



Rajarambapu Institute of Technology, Rajaramnagar

(An Autonomous Institute) Teaching
and Evaluation Scheme for

Forwarded through Head

**To,
The Director/Dean Academics,
RIT, Rajaramnagar**

Subject: Submission of revised curriculum for Academic year 2015-17

Reference: M Tech Civil-Construction Management

Respected Madam/Sir

We are hereby submitting the final revised curriculum of First Year M Tech Civil Construction Management, to be implemented from academic year 2015-2017. We request you to accept, approve and acknowledge the same.

Thank you

Faithfully yours

Prof. D. S. Patil

**Head of Program
M. Tech. Civil Const. Mgmt.
RIT, Rajaramnagar.**

**HEAD,
Department of Civil Engineering,
Rajarambapu Institute of Technology,
Rajaramnagar, Dist. Sangli.**



Date: 11.02.2016

To,

The Dean Academics,
R.I.T., Rajaramnagar

Sub.: Revision of course Code for Advanced Engineering Mathematics of F. Y. M. Tech
Civil Construction Management *2015-17-Sem-II*

Respected Sir,

We have assigned department course code to the above mentioned subject which is taken by humanities and science department (S&H). The course codes opted by other programs is of S&H department, as discussed with the office of Examination we need to revise and put code in the similar nomenclature. Requesting you to please allow us to change the course code from CCM 5141 to SHP 506

The corrected structure is attached herewith for your information and approval.

Kindly acknowledge for the same.

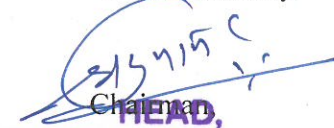
Thanking you,



Member Secretary
BOS, Civil Engineering

Recommended


Yours faithfully,



HEAD,
Department of Civil Engineering,
Rajarambapu Institute of Technology,
Rajaramnagar, Dist. Sangli.

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Rajarambapu Institute of Technology, Rajaramnagar

(An Autonomous Institute) Teaching

and Evaluation Scheme for

CCM5141: Advanced Engineering Mathematics

Unit 1	PROBABILITY: Introduction, Sample space and events, Random variables. Discrete distribution, Continuous distribution. Binomial distribution, Poisson distribution, Normal distribution-Related properties.	08
Unit 2	DATA INTERPOLATION: Introduction, Errors in Polynomial Interpolation, Finite differences, Forward, Backward and Central differences, Difference Equations –Newton’s formulae for interpolation, Central difference interpolation Formulae, Gauss Central Difference Formulae, Interpolation with unevenly spaced points-Lagrange’s Interpolation formula.	08
Unit 3	CORRELATION AND REGRESSION ANALYSIS: Correlation, Karl Pearson’s coefficient of correlation, Correlation coefficient for a bivariate distribution, Regression coefficient, regression lines, Reliability of regression estimates.	08
Unit 4	GAME THEORY: Introduction, Pay-off, Types of Games, The Maximin-Minimax Principle, Games without Saddle Points, Graphical Method for $2 \times n$ or $m \times 2$ Games.	08
Unit 5	DECISION THEORY: Introduction, Basic Terminology in Decision Theory, Steps in the Decision Making Process, Decision Making Environment, Decision Under Uncertainty.	08
Unit 6	GRAPHS, DIGRAPHS AND CONNECTIVITY: Introduction, Graph Isomorphism, Subgraphs, Degree Vectors of Simple Graphs. Paths, Circuits and Cycles. Connected Graphs and Digraphs. Trees and Spanning Trees.	08

Text Books:

1. Kreyszig E., Advanced Engineering Mathematics, Wiley Eastern, 8th edition, 2007
2. Schaum’s Outline of Graph Theory, V. K. Balkrishnan, McGraw-Hill Publication.
3. Operations Research, S Kalavathy, Third Edition, Vikas Publishing House Pvt. Ltd.
4. Sastry, S. S., Engineering Mathematics, Vol. I and II, Prentice hall of India, 4th edition, 2009
5. Peter V. O’Neil, Advanced Engineering Mathematics, / Cole Publishing House 4th Edition 2002
6. B. S. Grewal, Higher Engineering Mathematics, Khanna Publishers 39th edition: 2005



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Rajarambapu Institute of Technology, Rajaramnagar

(An Autonomous Institute) Teaching

and Evaluation Scheme for

First Year M. Tech-Civil/Construction Management

Course Code	Course	Teaching Scheme				Evaluation Scheme				
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical (Marks %)	
							Max	Min for Passing	Max	Min for Passing
CCM5141	Advanced Engineering Mathematics	4	-	-	4	ISE	20	40 %	--	--
						MSE	30		--	--
						ESE	50	40 %	--	--

Course Description:

Advanced Engineering Mathematics is a core subject introduced at Semester II of First year M. Tech. Construction Management. This course will help students to take decisions by using Statistical techniques and Optimization requirements.

Course Learning Outcomes

After successful completion of this subject students should be able to:-

1. Identify, formulate and analyze the engineering problem; and apply Mathematical concepts effectively to engineering fields.
2. Explain and identify random variables, discriminate between discrete and continuous random variables; and fit probability distributions.
3. Apply the techniques of Data Interpolation to solve specific engineering problems.
4. To understand the concept of Regression analysis; and apply the techniques of Correlation to solve specific engineering problems.
5. To understand the concept of Game Theory and Decision Theory; and apply the techniques of Decision Theory to solve specific engineering problems.
6. Explain and apply the concept of Graph Theory to solve specific engineering problems.





