, applications, advantages.

TEXT BOOKS:
3. Advanced Machining Processes by V.K. Jain, Allied Publications.

REFERENCE BOOKS:
5. Advanced Methods of Machining by J. A Mc Geough, Springer.
FLEXIBLE MANUFACTURING SYSTEMS (Professional Elective - II)

Prerequisites: Machine Tools, Basics of Industrial Engineering

Course Objectives:
- To Understand the role of Flexible Manufacturing Systems (FMS) in manufacturing
- To Understand the concept of Group Technology
- To Understand the concept of Cellular Mfg Systems
- To Understand the benefits of automation
- To Know types of manufacturing industries
- To have a basic knowledge of automation equipment
- To Understand logic control and associated technologies

Course Outcomes: At the end of the course, the student shall be able to:
- Develop FMS using the most appropriate technique.
- Implement FMS concept in a manufacturing environment
- Use various types of sensors and actuators in PLC implementations
- Explain the role of automation in manufacturing
- Tell the difference between Group Technology and Cellular Manufacturing
- Classify automation equipment and assembly systems into different categories.

UNIT-I:
Understanding of FMS: Evolution of Manufacturing Systems, Definition, objective and Need, Components, Merits, Demerits and Applications Flexibility in Pull and Push type

UNIT-II:
Classification of FMS Layout: Layouts and their Salient features, Single line, dual line, loop, ladder, robot centre type etc.

UNIT-III:
Processing stations: Salient features Machining Centers, Turning centre, Coordinate measuring machine (CMM), Washing/Deburring station

UNIT-IV:
Material Handling System: An introduction, Conveyor, Robots, Automated Guided Vehicle (AGV), Automated Storage Retrieval System (ASRS) Management technology: Tool Management, tool magazine, Tool preset, identification, Tool monitoring and fault detection, routing, Production Planning and Control, Scheduling and loading of FMS

UNIT-V:
Design of FMS: Performance Evaluation of FMS, Analytical model and Simulation model of FMS Case studies: Typical FMS problems from research papers

TEXT BOOKS:
REFERENCE BOOK:
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD  
M. TECH. I Year I Sem. (DESIGN FOR MANUFACTURING/ DESIGN AND MANUFACTURING)  

THEORY OF ELASTICITY & PLASTICITY (Professional Elective - II)  

UNIT – I:  
**Elasticity:** Two-dimensional stress analysis - Plane stress - Plane strain - Equations of compatibility - Stress function - Boundary conditions.  
**Problem in Rectangular Coordinates** - Solution by polynomials - Saint Venent's principles - Determination of displacement - Simple beam problems.  
**Problems in Polar Coordinates** - General equations in polar coordinates - Stress distribution symmetrical about axis - Strain components in polar coordinates - Simple and symmetric problems.  

UNIT – II:  
**Analysis of Stress and Strain in Three Dimensions:** Principle stresses - Homogeneous deformations - Strain spherical and deviatoric stress - Hydrostatic strain.  
**General theorems:** Differential equations of equilibrium and compatibility - Displacement - Uniqueness of solution - Reciprocal theorem.  

UNIT - III:  
**Bending of Prismatic Bars:** Stress function - Bending of cantilever beam - Beam of rectangular cross-section - Beams of circular cross-section.  

UNIT – IV:  
**Plasticity:** Plastic deformation of metals - Structure of metals - Deformation - Creep stress relaxation of deformation - Strain rate condition of constant maximum shear stress - Condition of constant strain energy - Approximate equation of plasticity.  

UNIT – V:  
**Methods of Solving Practical Problems:** The characteristic method - Engineering method - Compression of metal under press - Theoretical and experimental data drawing.  

REFERENCES:  
2. An Engineering Theory of Plasticity/E.P. Unksov/Butterworths  
4. Theory of Plasticity for Engineers/Hoffman and Sacks/TMH  
5. Theory of Elasticity and Plasticity/Sadhu Singh/ Khanna Publishers  
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M. TECH. I Year I Sem. (DESIGN FOR MANUFACTURING/ DESIGN AND MANUFACTURING)

QUALITY ENGINEERING IN MANUFACTURING (Professional Elective - II)

UNIT-I:
Quality Value and Engineering: An overall quality system, quality engineering in production design, quality engineering in design of production processes. Loss Function and Quality Level: Derivation and use of quadratile loss function, economic consequences of tightening tolerances as a means to improve quality, evaluations and types tolerances. (N-type, S-type and L-type)

UNIT-II:
Tolerance Design and Tolerancing: Functional limits, tolerance design for N-type. L-type and S-type characteristics, tolerance allocation for multiple components. Parameter and Tolerance Design: Introduction to parameter design, signal to noise ratios, Parameter design strategy, some of the case studies on parameter and tolerance designs.

