

**Deenbandhu Chhotu Ram University of Science & Technology, Murthal (Sonapat) Scheme of  
 Studies & Examinations under Choice Based Credit System  
 Programme: B. Tech. in Mechanical Engineering; Year - 2<sup>nd</sup> (Semester – III); Session: 2019-20**

S. No.	Course Code	Course Title	Teaching Schedule			Marks of Class Work	Examination Marks		Total	Credit	Duration of Exam
			L	T	P		Theory	Practical			
1	MGT201C	Engineering Economics (common with ECE, Auto & CSE)	3	0	0	25	75	-	100	3	3
2	MATHS201C	Mathematics-III (common with Auto & Aero)	3	1	0	25	75	-	100	4	3
3	BT 221C	Biology for Engineers (common with BT, Auto, Aero and CE)	3	0	0	25	75	-	100	3	3
4	ECE 211C	Basic Electronics Engineering	3	1	0	25	75	-	100	4	3
5	ME 201C	Engineering Mechanics (common with EE, EEE & Auto)	3	1	0	25	75	-	100	4	3
6	ME 203C	Thermodynamics	3	1	0	25	75	-	100	4	3
7	MC203C / MC 201C	Constitution of India (Group A) / Environmental Studies (Group B)	3	0	0	25	75	-	100	0	3
<b>Total</b>			<b>21</b>	<b>4</b>	<b>0</b>	<b>175</b>	<b>525</b>		<b>700</b>	<b>22</b>	

**L = Lecture, T = Tutorial, P = Practical, AUD = Audit Course, & C = Credits**

**NOTE:**

1. For student admitted in B. Tech. 1st Semester (C-Scheme) in 2019 and all trailing students, Examinations and evaluation of students shall be conducted as per guidelines AICTE Examinations Reforms covering the entire syllabus. The students shall be made aware about the reforms.
2. Students will be allowed to use non-programmable scientific calculator. However, sharing of calculators will not be permitted in the examinations

**Subject: Engineering Economics****Subject Code: MGT 201C**

L	T	P	Credits
3	-	-	3

<b>Class Work</b>	<b>: 25 Marks</b>
<b>Examination</b>	<b>: 75 Marks</b>
<b>Total</b>	<b>: 100Marks</b>
<b>Duration of Examination</b>	<b>: 3 Hours</b>

**UNIT – I**

- Topic No.1 Concept of Economics- various definitions, nature of Economic problem,  
Topic No.2 Micro and macro economics- their features and scope, production possibility curve,  
Topic No.3 Relationship between Science, Engineering Technology and Economics.  
Topic No.4 Utility: Concept and measurement of utility,  
Topic No.5 Law of Diminishing Marginal Utility,  
Topic No. 6 Law of equi-marginal utility – its importance and practical applications.

**UNIT - II**

- Topic No.7 Demand: Concept, Individual and Market demand schedule,  
Topic No.8 Law of demand, shape of demand curve. Elasticity of demand:  
Topic No.9 Concept, measurement of elasticity of demand,  
Topic No.10 Factors affecting elasticity of demand, practical application of elasticity of demand.  
Topic No.11 Various concepts of cost-Fixed cost, variable cost, average cost,  
Topic No.12 Marginal cost, money cost, real cost, opportunity cost.

**UNIT - III**

- Topic No.13 Meaning of production and factors of production;  
Topic No.14 Law of variable proportions, Law of Return to Scale,  
Topic No.15 Internal and External economics and diseconomies of scale.  
Topic No.16 Meaning of Market, Type of Market– perfect Competition,  
Topic No.17 Monopoly, Oligopoly, Monopolistic competition (Main features of these markers).

**UNIT - IV**

- Topic No.18 Supply and Law of Supply, Role of Demand & Supply in Price Determination  
Topic No.19 Effect of changes in demand and supply on price.  
Topic No.20 Nature and characteristics of Indian economy,  
Topic No.21 Privatization – meaning, merits and demerits. Globalisation – meaning, merits and demerits.

