

# **Walchand College of Engineering, Sangli**

*(Government Aided Autonomous Institute)*



## **Course Contents (Syllabus) for Second Year M. Tech. (Mechanical Heat Power Engineering) Sem - III to IV**

**AY 2020-21**

<b>Title of the Course:</b> <b>Dissertation Phase I, Dissertation Phase II 3HP690/691/692</b>	L	T	P	Cr
	0	0	8 +12	4+2+4

**Pre-Requisite Courses:**

**Textbooks: NIL**

**References:**

All National and International Journals

**Course Objectives :**

1. Acquire knowledge to tackle real world problems of societal concerns.
2. Impart flexibility to the student to have increased control over his/ her learning.
3. Teachers would serve as mentor/facilitator of inquiry and reflection rather than as an instructor.
4. Enhance student's learning through increased interaction with peers and colleagues.

**Course Learning Outcomes:**

CO	After the completion of the course the student should be able to	Bloom's Cognitive	
		level	Descriptor
CO1	Search the existing literature and identification of research problem	IV	Analyzing
CO2	Design and develop the solution for complex engineering problem.	V	Evaluating
CO3	Create the new knowledge in the specialized field	VI	Creating

**CO-PO Mapping :**

	PO1	PO2	PO3	PO4	PO5	PO6
CO1	2	2				2
CO2	1	1	3	3	3	2
CO3	1	1		3	3	3

**Assessments :**

**Teacher Assessment:**

In Semester Evaluation (ISE) and End Semester Evaluation (ESE)

Evaluation Scheme			
Scheme	Credits	Practical (Marks )	
		Max	Min for Passing
MSE	4	100	40
ISE II	2	100	40
ESE	4	100	40

**Course Contents:**

Students are expected to carry out independent research work on the chosen topic. In this semester it is expected that the student has carried out substantial research work including exhaustive literature survey, formulation of the research problem, development/fabrication of experimental set-up (if any/required) and testing, and analysis of initial results thus obtained. In fourth semester, the students continue their dissertation work. It is expected that the student has completed most of the experimental/computation works and analyzed the results so obtained as proposed in the synopsis. The work should be completed in all respects in this semester. The students are required to submit the dissertation work in the form of report as per the institute rule.

# **Professional Elective (Theory) Courses**

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<b>Title of the Course:</b> <b>Design of Solar and Wind System (3HP611)</b>		L	T	P	Cr	
		3	0	0	3	
<b>Pre-Requisite Courses:</b>						
<b>Textbooks:</b> 1. S.Rao&Dr.B.B.Parulekar, “ <i>Energy Technology – Nonconventional, Renewable &amp; Conventional</i> ”, Khanna Publishers 2. S. P. Sukhatme and J K Nayak, “ <i>Solar Energy</i> ”McGraw Hill Education 3. B. S. Mangal, “ <i>Solar Power Engineering</i> ”, Tata McGraw Hill, New Delhi 1990 4. Spera D. A. 1994 “ <i>Wind Turbine Technology, Fundamentals of concept in wind turbine Engg.</i> ” ASME ebook.						
<b>References:</b> 1. Culp, Archie W, “ <i>Principles of Energy Conversion</i> ”, McGraw Hill Book Company 2. Rabl. A. 1985, “ <i>Active solar collectors and their applications</i> ” Oxford University press 3. John A Duffie, W. A. Beckman, “ <i>Solar Engineering of Thermal Processes</i> ”, John Wiley and Sons INC 4. Gary L. Johnson, “ <i>Wind Energy Systems</i> ”, Prentice Hall New Jersey 5. Jonson WAM, 6. Sathyajith, Mathew, “ <i>Wind Energy Fundamentals, Resource Analysis and Economics</i> ”, springer verlag Berlin 7. Kloeffer R.G, Sitz E.L (1946), “ <i>Electric Energy from Winds</i> ” Kansas State College of Engg.,ManhattanKans						
<b>Course Objectives :</b> At the end of the course students should able to 1. Understand the national and world energy scenario. 2. Analyze different energy production and storage systems. 3. Design and analyze working of simple solar systems like Solar heaters. 4. Design and analyze wind based energy system. 5. Analyze working of wind and solar hybrid systems. 6. Estimate potential for wind and solar system.						
<b>Course Learning Outcomes:</b>						
CO	After the completion of the course the student should be able to	Bloom’s Cognitive				
		level	Descriptor			
CO1	Describe solar and wind systems.	II	Understanding			
CO2	Design simple wind and solar systems.	III	Applying			
CO3	Analyze and examine working of any wind, Solar and Hybrid sysems.	IV	Analyzing			
<b>CO-PO Mapping :</b>						
	PO1	PO2	PO3	PO4	PO5	PO6
CO1	1	1		2		
CO2					2	
CO3		2		2		
<b>Assessments :</b> <b>Teacher Assessment:</b> Two components of In Semester Evaluation (ISE), One Mid Semester Examination (MSE) and one End Semester Examination (ESE) having 20%, 30% and 50% weights respectively.						

Assessment	Marks
ISE 1	10
MSE	30
ISE 2	10
ESE	50

ISE 1 and ISE 2 are based on assignment/declared test/quiz/seminar etc.  
MSE: Assessment is based on 50% of course content (Normally first three modules)  
ESE: Assessment is based on 100% course content with 70-80% weightage for course content (normally last three modules) covered after MSE.

**Course Contents:**

<b>Module 1</b> Energy scenario, Man and energy, World's production of commercial energy sources, India's production and reserves, Energy alternatives, The solar energy option, Devices for thermal energy collection and storage	<b>Hrs.</b> <b>6</b>
<b>Module 2</b> Thermal applications, Water heating, Space heating, Space cooling and refrigeration, Power generation, Distillation, Drying and Cooking, Concentrating collector, Central receiver system	<b>Hrs.</b> <b>6</b>
<b>Module 3</b> Liquid flat plate collector, Performance analysis, Collection efficiency factor, Selective surfaces, Evacuated tube collector, BNL, Polymer and concrete collector, Solar air collector, types, performance analysis, Air heater with fins, Two pass air heater, Some novel designs	<b>Hrs.</b> <b>6</b>
<b>Module 4</b> Thermal energy storages, Sensible and latent heat storage, Solar ponds, Performance analysis, operational problems, Other solar pond concepts, Photovoltaic conversion, Performance characteristics, Commercial solar cell, cost and applications, prospects of PV cell for India	<b>Hrs.</b> <b>6</b>
<b>Module 5</b> Wind energy fundamentals and applications, Merits, Limitations, Nature and origin of wind, Wind turbine theory, Power of wind turbine for given incoming wind velocity $V_i$ , Wind to electric energy conversion system	<b>Hrs.</b> <b>6</b>
<b>Module 6</b> Classification and development of wind machines, Multi bladed type, Propeller type, wind machines, Wind data performance calculation, Concluding remarks, prospects of wind energy for India	<b>Hrs.</b> <b>6</b>

**Module wise Measurable Students Learning Outcomes :**  
**After the completion of the course the student should be able to:**

1. Correlate national level and global level energy demand and supply pattern.
2. Understand and apply Thermal applications of solar energy.
3. Analyze thermal applications of different types of flat plate collectors and their performance analysis.
4. Make analysis of thermal energy storage systems and PV systems.
5. Understand and apply wind energy fundamentals.
6. Analyze the performance of various types of wind energy systems.

<b>Title of the Course:</b> <b>Advance mathematical methods in Engineering – 3HP612</b>	L	T	P	Cr
	3	0	0	3

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**Pre-Requisite Courses:**

**Textbooks:**

1. Ronald E, Walpole, Sharon L. Myers, Keying Ye, Probability and Statistics for Engineers and Scientists (8<sup>th</sup> Edition), Pearson Prentice Hall, 07
2. J. B. Doshi, Differential Equations for Scientists and Engineers, Narosa, New Delhi, 10

### References:

1. Douglas C. Montgomery, Design and Analysis of Experiments (7th Edition), Wiley Student Edition, 09.
2. S. P. Gupta, Statistical Methods, S. Chand & Sons, 37<sup>th</sup> revised edition, 08
3. William W. Hines, Douglas C. Montgomery, David M. Goldsman, Probability and Statistics for Engineering, (4<sup>th</sup> Edition), Wiley Student edition, 06.
4. Advanced Engineering Mathematics (9<sup>th</sup> Edition), Erwin Kreyszig, Wiley India (13)

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**Course Objectives :**

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**Course Learning Outcomes:**

CO	After the completion of the course the student should be able to	Bloom's Cognitive	
		level	Descriptor
CO1	Apply statistical techniques to analyze multivariate functions and simple regression and correlation.	III	Applying
CO2	Analyze engineering problems by using the knowledge of ordinary and partial differential equations.	IV	Analyzing
CO3	Solve Differential equations using different techniques	V	Evaluating

### CO-PO Mapping :

PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO1	1		2		3	
CO2	1		2	3	2	
CO3	1					3

### Assessments :

**Teacher Assessment:**Two components of In Semester Evaluation (ISE), One Mid Semester Examination (MSE) and one End Semester Examination (ESE) having 20%, 30% and 50% weights respectively.

Assessment	Marks
ISE 1	10
MSE	30
ISE 2	10
ESE	50

<p>ISE 1 and ISE 2 are based on assignment/declared test/quiz/seminar etc.</p> <p>MSE: Assessment is based on 50% of course content (Normally first three modules)</p> <p>ESE: Assessment is based on 100% course content with 70-80% weightage for course content (normally last three modules) covered after MSE.</p>	
<b>Course Contents:</b>	
<b>Module 1 Introduction to Probability Theory</b>	<b>Hrs.</b>
Probability Theory and Sampling Distributions. Basic probability theory along with examples. Standard discrete and continuous distributions like Binomial, Poisson, and Normal, Exponential etc. Central Limit Theorem and its significance. Some samples distributions like $\chi^2$ , t, F.	<b>7</b>
<b>Module 2 Testing of Statistical Hypothesis</b>	<b>Hrs.</b>
Testing a statistical hypothesis, tests on single sample and two samples concerning means and Variances. ANOVA: One – way, Two – way with/without interactions.	<b>7</b>
<b>Module 3 Ordinary Differential Equations</b>	<b>Hrs.</b>
First-order equations (Linear, Equi dimensional, Separable Exact, Homogeneous,); Second-order linear differential equations (homogeneous and nonhomogeneous); Solution methods such as undetermined coefficients and variation of parameters.	<b>6</b>
<b>Module 4 Partial Differential Equations and Concepts in Solution to Boundary Value Problems</b>	<b>Hrs.</b>
First order partial differential equations; Second order linea partial differential equations; Canonical forms; Fourier series, Second order equation (Parabolic, Elliptic and Hyperbolic) in rectangular, cylindrical polar and spherical coordinate systems.	<b>6</b>
<b>Module 5 Solution techniques for PDE's</b>	<b>Hrs.</b>
Solution techniques such as separation of variables, eigen function expansions, integral transforms (Fourier and Laplace transforms); D'Alembert's solution for the Wave equation; Maximum principle for Elliptic equations; Variational methods for approximate solutions of differential equations.	<b>7</b>
<b>Module 6 Simple Regression and Correlation</b>	<b>Hrs.</b>
The simplest deterministic mathematical relationship between two variables x and y, A Linear Probabilistic Mode, Estimating model parameters, inferences about slope parameters, correlations.	<b>6</b>
<b>Module wise Measurable Students Learning Outcomes :</b> Students should be able to <ul style="list-style-type: none"> <li>To apply the theory of Probability and sampling distribution</li> <li>To solve the numerical related to statistical hypothesis</li> <li>To solve the ODEs.</li> <li>To solve the PDEs.</li> <li>To interpret the equations encountered in engineering and physical sciences.</li> <li>To apply the Simple Regression and Correlation.</li> </ul>	

<b>Title of the Course:</b> PE 5		L	T	P	Cr	
Food preservation and cold chain management3HP613		3	0	0	3	
<b>Pre-Requisite Courses:</b> Thermodynamics, Heat Transfer, Basic Refrigeration and airconditioning						
<b>Textbooks:</b> 1. Potter NH, Food Science, CBS Publication, New Delhi, 1998. 2. Ramaswamy H and Marcott M, Food Processing Principles and Applications CRC Press,2006 3.						
<b>References:</b> 1.B. Srilakshmi, Food science, New Age Publishers,2002 2. Meyer, Food Chemistry, New Age,2004 3. Bawa. A.S, O.P Chauhanetal. Food Science. New India Publishing agency, 2013 4. Frazier WC and Westhoff DC, Food Microbiology, TMH Publication, New Delhi, 2004 5. Desrosier NW and Desrosier JN, The Technology of Food Preservation, CBS Publication, New Delhi, 1998 6 Paine FA and Paine HY, Handbook of Food Packaging, Thomson Press India Pvt Ltd, New Delhi- 1992 7. Rao PG, Fundamentals of Food Engineering, PHI Learning Pvt. Ltd, New Delhi, 2010 8. Toledo Romeo T, Fundamentals of Food Process Engineering, Aspen Publishers, 1999						
<b>Course Objectives :</b> <ul style="list-style-type: none"><li>• To understand the importance microorganisms in food preservation.</li><li>• To introduce the basics of various food processing and preservation technologies</li><li>• To know the need and importance of preservation in dairy and fishery industry.</li><li>• To analyze the compositional and technological aspects of milk and fish and other food products.</li><li>• To apply study of food preservation for preservation of various food products.</li></ul>						
<b>Course Learning Outcomes:</b>						
CO	After the completion of the course the student should be able to	Bloom's Cognitive				
		level	Descriptor			
CO1	To understand the importance microorganisms in food preservation. To introduce the basics of various food processing and preservation technologies	II	Understanding			
CO2	. To apply study of food preservation for preservation of various food products and cold chain management	III	Applying			
CO3	To analyze the compositional and technological aspects of milk and fish and other food products during preservation.	IV	Analyzing			
<b>CO-PO Mapping :</b>						
	PO1	PO2	PO3	PO4	PO5	PO6
CO1			2	2		
CO2			2	2		
CO3		2		1		



**Assessments :****Teacher Assessment:**

Two components of In Semester Evaluation (ISE), One Mid Semester Examination (MSE) and one End Semester Examination (ESE) having 20%, 30% and 50% weights respectively.

Assessment	Marks
ISE 1	10
MSE	30
ISE 2	10
ESE	50

ISE 1 and ISE 2 are based on assignment/declared test/quiz/seminar etc.

MSE: Assessment is based on 50% of course content (Normally first three modules)

ESE: Assessment is based on 100% course content with 70-80% weightage for course content (normally last three modules) covered after MSE.

**Course Contents:**

<b>Module 1 Food Microbiology</b> Principles of Food Preservation, microorganisms associated with foods- bacteria, yeast and mold, Importance of bacteria, yeast and molds in foods. Classification of microorganisms based on temperature, pH, water activity, nutrient and oxygen requirements, typical growth curve of microorganisms. Classification of food based on pH, Food infection, food intoxication, definition of shelf life, perishable foods, semi perishable foods, shelf stable foods.	<b>Hrs. 6</b>
<b>Module 2 Food Preservation by Low temperature</b> <b>Freezing and Refrigeration :</b> Introduction to refrigeration, cool storage and freezing, definition, principle of freezing, freezing curve, changes occurring during freezing, types of freezing i.e. slow freezing, quick freezing, introduction to thawing, changes during thawing and its effect on food. Freezing methods -direct and indirect, still air sharp freezer, blast freezer, fluidized freezer, plate freezer, spiral freezer and cryogenic freezing.	<b>Hrs.7</b>
<b>Module 3 Food Preservation by high temperature</b> Commercial heat preservation methods: Sterilization, commercial sterilization, Pasteurization, and blanching.	<b>Hrs. 7</b>
<b>Module 4 Food Preservation by Moisture control</b> <b>Drying and Dehydration -</b> Definition, drying as a means of preservation, differences between sun drying and dehydration (i.e. mechanical drying), heat and mass transfer, factors affecting rate of drying, normal drying curve, names of types of driers used in the food industry. drying methods and equipment, air convection dryer, tray dryer, tunnel dryer, continuous belt dryer , fluidized bed dryer, spray dryer, drum dryer, vacuum dryer, freeze drying ,foam mat drying. <b>Evaporation –</b> Definition, factors affecting evaporation, names of evaporators used in food industry.	<b>Hrs.7</b>
<b>Module 5 Food Preservation by Irradiation and chemicals</b> Introduction, units of radiation, kinds of ionizing radiations used in food irradiation, mechanism of action, uses of radiation processing in food industry, concept of cold sterilization. <b>Recent Trends</b> Pulsed electric fields, High pressure technology, Ohmic heating, Microwave heating, Hurdle technology. <b>Chemical Preservatives -</b> Natural preservatives-Mode of action, Chemical preservatives- Sulphur dioxide, , Benzoic acid , Sorbic acid , Antioxidants.	<b>Hrs. 6</b>
<b>Module 6 Cold chain and Cold Chain Management</b>	<b>Hrs. 9</b>

Freezing: requirements of refrigerated storage - controlled low temperature, air circulation and humidity, changes in food during refrigerated storage, progressive freezing, changes during freezing –concentration effect and ice crystal damage, freezer burn. Refrigeration load, factors determining freezing rate, food composition and noncom-positional influences. Maintenance of controlled environment during transportation and sales outlets.	

**Module wise Measurable Students Learning Outcomes :**

**After the completion of the course the student should be able to:**

1. Understand microorganisms causing the spoilage of food and understand the basic principles of methods of food processing and preservation.,
2. Various methods of low temperature food preservation
3. Understand high temperature food preservation method
4. Various drying and evaporation methods.
5. ionization irradiation, new non-thermal processing methods (high-intensity pulsed electric fields, intense pulsed light, oscillating magnetic fields)
6. Importance of maintenance of cold chain from farm to customer for long term food preservation and quality.

Title of the Course: PE 5 Design of Thermal Systems3HP614		L	T	P	Cr	
		3	0	0	3	
Pre-Requisite Courses:Thermodynamics, Heat Transfer, and thermal systems						
Textbooks:						
4. W.F.Stoecker. “Design of thermal system’ McGraw hill International 3rd Edition 1989						
References:						
1.Robert A. Ackermann, “Cryogenic Regenerative Heat Exchanger”, Plenum Press, New Yorkedition,1st1997.						
2. Adrian bejan, George Tsatsaronis, MichelMoral “Thermal Design and Optimization” John Wileyand sons 1st edition 1996.						
3. YogeshJaluria, “Design and Optimization of Thermal Systems”, CRC Press 2nd edition 2008.						
Course Objectives :						
1. Identify and describe thermal systems and their economical consideration.						
2. Apply fundamentals of science, engineering and simulate thermal systems.						
3. Develop skills for the analysis of thermal systems in research or design.						
Course Learning Outcomes:						
CO	After the completion of the course the student should be able to	Bloom’s Cognitive				
		level	Descriptor			
CO1	Describe different thermal systems.	II	Understanding			
CO2	Apply knowledge of mathematics, science, economics and engineering for the needs in design of thermal systems	III	Applying			
CO3	Analysing and interpret the analysis report in the field of design of thermal systems.	IV	Analyzing			
CO-PO Mapping :						
	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	3			2	
CO2	2	3	1	2	2	1
CO3	1	2	1	1		1
Assessments :						
Teacher Assessment:						
Two components of In Semester Evaluation (ISE), One Mid Semester Examination (MSE) and one End Semester Examination (ESE) having 20%, 30% and 50% weights respectively.						
Assessment			Marks			
ISE 1			10			
MSE			30			
ISE 2			10			
ESE			50			
ISE 1 and ISE 2 are based on assignment/declared test/quiz/seminar etc. MSE: Assessment is based on 50% of course content (Normally first three modules)						

ESE: Assessment is based on 100% course content with 70-80% weightage for course content (normally last three modules) covered after MSE.	
<b>Course Contents:</b>	
<b>Module 1 Engineering Design</b> Introduction, Decisions in an engineering Undertaking, Activities Designing a Workable System, Workable and optimum systems. Steps Involved in arriving at a workable system.	<b>Hrs. 6</b>
<b>Module 2 Economics of Engineering Decision</b> Variable factor involved. Mathematical Modelling: Equation fitting, Modelling thermalequipment –counter-flow heat exchanger, evaporators and condensers, fans compressors and blowers.	<b>Hrs.6</b>
<b>Module 3 System Simulation</b> Description of simulation, Uses of simulation, Various Methods of simulation which will be useful in optimizing the thermal systems.	<b>Hrs. 6</b>
<b>Module 4 Optimization</b> Level of optimization, Mathematical representation of optimization, Optimization procedures. Mathematical Modelling of Thermodynamic Properties: Need, Form of the equation, Criteria for fidelity of representation. Linear and non-linear regression analysis. Thermodynamic properties. Internal energy and enthalpy. Clapeyron equation, Pressure-temperature relationship at saturated conditions. Maxwell relations, p-v-T equations, Building a full set of data.	<b>Hrs.7</b>
<b>Module 5 Steady-State Simulation of Large Systems</b> Newton-Raphson technique. Accelerating the solutions of linear equations. Quasi-Newton method. Influence coefficients.	<b>Hrs. 7</b>
<b>Module 6 Introduction to dynamic behaviour of thermal systems.</b> Introduction, Dynamic behaviour of thermal systems, failure analysis.	<b>Hrs. 6</b>
<b>Module wise Measurable Students Learning Outcomes :</b> <b>After the completion of the course the student should be able to:</b> <ol style="list-style-type: none"> <li>1. Describe and recall basics of design required for thermal systems.</li> <li>2. Make the decision related to economic design of thermal systems.</li> <li>3. Carry out the simulation by selecting suitable method.</li> <li>4. Optimize the system using engineering knowledge.</li> <li>5. Use different mathematical model to simulate large thermal systems.</li> <li>6. Explain the dynamic behaviour of thermal system.</li> </ol>	

# **Mandatory Life Skill Courses**

Title of the Course: Constitution of India 3IC601		L	T	P	Cr	
		02	-	-	-	
Pre-Requisite Courses: -						
Textbooks:						
1. Dr. S. N. Busi, Dr. B. R. Ambedkar framing of Indian Constitution, 1st Edition, 2015.						
2. M. P. Jain, Indian Constitution Law, 7 <sup>th</sup> Edn., Lexis Nexis, 2014.						
3. D.D. Basu, Introduction to the Constitution of India, Lexis Nexis, 2015.						
References:						
1. The Constitution of India, 1950 (Bare Act), Government Publication						
Course Objectives :						
The objectives of the course are:						
1. To review and create awareness on various provisions in the constitution of India.						
Course Learning Outcomes:						
CO	After the completion of the course the student should be able to	Bloom's Cognitive				
		level	Descriptor			
CO1	Explain the premises informing the twin themes of liberty and freedom from a civil rights perspective.	2	Understanding			
CO2	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.	2	Understanding			
CO3	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.	2	Understanding			
CO-PO Mapping :						
	1	2	3	4	5	6
CO1						
CO2						
CO3						
Assessments :						
Teacher Assessment:						
Two components of In Semester Evaluation (ISE), and One Mid Semester Examination (MSE) having 35%, 35% and 30% weights respectively.						
Assessment			Marks			
ISE 1			35			
MSE			30			
ISE 2			35			
ISE 1 and ISE 2 are based on assignment/declared test/quiz/seminar etc.						
MSE: Assessment is based on 50% of course content (Normally first three modules)						

**Course Contents:**

<b>Module 1</b>	<b>4 Hrs.</b>
History of Making of the Indian Constitution Drafting Committee, ( Composition & Working)	
<b>Module 2 Philosophy of the Indian Constitution</b>	<b>4 Hrs.</b>
Preamble, Salient Features	
<b>Module 3 Contours of Constitutional Rights &amp; Duties</b>	<b>5 Hrs.</b>
Fundamental Rights; Right to Equality; Right to Freedom; Right against Exploitation; Right to Freedom of Religion; Cultural and Educational Rights; Right to Constitutional Remedies; Directive Principles of State Policy; Fundamental Duties.	
<b>Module 4 Organs of Governance</b>	<b>5 Hrs.</b>
Parliament, Composition, Qualifications and Disqualifications, Powers and Functions, Executive, President, Governor, Council of Ministers Judiciary, Appointment and Transfer of Judges, Qualifications, Powers and Functions	
<b>Module 5 Local Administration</b>	<b>5 Hrs.</b>
District's Administration head: Role and Importance, Municipalities: Introduction, Mayor and role of Elected Representative, CEO of Municipal Corporation. Pachayati raj: Introduction, PRI: ZilaPachayat. Elected officials and their roles, CEO ZilaPachayat: Position and role. Block level: Organizational Hierarchy (Different departments), Village level: Role of Elected and Appointed officials, Importance of grass root democracy	
<b>Module 6 Election Commission</b>	<b>5 Hrs.</b>
Election Commission: Role and Functioning. Chief Election Commissioner and Election Commissioners. State Election Commission: Role and Functioning. Institute and Bodies for the welfare of SC/ST/OBC and women.	

<b>Title of the Course: Pedagogy Studies 3IC602</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Cr</b>
	02	-	-	-

**Pre-Requisite Courses: -**

**Textbooks:**

1. Agrawal M (2004) Curricular reform in schools: The importance of evaluation, Journal of Curriculum Studies, 36 (3): 361-379.
2. Akyeampong K (2003) Teacher training in Ghana - does it count? Multi-site teacher education research project (MUSTER) country report 1. London: DFID.
3. Akyeampong K, Lussier K, Pryor J, Westbrook J (2013) Improving teaching and learning of basic maths and reading in Africa: Does teacher preparation count? International Journal Educational Development, 33 (3): 272-282.
4. Chavan M (2003) Read India: A mass scale, rapid, 'learning to read' campaign.
5. [www.pratham.org/images/resource%20working%20paper%202.pdf](http://www.pratham.org/images/resource%20working%20paper%202.pdf).

**References:** 1. Alexander RJ, 2001, Culture and pedagogy: International comparisons in primary education, Oxford and Boston: Blackwell.  
2. Ackers J, Hardman F (2001) Classroom interaction in Kenyan primary schools, Compare, 31 (2): 245-261.

**Course Objectives :**

The objectives of the course are:

1. To discuss pedagogical practices being used by teachers in formal and informal classrooms in developing countries.
2. To provide the evidence on the effectiveness of these pedagogical practices, in what conditions, and with what population of learners.
3. To explain teacher education (curriculum and practicum) and the school curriculum and guidance materials best support effective pedagogy.

**Course Learning Outcomes:**

CO	After the completion of the course the student should be able to	Bloom's Cognitive	
		level	Descriptor
CO1	Outline pedagogical practices, and existing evidence on the review topic to inform programme design and policy making undertaken.	2	Understanding
CO2	Explain critical evidence gaps to guide the development	2	Understanding

**CO-PO Mapping :**

	1	2	3	4	5	6
CO1						
CO2						
CO3						

**Assessments :**



**Teacher Assessment:**

Two components of In Semester Evaluation (ISE), and One Mid Semester Examination (MSE) having 35%, 35% and 30% weights respectively.

Assessment	Marks
ISE 1	35
MSE	30
ISE 2	35

ISE 1 and ISE 2 are based on assignment/declared test/quiz/seminar etc.

MSE: Assessment is based on 50% of course content (Normally first three modules)

**Course Contents:**

<b>Module 1 Introduction and Methodology</b>	<b>5Hrs.</b>
Aims and rationale, Policy background, Conceptual framework and Terminology, Theories of learning, Curriculum, Teacher education, Conceptual framework, Research questions, Overview of methodology and Searching.	
<b>Module 2</b>	<b>5 Hrs.</b>
Thematic overview: Pedagogical practices are being used by teachers in formal and informal classrooms in developing countries. Curriculum, Teacher education.	
<b>Module 3</b>	<b>5 Hrs.</b>
Evidence on the effectiveness of pedagogical practices, Methodology for the in depth 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.	
<b>Module 4</b>	<b>5 Hrs.</b>
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	
<b>Module 5</b>	<b>5 Hrs.</b>
<b>Research gaps and future directions</b> Research design, Contexts, Pedagogy, Teacher education, Curriculum and assessment Dissemination and research impact.	

<b>Title of the Course: Disaster Management 3IC603</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Cr</b>
	02	-	-	-

**Pre-Requisite Courses: -**

**Textbooks:**

1. R. Nishith, Singh AK, “Disaster Management in India: Perspectives, issues and strategies “New Royal book Company.
2. Sahni, PardeepEt.Al. (Eds.),” Disaster Mitigation Experiences And Reflections”, Prentice Hall Of India, New Delhi.
3. Goel S. L., Disaster Administration And Management Text And Case Studies”,Deep&Deep

**Course Objectives :**

The objectives of the course are:

1. To impart knowledge for critical understanding of key concepts in disaster risk reduction and humanitarian response, and disaster management approaches
2. Critically evaluate disaster risk reduction and humanitarian response policy and practice from multiple perspectives.
3. Develop an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations.
4. Critically understand the strengths and weaknesses of, planning and programming in different countries, particularly their home country or the countries they work in

**Course Learning Outcomes:**

CO	After the completion of the course the student should be able to	Bloom’s Cognitive	
		level	Descriptor
CO1	Explain disaster risk reduction and humanitarian response policy and practice from multiple perspectives	2	Understanding
CO2	Summarize standards of humanitarian response and practical relevance in specific types of disasters and conflict situations.	2	Understanding
CO3	Outline the strengths and weaknesses of disaster management approaches, planning and programming in different countries.	2	Understanding

**CO-PO Mapping :**

	1	2	3	4	5	6
CO1						
CO2						
CO3						

**Assessments :**

**Teacher Assessment:**

Two components of In Semester Evaluation (ISE), and One Mid Semester Examination (MSE) having 35%, 35% and 30% weights respectively.

Assessment	Marks
ISE 1	35
MSE	30
ISE 2	35

<p>ISE 1 and ISE 2 are based on assignment/declared test/quiz/seminar etc.</p> <p>MSE: Assessment is based on 50% of course content (Normally first three modules)</p>	
<b>Module 1 Introduction</b>	<b>4 Hrs.</b>
Disaster: Definition, Factors and Significance; Difference Between Hazard and Disaster; Natural and Manmade Disasters: Difference, Nature, Types and Magnitude.	
<b>Module 2 Repercussions Of Disasters And Hazards</b>	<b>4 Hrs.</b>
Economic Damage, Loss Of Human And Animal Life, Destruction Of Ecosystem. Natural Disasters: Earthquakes, Volcanisms, Cyclones, Tsunamis, Floods, Droughts And Famines, Landslides And Avalanches, Man-made disaster: Nuclear Reactor Meltdown, Industrial Accidents, Oil Slicks And Spills, Outbreaks Of Disease And Epidemics, War And Conflicts.	
<b>Module 3 Disaster Prone Areas In India</b>	<b>4 Hrs.</b>
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	
<b>Module 4 Disaster Preparedness And Management</b>	<b>4 Hrs.</b>
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.	
<b>Module 5 Risk Assessment</b>	<b>4 Hrs.</b>
Disaster Risk: Concept and Elements, Disaster Risk Reduction, Global and National Disaster Risk Situation. Techniques Of Risk Assessment, Global Co-Operation In Risk Assessment and Warning, People's Participation In Risk Assessment. Strategies for Survival.	
<b>Module 6 Disaster Mitigation</b>	<b>4 Hrs.</b>
Meaning, Concept and Strategies Of Disaster Mitigation, Emerging Trends In Mitigation. Structural Mitigation And Non-Structural Mitigation, Programs Of Disaster Mitigation In India.	

Title of the Course: Value Education 3IC604		L	T	P	Cr	
		02	-	-	-	
Pre-Requisite Courses: -						
Textbooks: 1. Chakroborty, S.K. “Values and Ethics for organizations Theory and practice”, Oxford University Press, New Delhi						
Course Objectives : The objectives of the course are: 1. To impart knowledge on value of education and self- development. 2. To imbibe good values in students. 3. To highlight importance of character.						
Course Learning Outcomes:						
CO	After the completion of the course the student should be able to	Bloom’s Cognitive				
		level	Descriptor			
CO1	Explain value of education and self- development.	2	Understanding			
CO2	Summarize importance of good character, andBehavior development.	2	Understanding			
CO-PO Mapping :						
	1	2	3	4	5	6
CO1						
CO2						
CO3						
Assessments :						
Teacher Assessment: Two components of In Semester Evaluation (ISE), and One Mid Semester Examination (MSE) having 35%, 35% and 30% weights respectively.						
Assessment			Marks			
ISE 1			35			
MSE			30			
ISE 2			35			
ISE 1 and ISE 2 are based on assignment/declared test/quiz/seminar etc. MSE: Assessment is based on 50% of course content (Normally first three modules)						

<b>Module 1</b>	<b>6Hrs.</b>
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<ol style="list-style-type: none"> <li>1. Values and self-development –Social values and individual attitudes. Work ethics, Indian vision of humanism.</li> <li>2. Moral and non- moral valuation. Standards and principles.</li> <li>3. Value judgments</li> </ol>	
<b>Module 2</b>	<b>6 Hrs.</b>
<ol style="list-style-type: none"> <li>1. Importance of cultivation of values</li> <li>2. Sense of duty. Devotion, Self-reliance. Confidence, Concentration. Truthfulness, Cleanliness.</li> <li>3. Honesty, Humanity. Power of faith, National Unity.</li> <li>4. Patriotism. Love for nature, Discipline</li> </ol>	
<b>Module 3</b>	<b>7 Hrs.</b>
<ol style="list-style-type: none"> <li>1. Personality and Behavior Development - Soul and Scientific attitude. Positive Thinking. Integrity and discipline.</li> <li>2. Punctuality, Love and Kindness.</li> <li>3. Avoid fault Thinking.</li> <li>4. Free from anger, Dignity of labour.</li> <li>5. Universal brotherhood and religious tolerance.</li> <li>6. True friendship.</li> <li>7. Happiness Vs suffering, love for truth.</li> <li>8. Aware of self-destructive habits.</li> <li>9. Association and Cooperation.</li> <li>10. Doing best for saving nature</li> </ol>	
<b>Module 4</b>	<b>7 Hrs.</b>
<ol style="list-style-type: none"> <li>1. Character and Competence –Holy books vs Blind faith.</li> <li>2. Self-management and Good health.</li> <li>3. Science of reincarnation.</li> <li>4. Equality, Nonviolence, Humility, Role of Women.</li> <li>5. All religions and same message.</li> <li>6. Mind your Mind, Self-control.</li> <li>7. Honesty, Studying effectively</li> </ol>	

<b>Title of the Course:</b> <b>Dissertation Phase III and Dissertation Phase IV, 3HP693/694/695</b>		L	T	P	Cr	
		0	0	8 + 24	4+4+8	
<b>Pre-Requisite Courses:</b>						
<b>Textbooks: NIL</b>						
<b>References:</b> All National and International Journals						
<b>Course Objectives :</b> 1. Acquire knowledge to tackle real world problems of societal concerns. 2. Impart flexibility to the student to have increased control over his/ her learning. 3. Teachers would serve as mentor/facilitator of inquiry and reflection rather than as an instructor. 4. Enhance student’s learning through increased interaction with peers and colleagues.						
<b>Course Learning Outcomes:</b>						
<b>CO</b>	<b>After the completion of the course the student should be able to</b>	Bloom’s Cognitive				
		level	Descriptor			
<b>CO1</b>	Search the existing literature and identification of research problem	IV	Analyzing			
<b>CO2</b>	Design and develop the solution for complex engineering problem.	V	Evaluating			
<b>CO3</b>	Create the new knowledge in the specialized field	VI	Creating			
<b>CO-PO Mapping :</b>						
	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>
<b>CO1</b>	2	2				2
<b>CO2</b>	1	1	3	3	3	2
<b>CO3</b>	1	1		3	3	3
<b>Assessments :</b>						
<b>Teacher Assessment:</b> In Semester Evaluation (ISE) and End Semester Evaluation (ESE)						
Evaluation Scheme						
Scheme	Credits	Practical (Marks )				
		Max	Min for Passing			
MSE	4	100	40			
ISE II	4	100	40			
ESE	8	100	40			
<b>Course Contents:</b> Students are expected to carry out independent research work on the chosen topic. In this semester it is expected that the student has carried out substantial research work including exhaustive literature survey, formulation of the research problem, development/fabrication of experimental set-up (if any/required) and testing, and analysis of initial results thus obtained. In fourth semester, the students continue their dissertation work. It is expected that the student has completed most of the experimental/computation works and analyzed the results so obtained as proposed in the synopsis. The work should be completed in all respects in this semester. The students are required to submit the dissertation work in the form of report as per the institute rule.						



# **Mandatory Life Skill Courses**



<b>Course Contents:</b>					
<b>Module 1</b>				<b>4 Hrs.</b>	
History of Making of the Indian Constitution					
Drafting Committee, ( Composition & Working)					
<b>Title of the Course: Constitution of India 3IC601</b>				<b>L</b>	<b>T</b>
				<b>P</b>	<b>Cr</b>
				02	-
				-	-
<b>Pre-Requisite Courses: -</b>					
<b>Textbooks:</b>					
Preamble, Salient Features					
<b>References:</b>					
1. The Constitution of India, 1950 (Bare Act), Government Publication					
<b>Course Objectives :</b>					
The objectives of the course are:					
2. To review and create awareness on various provisions in the constitution of India.					
<b>Course Learning Outcomes:</b>					
CO	After the completion of the course the student should be able to	Bloom's Cognitive			
		level	Descriptor		
CO1	Explain the premises informing the twin themes of liberty and freedom from a civil rights perspective.	2	Understanding		
CO2	Address the growth of Indian opinion regarding modern Indian intellectuals' constitutional role and entitlement to civil and	2	Understanding		
	economic rights as well as the emergence of nationhood in the early years of Indian nationalism.				
CO3	Address the role of socialism in India after the commencement of the Bolshevik Revolution in 1917 and its impact on the initial	2	Understanding		
	drafting of the Indian Constitution.				
<b>CO-PO Mapping :</b>					
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>CO1</b>					
<b>CO2</b>					
<b>CO3</b>					
<b>Assessments :</b>					
<b>Teacher Assessment:</b>					
Two components of In Semester Evaluation (ISE), and One Mid Semester Examination (MSE) having 35%, 35% and 30% weights respectively.					
Assessment			Marks		
ISE 1			35		
MSE			30		
ISE 2			35		
ISE 1 and ISE 2 are based on assignment/declared test/quiz/seminar etc.					
MSE: Assessment is based on 50% of course content (Normally first three modules)					

<b>Title of the Course: Pedagogy Studies 3IC602</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Cr</b>
	02	-	-	-

**Pre-Requisite Courses: -**

**Textbooks:**

1. Agrawal M (2004) Curricular reform in schools: The importance of evaluation, Journal of Curriculum Studies, 36 (3): 361-379.
2. Akyeampong K (2003) Teacher training in Ghana - does it count? Multi-site teacher education research project (MUSTER) country report 1. London: DFID.
3. Akyeampong K, Lussier K, Pryor J, Westbrook J (2013) Improving teaching and learning of basic maths and reading in Africa: Does teacher preparation count? International Journal Educational Development, 33 (3): 272–282.
4. Chavan M (2003) Read India: A mass scale, rapid, ‘learning to read’ campaign.
5. [www.pratham.org/images/resource%20working%20paper%202.pdf](http://www.pratham.org/images/resource%20working%20paper%202.pdf).

**References:** 1. Alexander RJ, 2001, Culture and pedagogy: International comparisons in primary education, Oxford and Boston: Blackwell.  
 2. Ackers J, Hardman F (2001) Classroom interaction in Kenyan primary schools, Compare, 31 (2): 245-261.

**Course Objectives :**

The objectives of the course are:

1. To discuss pedagogical practices being used by teachers in formal and informal classrooms in developing countries.
2. To provide the evidence on the effectiveness of these pedagogical practices, in what conditions, and with what population of learners.
3. To explain teacher education (curriculum and practicum) and the school curriculum and guidance materials best support effective pedagogy.

**Course Learning Outcomes:**

CO	After the completion of the course the student should be able to	Bloom’s Cognitive	
		level	Descriptor
CO1	Outline pedagogical practices, and existing evidence on the review topic to inform programme design and policy making undertaken.	2	Understanding
CO2	Explain critical evidence gaps to guide the development	2	Understanding

**CO-PO Mapping :**

	1	2	3	4	5	6
CO1						
CO2						
CO3						

**Assessments :****Teacher Assessment:**

Two components of In Semester Evaluation (ISE), and One Mid Semester Examination (MSE) having 35%, 35% and 30% weights respectively.

Assessment	Marks
ISE 1	35
MSE	30
ISE 2	35

ISE 1 and ISE 2 are based on assignment/declared test/quiz/seminar etc.

MSE: Assessment is based on 50% of course content (Normally first three modules)

**Course Contents:**

<b>Module 1 Introduction and Methodology</b>	<b>5Hrs.</b>
Aims and rationale, Policy background, Conceptual framework and Terminology, Theories of learning, Curriculum, Teacher education, Conceptual framework, Research questions, Overview of methodology and Searching.	
<b>Module 2</b>	<b>5 Hrs.</b>
Thematic overview: Pedagogical practices are being used by teachers in formal and informal classrooms in developing countries. Curriculum, Teacher education.	
<b>Module 3</b>	<b>5 Hrs.</b>
Evidence on the effectiveness of pedagogical practices, Methodology for the in depth 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.	
<b>Module 4</b>	<b>5 Hrs.</b>
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	
<b>Module 5</b>	<b>5 Hrs.</b>
<b>Research gaps and future directions</b> Research design, Contexts, Pedagogy, Teacher education, Curriculum and assessment Dissemination and research impact.	

<b>Title of the Course: Disaster Management 3IC603</b>	L	T	P	Cr
	02	-	-	-

**Pre-Requisite Courses: -**

**Textbooks:**

4. R. Nishith, Singh AK, “Disaster Management in India: Perspectives, issues and strategies “New Royal book Company.
5. Sahni, PardeepEt.Al. (Eds.),” Disaster Mitigation Experiences And Reflections”, Prentice Hall Of India, New Delhi.
6. Goel S. L., Disaster Administration And Management Text And Case Studies”,Deep&Deep

**Course Objectives :**

The objectives of the course are:

5. To impart knowledge for critical understanding of key concepts in disaster risk reduction and humanitarian response, and disaster management approaches
6. Critically evaluate disaster risk reduction and humanitarian response policy and practice from multiple perspectives.
7. Develop an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations.
8. Critically understand the strengths and weaknesses of, planning and programming in different countries, particularly their home country or the countries they work in

**Course Learning Outcomes:**

CO	After the completion of the course the student should be able to	Bloom’s Cognitive	
		level	Descriptor
CO1	Explain disaster risk reduction and humanitarian response policy and practice from multiple perspectives	2	Understanding
CO2	Summarize standards of humanitarian response and practical relevance in specific types of disasters and conflict situations.	2	Understanding
CO3	Outline the strengths and weaknesses of disaster management approaches, planning and programming in different countries.	2	Understanding

**CO-PO Mapping :**

	1	2	3	4	5	6
CO1						
CO2						
CO3						

**Assessments :**

**Teacher Assessment:**

Two components of In Semester Evaluation (ISE), and One Mid Semester Examination (MSE) having 35%, 35% and 30% weights respectively.

Assessment	Marks
ISE 1	35
MSE	30
ISE 2	35

<p>ISE 1 and ISE 2 are based on assignment/declared test/quiz/seminar etc.</p> <p>MSE: Assessment is based on 50% of course content (Normally first three modules)</p>	
<b>Module 1 Introduction</b>	<b>4 Hrs.</b>
Disaster: Definition, Factors and Significance; Difference Between Hazard and Disaster; Natural and Manmade Disasters: Difference, Nature, Types and Magnitude.	
<b>Module 2 Repercussions Of Disasters And Hazards</b>	<b>4 Hrs.</b>
Economic Damage, Loss Of Human And Animal Life, Destruction Of Ecosystem. Natural Disasters: Earthquakes, Volcanisms, Cyclones, Tsunamis, Floods, Droughts And Famines, Landslides And Avalanches, Man-made disaster: Nuclear Reactor Meltdown, Industrial Accidents, Oil Slicks And Spills, Outbreaks Of Disease And Epidemics, War And Conflicts.	
<b>Module 3 Disaster Prone Areas In India</b>	<b>4 Hrs.</b>
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	
<b>Module 4 Disaster Preparedness And Management</b>	<b>4 Hrs.</b>
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.	
<b>Module 5 Risk Assessment</b>	<b>4 Hrs.</b>
Disaster Risk: Concept and Elements, Disaster Risk Reduction, Global and National Disaster Risk Situation. Techniques Of Risk Assessment, Global Co-Operation In Risk Assessment and Warning, People's Participation In Risk Assessment. Strategies for Survival.	
<b>Module 6 Disaster Mitigation</b>	<b>4 Hrs.</b>
Meaning, Concept and Strategies Of Disaster Mitigation, Emerging Trends In Mitigation. Structural Mitigation And Non-Structural Mitigation, Programs Of Disaster Mitigation In India.	

<b>Title of the Course: Value Education 3IC604</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Cr</b>
	02	-	-	-

**Pre-Requisite Courses: -**

**Textbooks:**

1. Chakroborty, S.K. “Values and Ethics for organizations Theory and practice”, Oxford University Press, New Delhi

**Course Objectives :**

The objectives of the course are:

1. To impart knowledge on value of education and self- development.
2. To imbibe good values in students.
3. To highlight importance of character.

**Course Learning Outcomes:**

CO	After the completion of the course the student should be able to	Bloom’s Cognitive	
		level	Descriptor
CO1	Explain value of education and self- development.	2	Understanding
CO2	Summarize importance of good character, andBehavior development.	2	Understanding

**CO-PO Mapping :**

	1	2	3	4	5	6
CO1						
CO2						
CO3						

**Assessments :**

**Teacher Assessment:**

Two components of In Semester Evaluation (ISE), and One Mid Semester Examination (MSE) having 35%, 35% and 30% weights respectively.

Assessment	Marks
ISE 1	35
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ISE 2	35

ISE 1 and ISE 2 are based on assignment/declared test/quiz/seminar etc.

MSE: Assessment is based on 50% of course content (Normally first three modules)

<b>Module 1</b>	<b>6Hrs.</b>
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<ol style="list-style-type: none"> <li>1. Values and self-development –Social values and individual attitudes. Work ethics, Indian vision of humanism.</li> <li>2. Moral and non- moral valuation. Standards and principles.</li> <li>3. Value judgments</li> </ol>	
<b>Module 2</b>	<b>6 Hrs.</b>
<ol style="list-style-type: none"> <li>1. Importance of cultivation of values</li> <li>2. Sense of duty. Devotion, Self-reliance. Confidence, Concentration. Truthfulness, Cleanliness.</li> <li>3. Honesty, Humanity. Power of faith, National Unity.</li> <li>4. Patriotism. Love for nature, Discipline</li> </ol>	
<b>Module 3</b>	<b>7 Hrs.</b>
<ol style="list-style-type: none"> <li>1. Personality and Behavior Development - Soul and Scientific attitude. Positive Thinking. Integrity and discipline.</li> <li>2. Punctuality, Love and Kindness.</li> <li>3. Avoid fault Thinking.</li> <li>4. Free from anger, Dignity of labour.</li> <li>5. Universal brotherhood and religious tolerance.</li> <li>6. True friendship.</li> <li>7. Happiness Vs suffering, love for truth.</li> <li>8. Aware of self-destructive habits.</li> <li>9. Association and Cooperation.</li> <li>10. Doing best for saving nature</li> </ol>	
<b>Module 4</b>	<b>7 Hrs.</b>
<ol style="list-style-type: none"> <li>1. Character and Competence –Holy books vs Blind faith.</li> <li>2. Self-management and Good health.</li> <li>3. Science of reincarnation.</li> <li>4. Equality, Nonviolence, Humility, Role of Women.</li> <li>5. All religions and same message.</li> <li>6. Mind your Mind, Self-control.</li> <li>7. Honesty, Studying effectively</li> </ol>	

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