UNIT-III:
Analysis of Variance (ANOVA): NO-way ANOVA, One-way ANOVA, Two-way ANOVA, Critique of F-test, ANOVA for four level factors, multiple level factors.

UNIT-IV:
Orthogonal Arrays: Typical test strategies, better test strategies, efficient test strategies, steps in designing, conducting and analyzing an experiment. Interpretation methods, percent contributor, estimating the mean.

UNIT-V:
ISO-9000 Quality System, BDRE, 6.-sigma, Bench marking, Quality circles Brain Storming — Fishbone diagram — problem analysis.

REFERENCES:
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M. TECH. I Year I Sem. (DESIGN FOR MANUFACTURING/ DESIGN AND MANUFACTURING)

RESEARCH METHODOLOGY AND IPR

Prerequisite: None

Course Objectives:
- To understand the research problem
- To know the literature studies, plagiarism and ethics
- To get the knowledge about technical writing
- To analyze the nature of intellectual property rights and new developments
- To know the patent rights

Course Outcomes: At the end of this course, students will be able to
- Understand research problem formulation.
- Analyze research related information
- Follow research ethics
- Understand that today’s world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.
- Understanding that when IPR would take such important place in growth of individuals & nation, it is needless to emphasis the need of information about Intellectual Property Right to be promoted among students in general & engineering in particular.
- Understand that IPR protection provides an incentive to inventors for further research work and investment in R & D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits.

UNIT-I:
Meaning of research problem, Sources of research problem, Criteria Characteristics of a good research problem, Errors in selecting a research problem, Scope and objectives of research problem. Approaches of investigation of solutions for research problem, data collection, analysis, interpretation, Necessary instrumentations

UNIT-II:
Effective literature studies approaches, analysis, Plagiarism, Research ethics

UNIT-III:
Effective technical writing, how to write report, Paper Developing a Research Proposal, Format of research proposal, a presentation and assessment by a review committee

UNIT-IV:

UNIT-V:
TEXT BOOKS:
2. Wayne Goddard and Stuart Melville, “Research Methodology: An Introduction”

REFERENCES:
Note: Conduct any Ten exercises from the list given below:

1. Two- dimensional drawing using CAD software.
2. Three-dimensional drawing using CAD software.
3. Various Dimensioning and tolerancing techniques on typical products using CAD software.
4. Assembly and animation of simple assemblies like screw jack, bolt-nut mechanism, etc.
5. Truss analysis using FEA software.
7. Frame analysis using FEA software.
8. Buckling analysis of columns using FEA software.
9. Harmonic analysis using FEA software.
10. Fracture analysis using FEA software.
11. Analysis of laminated composites using FEA software.
12. Couple-field analysis using FEA software.
13. Modal Analysis
14. Transient dynamic analysis.
15. Spectrum analysis.
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD  
M. TECH. I Year I Sem. (DESIGN FOR MANUFACTURING/ DESIGN AND MANUFACTURING)  
ADVANCED CASTING & WELDING LAB (Lab - II)  

List of Experiments:  
1. Tensile Strength Evaluation of TIG Welded Specimens under variable conditions.  
3. Tensile Strength Evaluation of MIG Welded Specimens under variable conditions.  
5. Inclusion Analysis of Cast Specimens  
6. Size Analysis of Grains for Cast Specimens under different input variables  
7. Design of Runner & Riser  
8. Non-Destructive Testing of Welded Joint  
9. Study of Blow Moulding  
10. Study of Injection Moulding  

Note: Each experiment involves preparation of Joint/ Casting, specimen preparation, testing, evaluation and reporting may be chosen from the above list.
ENGLISH FOR RESEARCH PAPER WRITING (Audit Course - I & II)

Prerequisite: None

Course objectives: Students will be able to:
- Understand that how to improve your writing skills and level of readability
- Learn about what to write in each section
- Understand the skills needed when writing a Title Ensure the good quality of paper at very first-time submission

UNIT-I:
Planning and Preparation, Word Order, Breaking up long sentences, Structuring Paragraphs and Sentences, Being Concise and Removing Redundancy, Avoiding Ambiguity and Vagueness

UNIT-II:

UNIT-III:
Review of the Literature, Methods, Results, Discussion, Conclusions, The Final Check.

UNIT-IV:
key skills are needed when writing a Title, key skills are needed when writing an Abstract, key skills are needed when writing an Introduction, skills needed when writing a Review of the Literature,

UNIT-V:
skills are needed when writing the Methods, skills needed when writing the Results, skills are needed when writing the Discussion, skills are needed when writing the Conclusions. useful phrases, how to ensure paper is as good as it could possibly be the first-time submission

TEXT BOOKS/ REFERENCES:
Prerequisite: None

Course Objectives: Students will be able to
- learn to demonstrate a critical understanding of key concepts in disaster risk reduction and humanitarian response.
- critically evaluate disaster risk reduction and humanitarian response policy and practice from multiple perspectives.
- develop an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations.
- critically understand the strengths and weaknesses of disaster management approaches,
- planning and programming in different countries, particularly their home country or the countries they work in

UNIT-I:
Introduction:
Disaster: Definition, Factors and Significance; Difference Between Hazard and Disaster; Natural and Manmade Disasters: Difference, Nature, Types and Magnitude.
Disaster Prone Areas in India:
Study of Seismic Zones; Areas Prone to Floods and Droughts, Landslides and Avalanches; Areas Prone to Cyclonic and Coastal Hazards with Special Reference to Tsunami; Post-Disaster Diseases and Epidemics

UNIT-II:
Repercussions of Disasters and Hazards:

UNIT-III:
Disaster Preparedness and Management:
Preparedness: Monitoring of Phenomena Triggering A Disaster or Hazard; Evaluation of Risk: Application of Remote Sensing, Data from Meteorological and Other Agencies, Media Reports: Governmental and Community Preparedness.

UNIT-IV:
Risk Assessment Disaster Risk:

UNIT-V:
Disaster Mitigation:
Meaning, Concept and Strategies of Disaster Mitigation, Emerging Trends In Mitigation. Structural Mitigation and Non-Structural Mitigation, Programs of Disaster Mitigation in India.
TEXT BOOKS/ REFERENCES:
2. Sahni, Pardeep Et. Al. (Eds.),” Disaster Mitigation Experiences and Reflections”, Prentice Hall of India, New Delhi.
Prerequisite: None

Course Objectives:
- To get a working knowledge in illustrious Sanskrit, the scientific language in the world
- Learning of Sanskrit to improve brain functioning
- Learning of Sanskrit to develop the logic in mathematics, science & other subjects enhancing the memory power
- The engineering scholars equipped with Sanskrit will be able to explore the huge knowledge from ancient literature

Course Outcomes: Students will be able to
- Understanding basic Sanskrit language
- Ancient Sanskrit literature about science & technology can be understood
- Being a logical language will help to develop logic in students

UNIT-I:
Alphabets in Sanskrit,

UNIT-II:
Past/Present/Future Tense, Simple Sentences

UNIT-III:
Order, Introduction of roots,

UNIT-IV:
Technical information about Sanskrit Literature

UNIT-V:
Technical concepts of Engineering-Electrical, Mechanical, Architecture, Mathematics

TEXT BOOKS/ REFERENCES:
1. “Abhyaspustakam” – Dr. Vishwas, Samskrita-Bharti Publication, New Delhi
2. “Teach Yourself Sanskrit” Prathama Deeksha-Vempati Kutumbshastri, Rashtriya Sanskrit Sansthanam, New Delhi Publication
Prerequisite: None

Course Objectives: Students will be able to
- Understand value of education and self-development
- Imbibe good values in students
- Let the should know about the importance of character

Course outcomes: Students will be able to
- Knowledge of self-development
- Learn the importance of Human values
- Developing the overall personality

UNIT-I:

UNIT-II:

UNIT-III:
Personality and Behavior Development - Soul and Scientific attitude. Positive Thinking. Integrity and discipline, Punctuality, Love and Kindness.

UNIT-IV:

UNIT-V:

TEXT BOOKS/ REFERENCES:
CONSTITUTION OF INDIA (Audit Course - I & II)

Prerequisite: None

Course Objectives: Students will be able to:
- Understand the premises informing the twin themes of liberty and freedom from a civil rights perspective.
- To address the growth of Indian opinion regarding modern Indian intellectuals’ constitutional role and entitlement to civil and economic rights as well as the emergence of nationhood in the early years of Indian nationalism.
- To address the role of socialism in India after the commencement of the Bolshevik Revolution in 1917 and its impact on the initial drafting of the Indian Constitution.

Course Outcomes: Students will be able to:
- Discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics.
- Discuss the intellectual origins of the framework of argument that informed the conceptualization of social reforms leading to revolution in India.
- Discuss the circumstances surrounding the foundation of the Congress Socialist Party [CSP] under the leadership of Jawaharlal Nehru and the eventual failure of the proposal of direct elections through adult suffrage in the Indian Constitution.
- Discuss the passage of the Hindu Code Bill of 1956.

UNIT-I:
History of Making of the Indian Constitution: History Drafting Committee, (Composition & Working),
Philosophy of the Indian Constitution: Preamble, Salient Features.

UNIT-II:

UNIT-III:
Organs of Governance: Parliament, Composition, Qualifications and Disqualifications, Powers and Functions, Executive, President, Governor, Council of Ministers, Judiciary, Appointment and Transfer of Judges, Qualification, Powers and Functions.

UNIT-IV:

UNIT-V:
TEXT BOOKS/ REFERENCES:
1. The Constitution of India, 1950 (Bare Act), Government Publication.
PEDAGOGY STUDIES (Audit Course - I & II)

Prerequisite: None

Course Objectives: Students will be able to:
- Review existing evidence on the review topic to inform programme design and policy making undertaken by the DFID, other agencies and researchers.
- Identify critical evidence gaps to guide the development.

Course Outcomes: Students will be able to understand:
- What pedagogical practices are being used by teachers in formal and informal classrooms in developing countries?
- What is the evidence on the effectiveness of these pedagogical practices, in what conditions, and with what population of learners?
- How can teacher education (curriculum and practicum) and the school curriculum and guidance materials best support effective pedagogy?

UNIT-I:

UNIT-II:
Thematic overview: Pedagogical practices are being used by teachers in formal and informal classrooms in developing countries. Curriculum, Teacher education.

UNIT-III:
Evidence on the effectiveness of pedagogical practices, Methodology for the indepth stage: quality assessment of included studies. How can teacher education (curriculum and practicum) and the school curriculum and guidance materials best support effective pedagogy? Theory of change. Strength and nature of the body of evidence for effective pedagogical practices. Pedagogic theory and pedagogical approaches. Teachers’ attitudes and beliefs and Pedagogic strategies.

UNIT-IV:
Professional development: alignment with classroom practices and follow-up support, Peer support, Support from the head teacher and the community. Curriculum and assessment, Barriers to learning: limited resources and large class sizes.

UNIT-V:
Research gaps and future directions: Research design, Contexts, Pedagogy, Teacher education, Curriculum and assessment, Dissemination and research impact.

TEXT BOOKS/ REFERENCES:
STRESS MANAGEMENT BY YOGA (Audit Course - I & II)

Prerequisite: None

Course Objectives:
- To achieve overall health of body and mind
- To overcome stress

Course Outcomes: Students will be able to:
- Develop healthy mind in a healthy body thus improving social health also
- Improve efficiency

UNIT-I:
Definitions of Eight parts of yog. (Ashtanga)

UNIT-II:
Yam and Niyam.

UNIT-III:
Do’s and Don’t’s in life.
i) Ahinsa, satya, astheya, brahmacharya and aparigrah
ii) Shaucha, santosh, tapa, swadhyay, ishwarpranidhan

UNIT-IV:
Asan and Pranayam

UNIT-V:
i) Various yog poses and their benefits for mind & body
ii) Regularization of breathing techniques and its effects-Types of pranayam

TEXT BOOKS/ REFERENCES:
1. “Yogic Asanas for Group Tarining-Part-I”: Janardan Swami Yogabhyasi Mandal, Nagpur
2. “Rajayoga or conquering the Internal Nature” by Swami Vivekananda, Advaita Ashrama (Publication Department), Kolkata
PERSONALITY DEVELOPMENT THROUGH LIFE ENLIGHTENMENT SKILLS
(Audit Course - I & II)

Prerequisite: None

Course Objectives:
- To learn to achieve the highest goal happily
- To become a person with stable mind, pleasing personality and determination
- To awaken wisdom in students

Course Outcomes: Students will be able to
- Study of Shrimad-Bhagwad-Geeta will help the student in developing his personality and achieve the highest goal in life
- The person who has studied Geeta will lead the nation and mankind to peace and prosperity
- Study of Neetishatakam will help in developing versatile personality of students

UNIT-I:
Neetisatakam-Holistic development of personality
- Verses- 19,20,21,22 (wisdom)
- Verses- 29,31,32 (pride & heroism)
- Verses- 26,28,63,65 (virtue)

UNIT-II:
Neetisatakam-Holistic development of personality
- Verses- 52,53,59 (don’ts)
- Verses- 71,73,75,78 (do’s)

UNIT-III:
Approach to day to day work and duties.
- Shrimad Bhagwad Geeta: Chapter 2-Verses 41, 47,48,
- Chapter 3-Verses 13, 21, 27, 35, Chapter 6-Verses 5,13,17, 23, 35,
- Chapter 18-Verses 45, 46, 48.

UNIT-IV:
Statements of basic knowledge.
- Shrimad Bhagwad Geeta: Chapter 2-Verses 56, 62, 68
- Chapter 12 -Verses 13, 14, 15, 16,17, 18
- Personality of Role model. Shrimad Bhagwad Geeta:

UNIT-V:
- Chapter2-Verses 17, Chapter 3-Verses 36,37,42,
- Chapter 4-Verses 18, 38,39
- Chapter18 – Verses 37,38,63

TEXT BOOKS/ REFERENCES:
1. “Srimad Bhagavad Gita” by Swami Swarupananda Advaita Ashram (Publication Department), Kolkata.
2. Bhartrihari’s Three Satakam (Niti-sringar-vairagya) by P.Gopinath, Rashtriya Sanskrit Sansthanam, New Delhi.