Rajarambapu Institute of Technology, Rajaramnagar

(An Autonomous Institute) Teaching

and Evaluation Scheme for

First Year M. Tech-Civil/Construction Management Semester II - 2015-17

Course Code	Course	Teaching Scheme				Evaluation Scheme					
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical (Marks %)		
							Max	Min for Passing	Max	Min Passing	
CCM5021	Advanced Construction Techniques and Equipments	3	1	--	4	ISE	20	40%	--	--	
						MSE	30		--	--	
						ESE	50		--	--	
CCM5041	Project Economics and Financial Management	3	1	--	4	ISE	20	40%	--	--	
						MSE	30		--	--	
						ESE	50		--	--	
PE-II	Program Elective II	3	1	--	4	ISE	20	40%	--	--	
						MSE	30		--	--	
						ESE	50		--	--	
CCM5141	Advanced Engineering Mathematics	4	-	--	4	ISE	20	40%	--	--	
						MSE	30		--	--	
						ESE	50		--	--	
IE	Institute Elective	3	-	--	3	ISE	20	40%	--	--	
						MSE	30		--	--	
						ESE	50		--	--	
CCM5521	Computer Lab II – Primavera	--	--	2	1	ISE	--	--	50	50 %	
						ESE	--	--	50		
CCM5541	Advance Surveying and GIS Lab	--	--	2	1	ISE	--	--	50	50 %	
						ESE	--	--	50		
CCM5561	Mini project	--	--	2	2	ISE	--	--	100	50 %	
CCM5581	*Comprehensive Viva-voce				1	ESE	--	--	100	50 %	

*Comprehensive viva-voce will be based on 3 core courses.

Total Credits: 24 Total Contact Hours/Week: 25





Rajarambapu Institute of Technology, Rajaramnagar

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First Year M. Tech-Civil/Construction Management

Semester I - 2015-17

Course Code	Course	Teaching Scheme				Evaluation Scheme					
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical (Marks)		
							Max	Min for Passing	Max	Min Passin	
CCM5011	Construction Project Management	3	1	--	4	ISE	20	40%	--	-	
						MSE	30		--	-	
						ESE	50	40%	--	--	
CCM5031	Construction Techniques and Equipments	3	1	--	4	ISE	20	40%	--	-	
						MSE	30		--	-	
						ESE	50	40%	--	-	
CCM5051	Construction Contracts	3	1	--	4	ISE	20	40%	--	-	
						MSE	30		--	-	
						ESE	50	40%	--	-	
CCM5071	Research Methodology	2	-	--	2	ISE	20	40%	--	-	
						MSE	30		--	-	
						ESE	50	40%	--	--	
PE-I	Program Elective I	3	1	--	4	ISE	20	40%	--	-	
						MSE	30		--	-	
						ESE	50	40%	--	--	
IEO523	Proficiency in Technical Communication			2	1	ISE	--	--	100	50 %	
CCM5511	Field work	-	-	2	1	ISE	--	--	50	50 %	
						ESE	--	--	50		
CCM5531	Computer Lab I- Microsoft Project	-	-	2	1	ISE	--	--	50	50 %	
						ESE	--	--	50		
CCM5551	Mini project/Seminar	-	-	2	2	ISE	--	--	100	50 %	
CCM5571	Research Methodology Laboratory	-	-	2	1	ISE	--	--	100	50 %	

Total Credits: 24, Total Contact Hours/Week: 28





Rajarambapu Institute of Technology, Rajaramnagar

(An Autonomous Institute) Teaching
and Evaluation Scheme for

First Year M. Tech-Civil/Construction Management Semester II - 2015-17

Course Code	Course	Teaching Scheme				Evaluation Scheme					
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical (Marks %)		
							Max	Min for Passing	Max	Min Passing	
CCM5021	Advanced Construction Techniques and Equipments	3	1	--	4	ISE	20	40%	--	--	
						MSE	30		--	--	
						ESE	50		--	--	
CCM5041	Project Economics and Financial Management	3	1	--	4	ISE	20	40%	--	--	
						MSE	30		--	--	
						ESE	50		--	--	
PE-II	Program Elective II	3	1	--	4	ISE	20	40%	--	--	
						MSE	30		--	--	
						ESE	50		--	--	
SHP506	Advanced Engineering Mathematics	4	-	--	4	ISE	20	40%	--	--	
						MSE	30		--	--	
						ESE	50		--	--	
IE	Institute Elective	3	-	--	3	ISE	20	40%	--	--	
						MSE	30		--	--	
						ESE	50		--	--	
CCM5521	Computer Lab II – Primavera	--	--	2	1	ISE	--	--	50	50 %	
						ESE	--	--	50		
CCM5541	Advance Surveying and GIS Lab	--	--	2	1	ISE	--	--	50	50 %	
						ESE	--	--	50		
CCM5561	Mini project	--	--	2	2	ISE	--	--	100	50 %	
CCM5581	*Comprehensive Viva-voce				1	ESE	--	--	100	50 %	

*Comprehensive viva-voce will be based on 3 core courses.

Total Credits: 24 Total Contact Hours/Week: 25





Rajarambapu Institute of Technology, Rajaramnagar

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and Evaluation Scheme for

First Year M. Tech-Civil/Construction Management Semester I - 2015-17 List of Program Elective I

Course Code	Name of Course
CCM5091	Human Resource Management in Construction
CCM5111	Ground Improvement Techniques
CCM5131	Disaster Management

First Year M. Tech-Civil/Construction Management Semester I - 2015-17 List of Program Elective II

Course Code	Name of Course
CCM5061	Operations Research in Construction
CCM5081	Materials Management
CCM5101	Environmental Impact Assessment
CCM5121	Energy Conservation Techniques in Building Construction

Total Credits: 24+24= 48





Rajarambapu Institute of Technology, Rajaramnagar

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First Year M. Tech-Civil/Construction Management

Course Code	Course	Teaching Scheme				Evaluation Scheme				
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical (Marks %)	
							Max	Min for Passing	Max	Min for Passing
CCM5011	Construction Project Management	3	1	-	4	ISE	20	40%	--	--
						MSE	30		--	--
						ESE	50		--	--

Course Description:

This core course is offered in first semester of M. Tech construction management; Focusing on construction planning. It covers all the methods currently being practiced by the industry. Spread over six units it takes care of students understanding of task planning, reducing resource waste and also safety.

Learning Outcomes:

After successful completion of this course students should be able to:-

1. Describe construction Project management framework.
2. Identify and integrate the various project management processes.
3. Construct WBS and Project; construct, evaluate and analyze CPM network.
4. Develop advanced project schedule such as precedence network, linear schedule and multiple project schedules.
5. Design site layout for construction sites.
6. Apply and monitor safety on construction sites.





Rajarambapu Institute of Technology, Rajaramnagar

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and Evaluation Scheme for

CCM5011: Construction Project Management

Unit 1 Introduction	06
Concept of project, Characteristics of construction project, project life cycle (Phase and processes), project categories, project objectives, management of construction project, role and responsibility of a project manager, major causes of project failure, scope of construction project management with reference to five year development plan of govt. of India, union budget, state budget etc.	
Unit 2 Project integration management	06
Project charter, project management plan, direct and manage of project, monitor and control of project work, integrated change control of project, closure of project.	
Unit 3 Project work breakdown structure	06
Levels classification, identification of project activities and its duration, Benefits of WBS techniques, CPM network- Float calculation, compression, updating and resource allocation of CPM network.	
Unit 4 Advanced Project Scheduling	06
Precedence network, crashing of Precedence network, linear scheduling, Multiple project scheduling, Earn Value Management	
Unit 5 Site Layout	06
Introduction, Present practices and problems, Site layout planning elements, Facility characteristics, Facility identification, Site Layout design, examples of site layout.	
Unit 6 Construction safety	06
Accidents, types, primary accidents to be taken, legal formalities, safety policy, equipment safety.	

References

1. Scheduling construction projects (Principle and Practices) - by Sandra C. Weber. PEARSON
2. Construction projects Management (Theory and Practices) - by Kumar N. Jha. PEARSON
3. Construction Management and Planning – by B. Sengupta and H. Guha. McGraw Hill Education (India)
4. Project Management- by K.Nagarjun. New Age International Publication.
5. Construction projects Management (Planning, scheduling and controlling) – by Chitkara. McGraw Hill Education (India)
6. PERT AND CPM-by K.K. Khandelwal and Dr. B.C.Punmia, K. K. Khandelwal. Laxmi Publication.
7. PERT AND CPM (Principles and Applications)-by L.S.Srinathan.
8. A guide to project management body of knowledge. Fifth edition.





Rajarambapu Institute of Technology, Rajaramnagar

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and Evaluation Scheme for

First Year M. Tech-Civil/Construction Management

Course Code	Course	Teaching Scheme				Evaluation Scheme					
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical (Marks %)		
							Max	Min for Passing	Max	Min for Passing	
CCM5031	Construction Techniques and Equipments	3	1	-	4	ISE	20	40%		--	--
						MSE	30			--	--
						ESE	50			--	--

Course Description:

Construction techniques and equipments is a core subject offered in first semester of M. Tech. This subject deals with construction methods and equipments used on construction projects. This course is designed to fulfill the requirements of construction managers to select appropriate equipment based on the construction technique and site condition. Major emphasis in the course is on various earthwork operations and equipments and equipment performance.

Learning Outcomes:

After successful completion of this course students should be able to:-

1. Know the construction equipment and plant operation,
2. Compute productivity of various earth moving equipments,
3. Compute capacity requirement for construction plants,
4. Analyze economics of project execution
5. Select optimum equipment for construction of particular task,





Rajarambapu Institute of Technology, Rajaramnagar

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and Evaluation Scheme for

CCM5031: Construction Techniques and Equipments

Unit 1	Earth work equipments Fundamentals of Earth Work Operations - Earth Moving Operations - Types of Earth Work Equipment-Dozers, Rippers, Excavators, dragline and clamshell	06
Unit 2	Special earthwork equipments Trucks and hauling equipments, Scrappers, Earthwork finishing equipments, Compaction equipments,	06
Unit 3	Rock Excavation Introduction, Planning, Drilling: process and equipments, Blast design, Special blasting techniques, blasting procedure. Mechanical excavation for tunneling in hard and soft strata	06
Unit 4	Construction plants and applications Ready mix concrete plants, Hot mix asphalt plants, Aggregate production plants. Construction of highways, concrete Dams	06
Unit 5	Concreting techniques and Equipments Concrete placing underwater, concrete pumps, boom placers, mixers, conventional methods	06
Unit 6	Equipment management Construction services, Equipment economics, selection, maintenance, Cost Control of Equipment - Depreciation Analysis	06

References

1. Construction Planning, Equipment and Methods by Peurifoy, R.L., Ledbetter, W.B. and Schexnayder, C., McGraw Hill, Singapore, 2006.
2. Construction Equipment and Management by Sharma S.C., Khanna Publishers, NewDelhi, 1988.
3. Construction Equipment and Job Planning by Deodhar, S.V., Khanna Publishers, NewDelhi, 1988.
4. Standard handbook of Heavy construction, James J. O'Brien, Jhon A. Havers and FrankW. Stubbs. Third edition, McGraw-Hill Publication





Rajarambapu Institute of Technology, Rajaramnagar

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and Evaluation Scheme for

First Year M. Tech-Civil/Construction Management

Course Code	Course	Teaching Scheme				Evaluation Scheme					
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical (Marks %)		
							Max	Min for Passing	Max	Min for Passing	
CCM5051	Construction Contracts	3	1	-	4	ISE	20	40	%	--	--
						MSE	30			--	--
						ESE	50			40	--

Course Description:

This core course is offered in first semester of M. Tech construction management; this subject split in two areas as Construction contracts and FIDIC. First part deals with Construction contracts that are followed in India and second part deals with Conditions of Contract for Construction. One of the important phases of construction is Contracts, it is important for construction managers to know the contract types, document requirement and rules and regulation. Last three unit deals with Conditions of Contract for Constructions by FIDIC.

Learning Outcomes:

After successful completion of this subject students should be able to:-

1. Select an appropriate contract type for a project.
2. Provide decision regarding dispute based on various rules and regulations laid down by government
3. Discuss procedure for arbitration.
4. Compare Indian Contracts laws with FIDIC.
5. Demonstrate role of parties involved in contract by FIDIC
6. Discuss special provisions of FIDIC





Rajarambapu Institute of Technology, Rajaramnagar

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and Evaluation Scheme for

CCM5051: Construction Contracts

Unit 1	Contracts The standard forms of building contracts, the rights of building owners, adjoining owners and third parties. The Indian Contract Act, Sale of Goods Act. Professional ethics. Injunction: Types, Temporary, perpetual, mandatory	06
Unit 2	Industrial Act and Labour Laws Industrial Dispute Acts, payment of wages act, Minimum Wages Act, Indian Trade Union Act, Limitation Act, and Workmen's Compensation Act.	06
Unit 3	Arbitration, Bailment, Indemnity and Guarantee Arbitration -Awards & Dispute Resolving boards – Indian Arbitration Act, arbitration agreement, conduct of arbitration, power and duties of arbitrator. Indemnity and Guarantee -Difference between the two contracts, consideration for guarantee, surety's liability, discharge of surety. Bailment - Nature of transactions, delivery of bailee, Bailee's responsibility, Termination, Bailment of pledges.	06
Unit 4	Introduction to FIDIC Definitions, Interpretation, Communications, Law and Language, Priority of Documents, Contract Agreement, Assignment, Care and Supply of Documents, Delayed Drawings or Instructions, Employer's Use of Contractor's Documents, Contractor's Use of Employer's Documents, Confidential Details, Compliance with Laws, Joint and Several Liability	06
Unit 5	Role of Parties The Engineer - Engineer's Duties and Authority, Delegation by the Engineer, Instructions of the Engineer, Replacement of the Engineer, Determinations The Employer - Right of Access to the Site, Permits, Licences or Approvals, Employer's Personnel, Employer's Financial Arrangements, Employer's Claims The Contractor- Contractor's General Obligations, Performance Security, Contractor's Representative, Subcontractors, Assignment of Benefit of Subcontract	06
Unit 6	Special Clauses Nominated Subcontractors, Staff And Labour, Plant, Materials And Workmanship, Commencement, Delays And Suspension, Tests On Completion, Defects Liability, Measurement And Evaluation, Termination by Employer.	06

References

1. S. K.Sears's G. A. Sears's R.H. Clough's Construction Contracting 7th (Seventh) edition(Construction Contracting: A Practical Guide to Company Management , 7th Edition (2005)
2. Roshan H.Namawati, "Professional practice with Elements of Estimating Valuation Contract and the arbitration Act", 9th Edition 2009.
3. Dr.B.P.Saraf, S.M.Jhunjhunwala, "Law of Arbitration and Conciliation", 6th Edition 2012.
4. " Conditions of Contract for Construction" First Edition 1999, by Fédération Internationale des Ingenieurs-Conseils (FIDIC),ISBN 2-88432-022-9





Rajarambapu Institute of Technology, Rajaramnagar

(An Autonomous Institute) Teaching

and Evaluation Scheme for

First Year M.Tech Civil-Construction Management Semester I

Course Code	Course	Teaching Scheme				Evaluation Scheme				
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical (Marks %)	
							Max	Min for Passing	Max	Min for Passing
CCM5071	Research Methodology	2	-	-	2	ISE	20	40%	--	--
						MSE	30		--	--
						ESE	50		--	--

Course Description:

Research methodology is a technique adopted to search identify and formulate the problem. For post graduate students, dissertation in phase I and phase II is incorporated in semester III and semester IV. It becomes necessary to find out some innovative work in this phase. Therefore this course curriculum and theme help the student to carry out their work.

Pre requisite Students should know the basics of journals, publications in which research articles are published.

Learning Outcomes:

After successful completion of this subject students should be able to

1. To develop understanding of the basic framework of research process.
2. To identify various sources of information for literature review and data collection.
3. To inculcate the basic knowledge of tools required in Statistical analysis
4. To adopt the criteria necessary for Design of Experiments.
5. To know the concept behind writing a research Proposal.





Rajarambapu Institute of Technology, Rajaramnagar

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and Evaluation Scheme for

CCM5071: Research Methodology

Unit 1: Research Methodology and research process:	05
Definition of research and characteristics of research; Types of research; Research process: Formulating the Research Problem, Literature Review, Developing the objectives, preparing the Research Design including Sample Design, Collecting the Data, Analysis of Data, Generalization and Interpretation, Preparation of the Report or Presentation of Results, Innovative tools required for presentation.	
Unit 2: Literature Survey:	05
Identification of various sources for literature review. Importance of literature review, types of literature review, selection of the review topic, searching for the literature, analyzing and synthesizing the literature, writing the review report. Synthesis matrix.	
Unit 3: Statistical tools for analysis:	05
Introduction to Analysis of variance, regression analysis, Introduction to SPSS, open source software.	
Unit 4: Design and analysis of experiments:	09
Strategy of experimentation, Statistical design of experiments, replication, randomization and blocking. Guidelines for designing experiments, Factorial designs. The two factor factorial design, Statistical analysis of factorial design, Taguchi design	
Writing a research proposal: Title, Abstract, Introduction, Rationale, Objectives, Methodology, Time frame and work plan, Budget and Justification, References, basics of research proposal.	

References:

1. Kothari C.K. (2004) 2/e, Research Methodology – Methods and Techniques (New Age International, New Delhi)
2. Krishnswamy, K.N., Shivkumar, Appa Iyer and Mathiranjana M. (2006) Management Research Methodology; Integration of Principles, Methods and Techniques (Pearson Education, New Delhi)
3. Gupta, Santosh (2005) Research Methodology and Statistical Techniques, Deep and Deep Publications.
4. Douglas C. Montgomery, Design and analysis of experiments, John Wiley and Sons, New York.
5. Tapan Bagchi, Taguchi Methods Explained: Practical steps to robust design, Prentice Hall
6. Phillip J. Ross, Taguchi Techniques for quality engineering, TATA McGraw Hill





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First Year M. Tech-Civil/Construction Management

Course Code	Course	Teaching Scheme				Evaluation Scheme					
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical (Marks)		
							Max	Min for Passing	Max	Min for Passing	
CCM5091	Human Resource Management in Construction	3	1	-	4	ISE	20	40%		--	--
						MSE	30			--	--
						ESE	50	40%	--	--	

Course Description:

Human resource, one of the main resources on construction project and also is unpredictable due to many constraints. This topic deals with manpower planning, organizing man power, laws applicable, and motivation and so on. Construction human resource management deals with workers on the project, their recruitment, wages and compensation.

Learning Outcomes:

After successful completion of this subject students should be able to

1. Plan manpower for daily work,
2. Organize available manpower to complete the given task,
3. Increase productivity through application of motivational skills,
4. Avoid disputes through welfare application,
5. Act as a link between management and human resource





Rajarambapu Institute of Technology, Rajaramnagar

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CCM5091: Human Resource Management in Construction

Unit 01	Nature & Scope of HRM and its environment	06
	Meaning & Definition, Functions and Objectives, Organization of HR department, Evolution of HRM, External Forces, Internal Forces, Knowing the environment	
Unit 02	Human Resource planning	04
	Definition, Importance, Need, Benefits and process of HRP. Manpower planning and forecasting-Factor affecting HRP- function of HRM	
Unit 3	Job Analysis and Design	06
	Meaning & Definition, Methods of collecting job data, Potential Problems with job analysis, Job design	
Unit 4	Recruitment, Selection, Placement and Training	08
	Meaning & Definition, Purpose and Importance, Factors governing Recruitment, Process Selection:- Meaning & Definition, Selection Process, Barriers to effective selection Placement:- Placement Problem Training:- Nature of Training and Development, Inputs in training and development, Training Process	
Unit 5	Employee Remuneration, Benefits and Services	06
	Components of Remuneration, Theories of Remuneration, Factors influencing employee remuneration, Remunerations plan and business strategy, Benefits and Services:- Meaning & Definition, Types of Employee benefits and services, Administration of Benefits and Services	
Unit 6	Performance Appraisal & Welfare Measures	06
	Meaning and Definition- Objective-process-Edward Deming on PA- challenges and legal issue- Job evaluation: Scope, evaluation process, Methods of job evaluation Welfare Measures:- Definition – Types-Variou approaches of labor welfare-Safety and health: Types of accidents, need and program- Health	

References

1. Personnel Management by Memoria,C.B., Himalaya Publishing Co., 1997.
2. Human resource and personnel management by K. Aswathappa fourth edition TATA McGraw Hill publication
3. Handbook of Human Resources Administration by Josy.J. Familaro, McGraw-ill International Edition, 1987.
4. Management by Charles D Pringle, Justin Gooderi Longenecter, CE Merril Publishing Co. 1981.
5. The Complete Standard Handbook of Construction Personnel Management by Carleton Counter II and Jill Justice Coutler , Prentice-Hall, Inc., New Jersey, 1989.
6. Human Relations and Organisational Behaviour by Dwivedi R.S, Macmillian India Ltd., 2005





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Course Code	Course	Teaching Scheme				Evaluation Scheme				
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical	
							Max	Min for Passing	Max	Min for Passing
CCM5111	Ground Improvement Techniques	3	1	-	4	ISE	20	40%	-	--
						MSE	30		-	--
						ESE	50		40%	-

Course Description:

This is the introductory course of ground improvement techniques for marginal and problematic soil. The content includes the basics of laboratory and in situ tests for geotechnical projects. Then, surface compaction, admixture stabilization and deep densification are covered. Ground modification by consolidation and vertical drains are then covered. Various types of in-situ reinforcement techniques such as stabilization of soil using different material & methods, soil nailing, stone columns

Learning outcomes:

After successful completion of this subject students should be able to

1. Classify the basic principles of various ground improvement techniques applied for Civil Engineering.
2. Assess the most appropriate ground improvement techniques to be used in specific circumstances.
3. Describe the laboratory and in situ tests for soil improvement projects.
4. Justify the surface compaction for the soil improvement
5. Illustrate the concept of admixture stabilization.
6. Discuss the concept of in-situ reinforcement.





Rajarambapu Institute of Technology, Rajaramnagar

(An Autonomous Institute) Teaching

and Evaluation Scheme for

CCM5111: Ground Improvement Techniques

Unit 1	Principles and objectives of ground improvement	06
	Principles and objectives of ground improvement; Introduction to ground improvement developments. Classification of ground improvement techniques. Factors affecting ground improvement	
Unit 2	Mechanical modification	06
	Mechanical modification; Principles of densification, Properties of compacted soils; Compaction control tests; Specifications for compaction	
Unit 3	Hydraulic modification	06
	Hydraulic modification; dewatering systems; Filtration, drainage and seepage control with Geo-synthetics, preloading and vertical drains. Electrical dewatering	
Unit 4	Chemical Modification	04
	Chemical Modification: Factors affecting chemical modification, Lime stabilization, Cement stabilization, Bitumen stabilization, Stabilization with calcium chloride, sodium chloride, lignin and other synthetic polymers, Methods of construction- mix in place method, traveling plant and stationary plant methods	
Unit 5	Grouting	08
	Grouting: Factors affecting grouting, Grout ability, Grouting materials and their properties, Pressure grouting, Compaction grouting, grouting procedures, Applications of grouting. Grouting Modification, inclusion and Confinement; Soil reinforcements	
Unit 6	Geo-synthetics Applications	06
	Introduction to Geo-synthetics, Applications of Geo-synthetics for ground improvement. Miscellaneous: Rock cutting, anchoring, heating, soil nailing	

References

1. Dr. P. Purushothama Raj (2005) "Ground Improvement Techniques", Firewall Media,
2. Manfired R.H. (1990) "Engineering Principles of Ground Modification", McGraw-Hill Pub.
3. Belt (1975) "Methods of Treatment of Unstable Ground", Butterworths.
4. Koener R M. (1985) "Construction and Geotechnical Methods in Foundation Engineering", McGraw Hill Pub Co New York.
5. Hausmann, M R (1990) "Engineering Principles of Ground Modifications", McGraw Hill Pub Co New York.
6. Ingles O G and Metcalf J B., "Soil Stabilisation: Principles and practice", Butterworths, London, 1972
7. Ell F G., "Methods of Treatment of Unstable ground, Newness Butterworths, London, 1975.
8. Rao, G. V. and Raju, V. V. S. (1990), "Engineering with geosynthetics", Tata McGraw Hill Book Co., New Delhi.





Rajarambapu Institute of Technology, Rajaramnagar

(An Autonomous Institute) Teaching

and Evaluation Scheme for

First Year M. Tech-Civil/Construction Management

Course Code	Course	Teaching Scheme				Evaluation Scheme					
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical (Marks %)		
							Max	Min for Passing	Max	Min for Passing	
CCM5131	Disaster Management	3	1	-	4	ISE	20	40	%	--	--
						MSE	30			--	--
						ESE	50			40	--

Course Description

This course offered at F. Y. M. Tech. as elective. This course deals with disaster Management and resolution techniques. It also has relevance with public awareness to cater for mitigating disaster.

Learning Outcomes

After successful completion of this subject students should be able to :-

1. Identify and analyze natural disasters
2. Analyze and prepare disaster management action plan for manmade disasters.
3. Design disaster management action plan for natural and manmade disasters
4. Perform Risk assessment and vulnerability analysis
5. Design regional rehabilitation plan, reconstruction and recovery activities





Rajarambapu Institute of Technology, Rajaramnagar

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and Evaluation Scheme for

CCM5131: Disaster Management

Unit 1 Natural Disasters	06
Meaning and nature of natural disasters, their types and effects. Floods, Drought, Cyclone, Earthquakes, Landslides, Avalanches, Volcanic eruptions, Heat and cold Waves, Climatic Change: Global warming, Sea Level rise, Ozone Depletion	
Unit 2 Man Made Disasters	06
Nuclear disasters, chemical disasters, biological disasters, building fire, coal fire, forest fire. Oil fire, air pollution, water pollution, deforestation, Industrial waste water pollution, road accidents, rail accidents, air accidents, sea accidents.	
Unit 3 Disaster Management	06
Efforts to mitigate natural disasters at national and global levels. International Strategy for Disaster reduction. Concept of disaster management, disaster management framework; financial arrangements; role of NGOs, Community-based organizations, and media. Central, State, District and local Administration; Armed forces in Disaster response; Disaster response: Police and other organizations.	
Unit 4 Risk Assessment And Vulnerability Analysis	06
Disaster preparedness plan, use and application of emerging technologies, role and responsibilities of various agencies and mitigation strategies	
Unit 5 Disaster Response	06
Immediate impact and post-impact phase of disasters, Disaster Response Plan, Communication, Participation, and Activation of Emergency Preparedness Plan, Logistics Management, Needs and Damage Assessment, Disaster Response: Central, State, District, and Local Administration, Role of Multiple Stockholders in Disaster Response.	
Unit 6 Rehabilitation, Reconstruction And Recovery	06
Damage Assessment, Role of Various Agencies in Disaster Management and Development, Information Management Structure, Parameters of Vulnerability, Development of Physical and Economic Infrastructure, Creation of Long-term Job Opportunities and Livelihood Options, Role of Housing/Building Authorities, Education and Awareness, Long-term Recovery, Long-term Counter Disaster Planning	

References

1. Construction Engineering and Management – Seetharaman
2. CCMR's Journals
3. NICMAR Publications
4. Different sites on internet on disaster management
5. Project Management – K. Nagarajan – New Age International Ltd.





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and Evaluation Scheme for

First Year M. Tech-Civil/Construction Management

Course Code	Course	Teaching Scheme				Evaluation Scheme					
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical (Marks %)		
							Max	Min for Passing	Max	Min for Passing	
IEO523	Proficiency in Technical Communication	3	1	-	4	ISE	20	40	%	--	--
						MSE	30			--	--
						ESE	50	40	%	--	--

Course Objective:

1. To demonstrate knowledge and skills to formulate various types of business and technical communication.
2. To analyze rhetorical aspects of audience, purpose, and context of technical information to effectively communicate through written, oral, and visual media.

Course Learning Outcomes (CLOs):

After successful completion of this subject students should be able to:-

1. To prepare documents those are structurally and technically appropriate.
2. To enhance writing skills with clarity, conciseness, coherence, cohesion, and emphasis.
3. To develop strategies for any Communication to address diverse forums.
4. Learn to Listen actively and Efficiently
5. To enhance Inter-personnel interaction & interviewing techniques.

Course Prerequisite:

1. Student should have adequate knowledge of basic Grammar of English Language.
2. Student should have basic knowledge about Written Communication.
3. Student should have basic knowledge about presentation tools.
4. Student should be able to moderately communicate in English.





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and Evaluation Scheme for

IEO523: Proficiency in Technical Communication

Unit 1	Language for Technical Purpose and Presentation Tools	06
	Technical vocabulary, Sentence structures, Microsoft office, Graphical presentations	
Unit 2	Formal Written Communication	06
	Drafting Letters, e-Mails, Memos, Notices, Circulars, Schedules	
Unit 3	Project and Research Proposals	06
	What's a research proposal? Essentials, Abstract, Aims, Background & significance, Design & methods, Writing a sample proposal	
Unit 4	Project Reports	06
	Types of reports, Planning a report, Collection & organization of information, Structure & style, Proofreading etc. Writing a sample report.	
Unit 5	Team Building and Working in Groups	06
	Need of team, Effective teams, Group development, Roles in group, Case studies	
Unit 6	Leadership Skills	06
	Leadership quality and styles, Emotional intelligence, Diplomacy and Tact and effective communication, Case studies	
Unit 7	Business Meetings	
	Understanding role of meetings, planning meetings, developing meeting agendas, scheduling meetings, conducting meetings effectively, Taking notes and publishing minutes and concluding meetings, action plans, Demo meetings	
Unit 8	Presentation Skills	
	Preparation, Understanding audience, Use of presentation tools, Presentation, non verbal techniques, handling questions, Demo presentations	

References

1. S. Hariharan, et.al. Soft Skills; MJP Publishers, 2010.
2. John Seely, Oxford Guide to Effective Writing and Speaking; Oxford University Press, 2009.
3. Thomas N. Huckin and Leslie A. Olsen, Technical Writing and Professional Communication for Nonnative Speakers of English; Tata McGraw Hills, International Edition, 1991.
4. Jeff Butterfield, Soft Skills for Everyone, Cengage Learning India Private Limited, 2010.
5. L. Ann Masters & Harold R. Wallace, Personal Development for Life & Work, 10e, Cengage Learning India Private Limited, 2011.





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and Evaluation Scheme for

First Year M. Tech-Civil/Construction Management

Course Code	Course	Teaching Scheme				Evaluation Scheme				
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical (Marks %)	
							Max	Min for Passing	Max	Min for Passing
CCM5511	Field Work			2	1	ISE	--	--	50	50
						ESE	--	--	50	

Course Description:

This lab course offered in first semester of F.Y. M. Tech. is designed to make graduates familiar with the current trends and practices in building construction. Students are expected to select a building construction site in the nearby vicinity and give weekly visits and prepare running bill on partial completion and draft contract document.

Learning Outcomes:

After successful completion of this subject students should be able to:-

- 1 Explain construction site operations
- 2 Identify various groups involved in building construction
- 3 Compute resource requirement
- 4 Prepare running bills,
- 5 Prepare tender/contract document





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and Evaluation Scheme for

First Year M. Tech-Civil/Construction Management

Course Code	Course	Teaching Scheme				Evaluation Scheme				
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical (Marks %)	
							Max	Min for Passing	Max	Min for Passing
CCM5531	Computer Lab I- Microsoft Project			2	1	ISE	--	--	50	50%
						ESE	--	--	50	

Course Description:

Computer based project management is vital in construction industry. Microsoft project software analyses complex projects. In this manager has to give input regarding project. Microsoft project software offers planning, scheduling and controlling of civil engineering projects. This lab course offered in first semester of F.Y. M. Tech. is designed to make graduates familiar with the current planning software's used in industry; in this course students will acquire knowledge and expertise/hands-on in Microsoft project software.

Learning Outcomes:

After successful completion of this subject students should be able to:-

1. Acquire knowledge of Microsoft project,
2. Compute resource requirement for building construction
3. Plan the project duration and resources,
4. Update the plan based on various constraints,

Lab work will consist of:

1. Acquiring expertise in Microsoft Project
2. Solving assignments given on Construction planning and control course
3. Plan two projects using Microsoft Project





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and Evaluation Scheme for

First Year M. Tech-Civil/Construction Management

Course Code	Course	Teaching Scheme				Evaluation Scheme				
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical (Marks %)	
							Max	Min for Passing	Max	Min for Passing
CCM5551	Seminar/Mini Project			2	2	ISE	--	--	100	50

Course Description:

This lab course offered in first semester of F.Y. M. Tech. It is in common interest of guide and students to decide among seminar and mini project. The course is designed to make graduates perform self study in the area of their interest to understand and acquire expert knowledge in the area. A report is expected on completion of the course.

Learning Outcomes:

After successful completion of this subject students should be able to:-

1. Identify research problem
2. Prepare and present statement of Purpose,
3. Perform analysis work
4. Communicate with outside agencies
5. Generate report and
6. Present the work carried out





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First Year M. Tech-Civil/Construction Management

Course Code	Course	Teaching Scheme				Evaluation Scheme				
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical (Marks %)	
							Max	Min for Passing	Max	Min for Passing
CCM5571	Research Methodology Laboratory	-	-	2	1	ISE	--	--	100	50

Course Description:

This lab course offered in first semester of F. Y. M. Tech. is designed to make graduates aware of various steps involved in Research Process along with software used for Statistical Analysis.

Learning Outcomes:

After successful completion of this subject students should be able to:-

1. To Write the Literature review
2. To Design the Questionnaire for Data Collection
3. To Design and Analyze the Experiments
4. To Write the Research Proposal

Lab work will consist of:

List of case studies:

1. Literature Review: Writing a review based on research papers
2. Questionnaire design for data collection
3. Design and Analysis of Experiments-I
4. Design and Analysis of Experiments-II
5. Writing a research proposal,
6. Collection, Analysis of data and presentation

List of Assignments:

1. Based on research methodology and process
2. ANOVA, regression analysis, SPSS ect..
3. Guidelines for DOE





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SEMESTER II





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First Year M. Tech-Civil/Construction Management

Course Code	Course	Teaching Scheme				Evaluation Scheme				
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical (Marks)	
							Max	Min for Passing	Max	Min for Passing
CCM5021	Advanced Construction Techniques & Equipment's.	3	1	-	4	ISE	20	40%	--	--
						MSE	30		--	--
						ESE	50		40%	--

Course Description:

This core course is offered in second semester of M. Tech construction management as a core subject. Focus of this course is on advanced construction techniques and equipments. It covers all the methods currently being practiced by the industry. Spread over six units it takes care of students understanding about various ways a task can be completed and equipments which can be used. It also caters for project based application of various techniques and equipments.

Learning Outcomes:

After successful completion of this subject students should be able to:-

1. Explain construction techniques
2. Confident to select appropriate equipment for particular task
3. Identify feasible technique for particular task
4. Compare among various construction techniques
5. Confident to plan and monitor construction project
6. Analyze feasibility of construction equipments





Rajarambapu Institute of Technology, Rajaramnagar

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and Evaluation Scheme for

CCM5021: Advanced Construction Techniques & Equipments.

Unit 1 Offshore construction:	06
Dredging operation: Methods and Equipments, Piles and Pile driving: Method and equipments, Construction of Docks and Harbor, Floating docks	
Unit 2 Construction dewatering	06
Introduction, Various methods of dewatering, Pumps for dewatering, Design of dewatering system, cost of dewatering. Vacuum dewatering in concrete slab construction, its process and Equipment.	
Unit 3 Trenchless technology	06
Introduction to Trenchless Technology, Concept, Methods used in Trenchless technology, equipments and applications of trenchless technology.	
Unit 4 Construction of Bridges	06
Types of Bridges, Components of bridge, Bridge construction techniques, Erecting Techniques, Pre cast bridge construction, Accelerated bridge construction techniques.	
Unit 5 Railway Construction	06
Construction of Metro Railway-underground and over ground structures, different methods and techniques of construction, problems and solutions- during maintenance and up-keep of structures, advanced methods of rail alignment and placing	
Unit 6 Material Handling equipments	06
Cranes: Mobile cranes, Tower cranes, Hydraulic cranes, Sizes and capacity, Application and operations, Conveyor systems: types and applications.	

References

1. Practical foundation engineering hand book by Robert wade Brown, McGraw Hill Publications, 1995.
2. Construction Dewatering: New Methods and Applications by Patrick Powers. J., John Wiley & Sons, 1992
3. Advanced Construction Techniques by Jerry Irvine, CA Rocketr, 1984.
4. Concrete repair and maintenance illustrated by Peter.H.Emmons, Golgotha Publications Pvt. Ltd., 2001.
5. Construction Technology by Sankar, S.K. and Saraswati, S., Oxford University Press, New Delhi, 2008





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and Evaluation Scheme for

First Year M. Tech-Civil/Construction Management

Course Code	Course	Teaching Scheme				Evaluation Scheme					
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical (Marks)		
							Max	Min for Passing	Max	Min for Passing	
CCM5041	Project Economics & Financial Management	3	1	-	4	ISE	20	40%		--	--
						MSE	30			--	--
						ESE	50			40%	--

Course Description:

Project Economics and Finance Management is offered as regular subject for semester two, Aim of including this subject is to make graduates familiar with Project Economics and its comparison in civil engineering. This course will help graduates to understand, manage and control the project finance in appropriate manner. Divided into six units this takes care of major roles played by project managers.

Learning Outcomes

After successful completion of this subject students should be able to:-

1. Describe foundation of engineering economy.
2. Select the best project of different alternatives.
3. Analyze projects using different techniques.
4. Identify and suggest sources of finance.
5. Analyze different financial statement.
6. Prepare and maintain different site accounts for civil engineering projects.





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and Evaluation Scheme for

CCM5041: Project Economics & Financial Management

Unit – 1 Foundation of Engineering Economy	6
Concept of Engineering economy, Interest rate- Simple and compound, Cash flow, Factors-Single payment Factors, Uniform series factors, gradient factors, Nominal and effective interest rate.	
Unit – 2 Analysis of Engineering Projects	8
Present worth analysis, capitalized cost analysis, Annual worth analysis, Rate of return analysis.	
Unit – 3 Evaluation of Engineering Project	6
Benefit cost analysis, Breakeven, Sensitivity and payback analysis, Replacement and retention decisions, Inflation and its effects.	
Unit – 4 Capital Structure:	6
Sources of finance (long term and short term sources) available for construction projects, Sources of long term finance – Securities (Ordinary shares, Preference shares, Debentures or bonds), Loan capital. