

Detailed Syllabus

**Lecture-wise Breakup**

<b>Course Code</b>	18M12MA111	<b>Semester</b> Odd <b>(specify Odd/Even)</b>	<b>Semester</b> I <b>Session</b> 2019 -2020 <b>Month</b> from July 2019 to December 2020
<b>Course Name</b>	Advanced Operations Research		
<b>Credits</b>	3	<b>Contact Hours</b>	3-0-0

<b>Faculty (Names)</b>	<b>Coordinator(s)</b>	Prof. A. K. Aggarwal
	<b>Teacher(s) (Alphabetically)</b>	Prof. A. K. Aggarwal

<b>COURSE OUTCOMES</b>		<b>COGNITIVE LEVELS</b>
After pursuing the above mentioned course, the students will be able to:		
C203.1	construct and solve linear programming problems and analyze their optimal solution using parametric and sensitivity analysis	Analyzing Level (C4)
C203.2	identify and solve the deterministic inventory models with and without shortages.	Applying Level (C3)
C203.3	construct the network models and analyze the critical activities using PERT/CPM for project planning.	Analyzing Level (C4)
C203.4	identify pure and mixed strategy games and solve and analyze them using graphical and linear programming techniques.	Analyzing Level (C4)
C203.5	solve multi-objective and goal programming problems by graphical and simplex method.	Analyzing Level (C4)
C203.6	demonstrate Khun-Tucker conditions and apply them to solve non-linear programming problems, quadratic and separable programming problems.	Analyzing Level (C4)

Module No.	Title of the Module	Topics in the Module	No. of Lectures for the module
1.	Review of Linear Programming Problems and Duality	Convex sets, graphical and simplex method, artificial variable techniques, revised simplex method, Duality theory, dual simplex method, revised dual simplex method.	06
2.	Parametric and Sensitivity Analysis	Sensitivity analysis, parametric linear programming, parametric sensitivity analysis.	06
3.	Inventory Controls	Introduction, Inventory models, Economic order quantity (EOQ), Deterministic inventory problems with and without shortages.	06
4.	Network Analysis	Shortest path problem, PERT/CPM, Simulation techniques.	06
5.	Games and Strategies	Pure and mixed strategies, solution by graphical and linear programming methods.	06
6.	Multi-objective and Goal Programming Problems	Solution by graphical and simplex method.	04
7.	Nonlinear Programming	Convex functions and their properties, Kuhn Tucker theory, convex quadratic programming, Wolfe's and Beale's algorithm, Separable convex programming.	06
		<b>Total number of Lectures</b>	<b>40</b>

#### Evaluation Criteria

Components	Maximum Marks
T1	20
T2	20
End Semester Examination	35
TA	25 (Quiz, Assignments)
<b>Total</b>	<b>100</b>

**Recommended Reading material:** Author(s), Title, Edition, Publisher, Year of Publication etc. ( Text books, Reference Books, Journals, Reports, Websites etc. in the IEEE format)

1.	Taha H. A., Operations Research: An Introduction, 7th edition, PHI, 2002.
2.	Rao, S. S., Engineering Optimization, Theory and Practice, Third Edition, New Age International Publishers, 2010.
3.	Wagner, H. M., Principles of Operations Research with Applications to Managerial Decisions, Prentice Hall of India Pvt. Ltd., 1975.
4.	Deb, Kalyanmoy, Optimization for Engineering Design, Algorithms and Principles, PHI, 2010.

**Detailed Syllabus**  
**Lecture-wise Breakup**

Course Code	<b>19M13HS211</b>	Semester: Odd	Semester: III Session: 2019 -2020 Month from: July-December
Course Name	<b>Constitution of India</b>		
Credits	2	Contact Hours	(2-0-0)

Faculty (Names)	Coordinator(s)	Dr. Chandrima Chaudhuri
	Teacher(s) (Alphabetically)	Dr. Chandrima Chaudhuri

COURSE OUTCOMES		COGNITIVE LEVELS
<b>C202.1</b>	Demonstrate an understanding of the conflict between the Fundamental Rights and Directive Principles as given in the Indian Constitution	Understand (C2)
<b>C202.2</b>	Assess the nature of the Indian constitution and its applicability in the study of politics in India.	Evaluate (C5)
<b>C202.3</b>	Assess the devolution of powers and authority of governance of the Union government and the local government	Evaluate (C5)
<b>C202.4</b>	Demonstrate an understanding of the powers and functions of the Indian executive, legislature and judiciary	Understand (C2)

Module No.	Title of the Module	Topics in the Module	No. of Lectures for the module
<b>1.</b>	History of Making of the Indian Constitution	<ul style="list-style-type: none"> <li>History Drafting Committee-Composition &amp; Working</li> </ul>	3
<b>2.</b>	Philosophy of the India Constitution	<ul style="list-style-type: none"> <li>Preamble -Salient Features</li> </ul>	1

3.	Fundamental Rights and Directive Principles	<ul style="list-style-type: none"> <li>• Right to Equality</li> <li>• Right to Freedom</li> <li>• Right against Exploitation</li> <li>• Right to Freedom of Religion</li> <li>• Cultural and Educational Rights</li> <li>• Right to Constitutional Remedies</li> <li>• Directive Principles of State Policy</li> </ul>	5
4.	Organs of Governance	<ul style="list-style-type: none"> <li>• Parliament-Composition, Qualifications &amp; and Disqualification ,Powers and Functions</li> <li>• Executive- President , Governor , Council of Ministers</li> <li>• Judiciary-Appointment and Transfer of Judges, Qualifications, Power and Functions</li> </ul>	8
5.	Local Administration	<ul style="list-style-type: none"> <li>• District's Administration head: Role and Importance</li> <li>• Municipalities: Introduction, Mayor and role of Elected Representative, CEO of Municipal Corporation</li> <li>• Panchayati raj: Introduction, PRI: Zila Panchayat. Elected officials and their roles, CEO Zila Panchayat: Position and role. Block level: Organizational Hierarchy(Different departments),Village level, Importance of Grass root democracy</li> </ul>	8
6.	Election Commission	<ul style="list-style-type: none"> <li>• Election Commission: Role and Functioning</li> </ul>	3
<b>Total number of Lectures</b>			<b>28</b>
<b>Evaluation Criteria</b>			
<b>Components</b>		<b>Maximum Marks</b>	

Mid Term Examination:	30
End Semester Examination	40
TA	30 (Assignment and Presentation)
<b>Total</b>	<b>100</b>

<b>Recommended Reading material:</b> Author(s), Title, Edition, Publisher, Year of Publication etc. ( Text books, Reference Books, Journals, Reports, Websites etc. in the IEEE format)	
1.	Austin, G. (1996). <i>The Indian Constitution: Corner Stone of a Nation</i> . Oxford: Oxford University Press
2.	Bakshi, P.M.(2015). <i>The Constitution of India</i> . Delhi: Universal Law Pub. Co. Pvt. Ltd
3.	Bhuyan, D. (2016). <i>Constitutional Government and Democracy in India</i> . Cuttack:Kitab Mahal..
4.	Busi, S.N. (2016). <i>Dr. B. R. Ambedkar framing of Indian Constitution</i> . Hyderabad:Ava Publishers
5.	Basu, D.D. (2018). <i>Introduction to the Constitution of India</i> . Nagpur: Lexis Nexis
6.	Jayal, N.G. & Mehta, P.B. (eds.)(2010). <i>The Oxford Companion to Politics inIndia</i> . New Delhi: Oxford University Press.
7.	Kashyap, S.C.(1995). <i>Our Constitution/ Our Parliament/Our Judiciary</i> . New Delhi: NBT
8.	Raghunandan, J. R. (2012). <i>Decentralization and local governments: The Indian Experience</i> . New Delhi: Orient Black Swan
9.	Sharma, B.K. (2005). <i>Introduction to the Constitution of India</i> . New Delhi: Prentice Hall of India Prvt Limited
10.	Sikri, S.L.(2002). <i>Indian Government and Politics</i> . New Delhi: Kalyani Publishers

**Detailed Syllabus**  
**Lecture-wise Breakup**

Course Code	<b>19M12HS211</b>	Semester: Odd (specify Odd/Even)	Semester: III Session: 2019 -2020 Month from: July-December
Course Name	<b>Cost Accounting for Engineering Projects</b>		
Credits	03	Contact Hours	3-0-0

Faculty (Names)	Coordinator(s)	Dr. Praveen Kumar Sharma
	Teacher(s) (Alphabetically)	Dr. Praveen Kumar Sharma

COURSE OUTCOMES		COGNITIVE LEVELS
<b>C201-1.1</b>	Understand basic concepts of Cost Accounting	Understand (C2)
<b>C201-1.2</b>	Apply concepts of cost in project management	Apply (C3)
<b>C201-1.3</b>	Analyze cost behaviour for decision making	Analyze (C4)
<b>C201-1.4</b>	Construct different budgets for controlling the cost	Create (C6)

Module No.	Title of the Module	Topics in the Module	No. of Lectures for the module
1.	Introduction	Introduction & Overview of Cost Management Process	3
2.	Cost Concepts	Relevant Cost, Differential Cost, Incremental Cost, Opportunity Cost, Objectives of a costing system, Inventory Valuation, Provision of data for decision making	4
3.	Project execution	Meaning, Different types, why to manage, cost overruns centres, various stages of project execution: conception to commissioning. Project execution as conglomeration of technical and nontechnical activities. Detailed Engineering activities.	5
4.	Project Execution	Pre project execution main clearances and documents Project team: Role of each member. Importance Project site Data required with significance, Project contracts, Types and contents, Project execution, Project cost control, bar charts & network diagrams, Project commissioning	6

5.	Cost Behavior	Distinction between Marginal Costing and Absorption Costing; Break-even Analysis, Cost-Volume-Profit Analysis. Various decision-making problems.	6
6.	Profit Planning Marginal Costing	Standard Costing and Variance Analysis. Pricing strategies: Pareto Analysis. Target costing, Life Cycle Costing. Costing of service sector. Just-in-time approach,	6
7.	Material Planning	Material Requirement Planning, Enterprise Resource Planning, Total Quality Management and Theory of constraints. Activity-Based Cost Management, Bench Marking; Balanced Score Card & value chain analysis.	6
8.	Budgetary Control	Flexible budgets, Performance budgets, zero based budgets, Measurements of divisional profitability pricing decisions including transfer pricing.	6

**Total number of Lectures**

**42**

**Evaluation Criteria**

**Components**

**Maximum Marks**

T1	20
T2	20
End Semester Examination	35
TA	25 (Test + Quiz + Assignment)
<b>Total</b>	<b>100</b>

**Recommended Reading material:** Author(s), Title, Edition, Publisher, Year of Publication etc. ( Text books, Reference Books, Journals, Reports, Websites etc. in the IEEE format)

1.	B. M. L. Nigam and I. C. Jain, <i>Cost Accounting: Principles And Practice</i> , PHI Learning Pvt. Ltd. PHI Learning Pvt. Ltd., 2010.
2.	C. T. Horngren, <i>Cost accounting: A managerial emphasis</i> , 13/e Pearson Education India. Pearson Education India, 2009.
3.	R. S. Kaplan and A. A. Atkinson, <i>Advanced management accounting</i> . PHI Learning, 2015.
4.	A. K. Bhattacharyya, <i>Principles and practice of cost accounting</i> . PHI Learning Pvt. Ltd., 2004.
5.	N. D. Vohra, <i>Quantitative Techniques in Management</i> , 3e. Tata McGraw-Hill Education, 2006.

## Detailed Syllabus

<b>Course Code</b>	17M17EC218 17M27EC211	<b>Semester Odd</b> <b>(specify Odd/Even)</b>	<b>Semester 10<sup>th</sup></b> for dual degree and 3 <sup>rd</sup> for M.Tech. <b>Session</b> 2019-2020 <b>Month from</b> July to December
<b>Course Name</b>	Seminar and Term Paper		
<b>Credits</b>	4	<b>Contact Hours</b>	

<b>Faculty (Names)</b>	<b>Coordinator(s)</b>	Dr Saurabh Chaturvedi
	<b>Teacher(s)</b> <b>(Alphabetically)</b>	

<b>COURSE OUTCOMES</b> - At the end of the course, students will be able to:		<b>COGNITIVE LEVELS</b>
<b>C212.1</b>	Understand relevant theories, methods and research design relating to the seminar topic selected by a student	Understanding Level (C2)
<b>C212.2</b>	Analyze the work of other authors/researchers and contribute to the field of knowledge with the cooperation of the supervisor	Analyzing Level (C4)
<b>C212.3</b>	Evaluate the previously published research works, findings and conclusions	Evaluating Level (C5)
<b>C212.4</b>	- Develop and refine the master's dissertation topic and proposal - Develop the effective technical writing, communication and presentation skills	Creating Level (C6)



**Evaluation Criteria****Components****Maximum Marks**

Day to day work done prior to mid-term

20

Mid-term seminar/presentation

20

Day to day work done prior to end-term

20

End-term seminar/presentation

20

End-term report - Term Paper

20

**Total****100**

**Detailed Syllabus**  
**Course Outcomes**

<b>Course Code</b>	17M15EC114/ 17M11EC120	<b>Semester ODD &amp; EVEN</b>	<b>Semester</b> 3 <sup>rd</sup> & 4 <sup>th</sup> for M.Tech / 10 <sup>th</sup> & 11 <sup>th</sup> for Dual Degree <b>Session</b> 2019 -2020 <b>Month from</b> July to Dec/Jan to May
<b>Course Name</b>	Project Based Learning		
<b>Credits</b>	2 & 4	<b>Contact Hours</b>	8 & 4

<b>Faculty (Names)</b>	<b>Coordinator(s)</b>	Dr. Madhu Jain
	<b>Teacher(s) (Alphabetically)</b>	Dr. Ajay Kumar, Dr. D.K. Jhariya, Dr. Ekta Goyal, Dr. Neeti singh

<b>COURSE OUTCOMES</b>		<b>COGNITIVE LEVELS</b>
<b>C210.1</b>	Summarize the contemporary scholarly literature, activities, and explored tools/ techniques/software/hardware for hands-on in the respective project area in various domain of Embedded Systems, Signal Processing, VLSI, Communication, Artificial Intelligence and Machine Learning/Deep Learning etc.	Understanding (Level II)
<b>C210.2</b>	Analyze/ Design the skill for obtaining the optimum solution to the formulated problem with in stipulated time	Analyzing and Designing (Level IV)
<b>C210.3</b>	Use latest techniques and software tools for achieving the defined objectives.	Evaluating (Level V)
<b>C210.4</b>	Evaluate /Validate sound conclusions based on evidence and analysis.	Evaluating (Level V)

## Evaluation Criteria

- |   |   |     |
|---|---|-----|
| (i) Each fortnightly assessment   |   |     |
| - 8%  |   |     |
| (First assessment should be at the end of 3 <sup>rd</sup> week from the beginning of the semester and thereafter fortnightly assessment. A total of six assessments giving a total percentage $6 \times 8 = 48\%$ ) | - | 48% |
| (ii) Report at the end of the semester  | - | 10% |
| (iii) Semester end presentation by the students   | - | 10% |
| (iv) Viva-voce at the end of the semester   | - | 16% |
| (v) Peer group evaluation (i.e. evaluation by the fellow students not belonging to the same batch)  | - | 8%  |
| (vi) Self assessment by the student concerned (can be moderated by the instructor by discussing with the student concerned)   | - | 8%  |

**Detailed Syllabus**  
**Course Outcomes**

<b>Course Code</b>	17M17EC219/ 17M17EC220/ 17M27EC212/ 17M27EC213 & 17M17EC511/ 17M17EC512 / 17M17EC222 / 17M17EC223/ 17M27EC215/ 17M27EC216	<b>Semester ODD &amp; EVEN</b>	<b>Semester</b> 3 <sup>rd</sup> & 4 <sup>th</sup> for M.Tech / 11 <sup>th</sup> for Dual Degree  <b>Session</b> 2019 -2020  <b>Month from</b> July to Dec/Jan to May
<b>Course Name</b>	Dissertation /Industrial Project		
<b>Credits</b>	M.Tech – 4 & 16 DD - 22	<b>Contact Hours</b>	8 & 32

<b>Faculty (Names)</b>	<b>Coordinator(s)</b>	Ms. Bhawna Gupta, Dr. Rachna Singh
	<b>Teacher(s) (Alphabetically)</b>	All faculty of ECE Deptt.

<b>COURSE OUTCOMES</b>		<b>COGNITIVE LEVELS</b>
<b>C213.1</b>	Summarize the contemporary scholarly literature, activities, and explored tools/ techniques/software/hardware for hands-on in the respective project area in various domain of Electronics Engineering.	Understanding (Level II)
<b>C213.2</b>	Gain knowledge of the State-of-Art in the chosen field of study. Analyze various feasible methods of solving a problem to slot a suitable solution methodology	Analyzing and Designing (Level IV)
<b>C213.3</b>	Use latest techniques and software tools for achieving the defined objectives. Evaluate /Validate sound conclusions based on evidence and analysis	Evaluating (Level V)
<b>C213.4</b>	Demonstrate the oral and written communication skills. Describe the importance of possible future developments in the selected domain	Create Level (Level VI)

## Evaluation Criteria

### (Dissertation at the end of third semester for M.Tech only)

Components	Maximum Marks
End Term Viva	60
Day to Day	40
<b>Total</b>	<b>100</b>

### (Dissertation at the end of final semester for M.Tech / DD)

Components	Maximum Marks
End Term Viva	50
Special Contribution	10
Day to Day	40
<b>Total</b>	<b>100</b>

OR

### (Industrial Project at the end of final semester for M.Tech / DD)

Components	Maximum Marks
End Term Viva	30
Day To Day	20 (Awarded by Internal Supervisor)
Day To Day	50 (Awarded by Supervisor from Industry)
<b>Total</b>	<b>100</b>