**TEXT BOOKS:**

1. Ahuja H.L.”Micro Economic Theory” S. Chand Publication, New Delhi
2. Dewett K.K “Modern Economic Theory” S. Chand Publication, New Delhi
3. Jain T.R, Grover M.L, Ohri V.K Khanna O.P,”Economics for engineers” V.K .Publication ,New Delhi
4. Dr. R.K. Agarwal & Rashmi Agarwal, “ Principles and Applications of Economic”, Pragati Prakashan.

**REFERNCE BOOKS:**

1. Jhingan I. Jhingan M.L”Micro Economic Theory” S.Chand Publication ,New Delhi
2. Chopra P.N “Principle of Economics” Kalyani Publishers, Delhi
3. Mishra S.K “Modern Micro Economics” Pragati Publication Mumbai. 44
4. Dwivedi D.N ”Micro Economics ” Pearson Education, New Delhi.

**Note:**

1. In Semester Examinations, the examiner will set two questions from each unit (total 8 questions in all) covering the entire syllabus. The students will be required to attend only five questions selecting atleast one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

**For student admitted in B. Tech. 1<sup>st</sup> Year (C-Scheme) in 2019 and all trailing students.**

Examinations and evaluation of students shall be conducted as per guidelines AICTE Examinations Reforms covering the entire syllabus. The students shall be made aware about the reforms

**Subject: Mathematics – III**  
**Subject Code: MATHS 201C**

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 hours	100

**UNIT NO.1 Partial Differential Equations**

- Topic No. 1: First order Partial Differential Equations
- Topic No. 2: Solutions of First order Linear and Non-Linear PDEs
- Topic No. 3: Solution to Homogenous and Non-Homogenous
- Topic No. 4: Linear Partial Differential Equations of second and higher order
- Topic No. 5: complimentary function and particular integral method

**UNIT NO.2 Flows, Vibrations and Diffusions**

- Topic No. 6: Flows, Vibrations and Diffusions
- Topic No. 7: Second-order Linear equations and their classification
- Topic No. 8: Initial and, Boundary conditions
- Topic No. 9: D'Alembert's solution of the Wave equation
- Topic No.10: Duhamel's principle for One Dimensional Wave Equation
- Topic No. 11: Separation of variables
- Topic No. 12: Method to Simple Problems in Cartesian coordinates.

**UNIT NO.3 Statistics**

- Topic No. 13: Basic Statistics
- Topic No. 14: Measures of Central Tendency
- Topic No. 15: Moments, Skewness and Kurtosis
- Topic No. 16: Probability distributions- Binomial, Poisson and Normal
- Topic No. 17: Evaluation of Statistical Parameters for Correlation and Regression, Rank Correlation
- Topic No. 18: Curve fitting by the Method of Least Squares
- Topic No. 19: Fitting of Straight Lines
- Topic No. 20: Second Degree Parabolas and more general curves.

**UNIT NO.4 Probability**

- Topic No 21 Probability spaces,
- Topic No. 22 Conditional Probability,
- Topic No. 24 Independence; Discrete random variables, Independent random variables,
- Topic No. 25 The Multinomial Distribution,
- Topic No. 26: Poisson Approximation to the Binomial Distribution,
- Topic No. 27 Infinite sequences of Bernoulli Trials,
- Topic No. 28: Sums of independent random variables;
- Topic No. 29: Expectation of Discrete Random Variables
- Topic No. 30 Moments, Variance of a sum, Correlation coefficient,
- Topic No. 31 Chebyshev's Inequality

**REFERENCE BOOKS:**

1. S. J. Farlow, Partial Differential Equations for Scientists and Engineers, Dover Publications, 1993.
2. R. Haberman; Elementary Applied Partial Differential equations with Fourier Series And Boundary Value Problem, 4th Ed., Prentice Hall, 1998.
3. Ian Sneddon, Elements of Partial Deferential Equation, McGraw Hill, 1964.
4. S.S. Sastry, Engineering Mathematics, PHI, Vol. I & II.

1. **Note:** In Semester Examinations, the examiner will set two questions from each unit (total 8 questions in all) covering the entire syllabus. The students will be required to attend only five questions selecting at least one question from each unit.

The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed



**Subject: BIOLOGY FOR ENGINEERS**  
**Subject Code: BT 221C**

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	-	-	3	25	75	3 hours	100

**UNIT – I Introduction**

- Topic No 1 Significance of biology;
- Topic No 2 Why study biology;
- Topic No 3 Biological observations in history that led to the discovery of some major engineering basics
- Topic No 4 Fundamental similarities
- Topic No 5 Differences between science and engineering- humans as the best machines,
- Topic No 6 Comparison between eye and camera, flying of a bird and aircraft etc.
- Topic No 7 Classification based on Cellularity- unicellular or multicellular
- Topic No 8 Ultrastructure- prokaryotes or eukaryotes (c)
- Topic No 9 Energy and carbon utilization- autotrophs, heterotrophs and lithotrophs (d)
- Topic No 10 Ammonia excretion- aminotelic, uricotelic, or ureotelic (e)
- Topic No 11 Habitat- aquatic or terrestrial; Molecular taxonomy- three major kingdoms of life.
- Topic No 12 Concept of- single-celled organisms, species & strains;
- Topic No 13 Identification and classification of microorganisms;
- Topic No 14 Ecological aspects of single-celled organisms; Microscopy.

**UNIT – II Biomolecules and Proteins and Enzymes:**

- Topic No 15 Molecules of Life- Monomeric units and polymeric structures- sugars, starch and cellulose;
- Topic No 16 Amino acids Proteins
- Topic No 17 Nucleotides and DNA/ RNA;
- Topic No 18 Two carbon units and lipids.
- Topic No 19 Proteins- structure and function;
- Topic No 20 Hierarchy in protein structure- primary, secondary, tertiary and quaternary structure;
- Topic No 21 Proteins as enzymes, transporters, receptors and structural elements;
- Topic No 22 Enzymes: classification and mechanism of action; Enzyme catalyzed reactions;
- Topic No 23 Enzyme kinetics and kinetic parameters;
- Topic No 24 RNA catalysis.

**UNIT – III Genetics and Genes, Chromosomes and Information transfer :**

- Topic No 25 Genetics is to biology what Newton's laws are to physics;
- Topic No 26 Mendel's laws of genetics;
- Topic No 27 Concept of- allele, recessiveness and dominance, segregation and independent assortment;
- Topic No 28 Genetic material passes from parent to offspring;
- Topic No 29 Epistasis; Mapping of phenotype to genes, gene/ linkage mapping;
- Topic No 30 Single gene disorders in humans;
- Topic No 31 Meiosis and mitosis
- Topic No 32 DNA as genetic material;
- Topic No 33 Hierarchy of DNA structure- single stranded to double stranded to nucleosomes to chromosomes;
- Topic No 34 Molecular basis of information transfer;
- Topic No 35 Concept of genetic code;
- Topic No 36 Universality and degeneracy of genetic code.

**UNIT – IV Metabolism:**

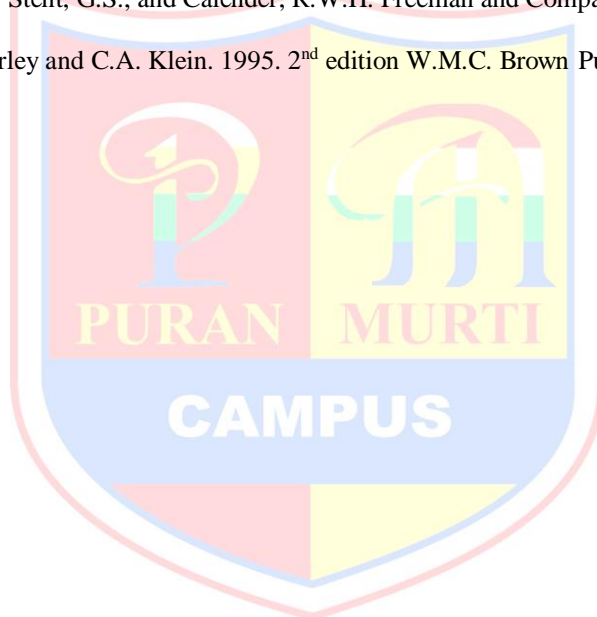
- Topic No 37 Similarities between fundamental principles of energy transactions in physical and biological world;
- Topic No 38 Thermodynamics as applied to biological systems;
- Topic No 39 Exothermic and endothermic versus endergonic and exergonic reactions;
- Topic No 40 Concept of  $K_{eq}$  and its relation to standard free energy;
- Topic No 41 Spontaneity; ATP as an energy currency;
- Topic No 42 Glycolysis and Krebs cycle (breakdown of glucose to  $CO_2$  to  $H_2O$ );
- Topic No 43 Photosynthesis (synthesis of glucose from  $CO_2$  and  $H_2O$ );
- Topic No 44 Energy yielding and energy consuming reactions;
- Topic No 45 Concept of energy change

**TEXT BOOK:**

1. Biology: A global approach: Campbell, N.A.; Reece, J.B.; Urry, Lisa; Cain, M.L.; Wasserman, S.A.; Minorsky, P.V.; Jackson, R. B. Pearson Education Ltd.
2. Outlines of Biochemistry, Conn, E.E.; Stumpf, P.K.; Bruening, G.; Doi, R.H.; John Wiley and Sons.

**REFERENCE BOOKS:**

1. Principles of Biochemistry (V Edition), By Nelson, D.L.; and Cox, M.M.W.H. Freeman and Company.
2. Molecular Genetics (Second edition), Stent, G.S.; and Calender, R.W.H. Freeman and Company. Distributed by Satish Kumar Jain for CBS Publisher.
3. Microbiology, Prescott, L.M.J.P.; Harley and C.A. Klein. 1995. 2<sup>nd</sup> edition W.M.C. Brown Publishers..



**Subject: Basic Electronics Engineering**

**Subject Code: ECE 211C**

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 hours	100

**UNIT- I Semiconductor Devices and Applications:**

- Topic No 1 Introduction to P-N junction Diode and V-I characteristics,
- Topic No 2 Half wave and Full-wave rectifiers, capacitor filter.
- Topic No 3 Zener diode and its characteristics,
- Topic No 4 Zener diode as voltage regulator.
- Topic No 5 Regulated power supply IC based on 78XX and 79XX series.
- Topic No 6 Introduction to BJT, its input-output and transfer characteristics,
- Topic No 7 BJT as a single stage CE amplifier, frequency response and bandwidth.

**UNIT-II Operational amplifier and its applications:**

- Topic No 8 Introduction to operational amplifiers,
- Topic No 9 Op-amp input modes and parameters,
- Topic No 10 Op-amp in open loop configuration,
- Topic No 11 Op-amp with negative feedback,
- Topic No 12 Study of practical op-amp IC 741,
- Topic No 13 Inverting and non-inverting amplifier applications:
- Topic No 14 Summing and difference amplifier,
- Topic No 15 Unity gain buffer, comparator,
- Topic No 16 Integrator and differentiator.
- Topic No 17 Timing Circuits and Oscillators:
- Topic No 18 RC-timing circuits,
- Topic No 19 IC 555 and its applications as astable and monostable multi-vibrators, positive feedback,
- Topic No 20 Barkhausen's criteria for oscillation,
- Topic No 21 R-C phase shift and Wein bridge oscillator.

**UNIT-III Digital Electronics Fundamentals:**

- Topic No 22 Difference between analog and digital signals,
- Topic No 23 Boolean algebra, Basic and Universal Gates, Symbols,
- Topic No 24 Truth tables, logic expressions,
- Topic No 25 Logic simplification using K- map,
- Topic No 26 Half and full adder/subtractor, multiplexers,
- Topic No 27 Demultiplexers, flip-flops, shift registers, counters.
- Topic No 28 Block diagram of microprocessor 8085,
- Topic No 29 Instruction set, Interrupt structure
- Topic No 30 Addressing modes, Simple programs

**UNIT-IV Electronic Communication Systems:**

- Topic No 31 The elements of communication system,
- Topic No 32 Classification of signals
- Topic No 33 Analog and Digital Communication,
- Topic No 34 Need of modulation,
- Topic No 35 AM and FM (modulation and demodulation) schemes, modulation index.
- Topic No 36 Mobile communication systems: wired and wireless,
- Topic No 37 Cellular concept and block diagram of GSM system..

**TEXT/REFERENCE BOOKS:**

1. Floyd ,” Electronic Devices” Pearson Education 9th edition, 2012.
2. R.P. Jain , “Modern Digital Electronics”, Tata Mc Graw Hill, 3rd Edition, 2007.
3. Manoj Duhan, “Communication Systems”, I.K International, 2nd Edition, 2012.
4. Ramesh Gaonkar, “Microprocessor Architecture, Programming and Applications with the 8085”, 6/e October 2013  
Ramakant A. Gayakwad, “Op-Amps and Linear Integrated Circuit”, PHI, 1993.





**Subject: ENGINEERING MECHANICS**  
**Subject Code: ME 201C**

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 hours	100

**UNIT- I Review Of Basic Force Systems:**

Topic No1 Dimensions and units of mechanics,  
 Topic No2 Idealization of mechanics,  
 Topic No3 Laws of mechanics,  
 Topic No4 Vector algebra review,  
 Topic No5 Moment of a force about a point and axis  
 Topic No6 The couple and couple moment,  
 Topic No7 Addition and subtraction of couples,  
 Topic No8 Moment of a couple about a line  
 Topic No9 Translation of a force to a parallel position,  
 Topic No10 Rof a force system, equivalent force,  
 Topic No11 Friction – static and dynamic, Problems.  
 Topic No12 Equilibrium: Introduction, free body diagram,  
 Topic No13 Columes, general equations of equilibrium,  
 Topic No14 Tpoint equivalent loading, static in-determinacy,  
 Topic No15 Simple truss,  
 Topic No16 Method of joints,  
 Topic No17 Method of sections, Problems.

**UNIT-II Properties of Surfaces, Moments And Products Of Inertia:**

Topic No 18 First moment of an area and the centroid,  
 Topic No19 Formal definition of inertia quantities,  
 Topic No20 Relation between mass-inertia terms and area-inertia terms,  
 Topic No21 Tof coordinate axes, transportation properties of the inertia terms,  
 Topic No22 A brief introduction to tensors,  
 Topic No 23 Tinertia of ellipsoid and principal moments of inertia, Problems.

**UNIT-III Kinematics Of Particles And Rigid Bodies:**

Topic No24 Velocity and acceleration in path and cylindrical coordinates,  
 Topic No25 Motion of a particle relative to a pair of translating axes,  
 Topic No26 Inertial and non-inertial frame of reference,  
 Topic No27 Centripetal and coriolis acceleration,  
 Topic No28 Definition and motion of a rigid body in the plane,  
 Topic No29 Translation and rotation in the plane,  
 Topic No30 Chasles theorem,  
 Topic No31 Kinematics in a coordinate system rotating and translating in the plane,  
 Topic No32 Amomentum about a point of a rigid body in planar motion;  
 Topic No33 Euler’s laws of motion. Problems.

**UNIT-IV Particle Dynamics, Energy & Momentum Methods:**

Topic No34 Newton's law for rectangular coordinates & cylindrical coordinates,  
 Topic No35 Newton's law for path variables,  
 Topic No36 Work energy equations, work energy equations for a systems of particles,  
 Topic No37 Linear and angular momentum equations for a systems of particles,  
 Topic No38 Conservation of angular momentum, Problems.

**TEXT BOOK:**

1. Engineering Mechanics- Statics and Dynamics by R. C. Hibler, Pearson
2. Engineering Mechanics - Statics & Dynamics by I.H. Shames, PHI, New Delhi.
3. Engineering Mechanics – Timoschenko.

**REFERENCE BOOKS:**

1. Statics & Dynamics by J.L. Meriam, JohnWiley & Sons (P) Ltd. New York.  
Statics & Dynamics by Beer & Johnson, MGH, New Delhi



**Subject: THERMODYNAMICS**  
**Subject Code: ME 203C**

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 hours	100

**UNIT – I Basic Concepts:**

- Topic No 1 Thermodynamic system and control volume,
- Topic No 2 Properties, state & Process, cycle,
- Topic No 3 Thermodynamic equilibrium;
- Topic No 4 Zeroth law and temperature scales;
- Topic No 5 Thermodynamic concept of energy;
- Topic No 6 Displacement work,
- Topic No 7 Definition of heat; examples of heat/work interaction in systems
- Topic No 8 First Law of Thermodynamics:
- Topic No 9 First law for cyclic & con-cyclic processes;
- Topic No 10 Concept of total energy;
- Topic No 11 Energy as a property; different forms of stored energy,
- Topic No 12 Internal energy and Enthalpy; free expansion process.
- Topic No 13 First Law for Flow Processes - general energy equation for a control volume;
- Topic No 14 Steady state steady flow processes including throttling;
- Topic No 15 Examples of steady flow devices;
- Topic No 16 Unsteady processes; examples of steady and unsteady I law applications for system and control volume.

**UNIT – II Pure Substance and Phase:**

- Topic No 17 Phase Transformation,
- Topic No 18 Solid-Liquid-Vapour Equilibrium,
- Topic No 19 Throttling and Measurement of Dryness Fraction of Steam,
- Topic No 20 Idea of a generalized chart and the law of corresponding states
- Topic No 21 Concept of ideal gases and their equations of state.Problems.
- Topic No 22 Second Law of Thermodynamics:
- Topic No23 Definitions of direct and reverse heat engines;
- Topic No 24 Definitions of thermal efficiency and COP;
- Topic No 25 The directional constraints on natural processes;
- Topic No 26 Kelvin- Planck and Clausius Statements and their Equivalence;
- Topic No 27 Concept of reversibility;
- Topic No 28 Carnot principle; Absolute thermodynamic temperature scale;
- Topic No 29 Clausius Inequality,
- Topic No 30 Entropy,
- Topic No 31 Change in entropy in various thermodynamic processes,
- Topic No 32 T-dS relations, entropy balance for closed and open systems,
- Topic No 33 Principle of increase-in-Entropy, entropy generation,
- Topic No 34 Third Law of Thermodynamics. Problems

**UNIT – III Energy and Introduction to Properties of Mixtures and Phases:**

- Topic No35 Concept of reversible work and irreversibility;
- Topic No36 Second law efficiency;
- Topic No37 Energy change of a system: closed and open system
- Topic No 38 Energy transfer by heat, work and mass,
- Topic No 39 Energy destruction,
- Topic No 40 Energy balance in closed and open systems. Problems

- Topic No 41 Dalton's model,
- Topic No 42 Equation of state,
- Topic No 43 Properties of ideal gas mixtures,
- Topic No 44 Change in entropy on mixing;
- Topic No 45 Law of corresponding states and introduction to real-gas mixtures;
- Topic No 46 Gibbs phase rule; Air/Water Mixtures,
- Topic No 47 Psychrometrics. Problems

**UNIT – IV Thermodynamic Property Relations:**

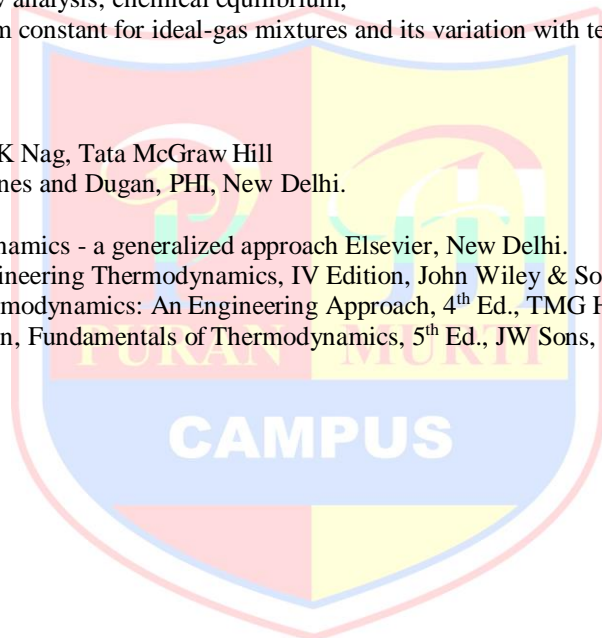
- Topic No 48 Maxwell relations;
- Topic No 49 Clausius - Clapeyron equation;
- Topic No 50 Difference in heat capacities; Ratio of heat capacities;
- Topic No 51 Joule-Thompson coefficient and inversion curve.
- Topic No 52 Thermodynamics of Reactive Systems:
- Topic No 53 Stoichiometry of combustion,
- Topic No 54 First law analysis;
- Topic No 55 Internal energy and enthalpy of reaction;
- Topic No 56 Enthalpy of formation;
- Topic No 57 Second law analysis; chemical equilibrium;
- Topic No 58 Equilibrium constant for ideal-gas mixtures and its variation with temperature. Problems

**TEXT BOOK:**

1. Engineering Thermodynamics – P K Nag, Tata McGraw Hill
2. Engineering Thermodynamics – Jones and Dugan, PHI, New Delhi.

**REFERENCE BOOKS:**

1. Dhar, P.L., Engineering Thermodynamics - a generalized approach Elsevier, New Delhi.
2. Moran M.J. and Shapiro H.N., Engineering Thermodynamics, IV Edition, John Wiley & Sons, Singapore.
3. Çengel Y.A. and Boles, M.A., Thermodynamics: An Engineering Approach, 4<sup>th</sup> Ed., TMG Hill, New Delhi.
4. Sonntag, Borgnakke and Van Wylen, Fundamentals of Thermodynamics, 5<sup>th</sup> Ed., JW Sons, Singapore.



**Subject: Constitution of India**

**Subject Code: MC203C**

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	-	-	3	25	75	3 hours	100

**Unit 1 Philosophy of Indian Constitution:**

Topic No 1 Ideological Basis and Salient Features of Indian Constitution,  
 Topic No 2 Fundamental Rights & Duties of the Citizens,  
 Topic No3 Directive Principles of State Policy

**Unit 2 Nature and Dynamics of Indian Federalism:**

Topic No 4 Federalism: Theory and Practice in India,  
 Topic No 5 Federal Features of the Indian Constitution, Legislative,  
 Topic No 6 Administrative and Financial Relations between the Union and the States.

**Unit 3 Union and State Legislature :**

Topic No 7 Parliament: Composition, Functions and Working of the Parliamentary system  
 Topic No 8 State Legislature:  
 Topic No 9 Composition and Functions of Vidhan Sabha/ Vidhan Parishad

**Unit 4 Centre and State: Executive and Judiciary:**

Topic No 10 President,  
 Topic No 11 Prime Minister and Council of Ministers ,  
 Topic No 12 Governor,  
 Topic No 13 Chief Minister and Council of Ministers, Judiciary:  
 Topic No 14 Supreme Court;  
 Topic No 15 High Court

**Text Books:**

1. Austin G., The Indian Constitution: Corner Stone of a Nation, New Delhi: Oxford University Press, 196
2. Basu D.D., An Introduction to the Constitution of India, New Delhi: Prentice Hall, 1994
3. Kothari R., Politics in India, New Delhi: Orient Language, 1970
4. Siwach J.R., Dynamics of Indian Government and Politics, New Delhi: Sterling Publishers, 1985
5. Bhambhri C.P., The Indian State--Fifty Years, New Delhi: Shipra, 1997
6. Ghai U.R., Indian Political System, Jalandhar: New Academic Publishing Company, 2010

**Course Outcomes:** Upon successful completion of this course, students will be able:

1. To understand basic features of the constitution and rights and duties of Indian citizens
2. To understand the basic structure of Centre and State Government
3. To get acquainted with the nature of parliamentary form of Government  
 To have knowledge of the executive and judiciary powers in Indian democratic set-up

**Scheme of End Semester Examinations (Major Test):**

1. The duration of examinations will be three hours.
2. Nine questions of 15 marks each will be set out of which the students will have to attempt five questions in all.
3. First question of 15 marks will be compulsory. It will cover all the four units of the syllabus. The nature of the questions in each unit will depend upon the nature of content therein. The questions may have sub-parts with marks assigned against each.
4. Question No 02 to 09 of 15 marks each will be set from the four units of the syllabus --- two from each unit.
5. In addition to first compulsory question the students will have to attempt four more questions, selecting one from each unit.

**Subject: Environmental Studies**  
**Subject Code: MC201C**

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	-	-	3	25	75	3 hours	100

**UNIT – I Environmental Studies and Environmental Pollution**

- Topic No 1 The Multidisciplinary Nature of Environmental Studies,
- Topic No 2 Introduction to Environment:
- Topic No 3 Definition, Scope, and importance of environmental studies;
- Topic No 4 Need for public awareness.
- Topic No 5 Environmental Pollution: Definition, Cause and effects
- Topic No 6 Air pollution,
- Topic No7 Waterpollution
- Topic No8 Soil pollution,
- Topic No 9 Marine pollution,
- Topic No10 Noise pollution,
- Topic No 11 Role of an individual in prevention of pollution,
- Topic No 12 Pollution case studies

**UNIT – II Natural Resources:**

- Topic No13 Water resources: over-utilization, floods, drought, dams-benefits and problems;
- Topic No14 Mineral resources: Use and exploitation, environmental effects;
- Topic No15 Food resources: changes caused by modern agriculture, fertilizer-pesticide Problems, water logging,
- Topic No16 Energy resources: Growing energy needs, renewable and non renewable energy Sources;
- Topic No17 Land resources: Land as a resource, land degradation, man induced landslides,
- Topic No18 Soil erosion and desertification.

**UNIT – III Ecosystems and Biodiversity**

- Topic No 19 Concept of an ecosystem,
- Topic No 20 Structure and function,
- Topic No 21 Energy flow,
- Topic No 22 Ecological succession,
- Topic No 23 Ecological pyramids.
- Topic No24 Concept of Biodiversity, definition and types,
- Topic No25 Hot-spots of biodiversity; threats to biodiversity,
- Topic No26 Endangered and endemic species of India, Conservation of biodiversity.

**UNIT - IV Social Issues and Environment**

- Topic No 27 Water conservation,
- Topic No 28 Rain water harvesting,
- Topic No 29 Environmental ethics: Issues and possible solutions.
- Topic No 30 Climate change, global warming,
- Topic No 31 Acid rain,
- Topic No 32 Ozone layer depletion,
- Topic No 33 Public awareness.
- Topic No34 Population growth, variation among nations,
- Topic No35 Family Welfare Programmed.
- Topic No 36 Human Population and the Environment
- Topic No 37 Population growth,
- Topic No 38 Population explosion,
- Topic No 39 Women and Child Welfare.

Field Work –

1. Visit to a local area to document environmental assets—river/forest/grassland/hill/ mountain.
2. Visit to a local polluted site—Urban/Rural/Industrial/Agricultural.
3. Study of common plants, insects, birds.
4. Study of simple ecosystems—pond, river, hill slopes, etc

REFERNCE BOOKS:

1. A Textbook of Environmental Studies by Asthana D.K. and Asthana Meera
2. Fundamental Concepts in Environmental Studies by Mishra D.D.
3. Environmental Studies by S.C Sharma M.P Poonia
4. Textbook of Environmental Studies for Undergraduate by Erach Bharucha  
Environmental Studies: Third Edition by R. Rajagopalan



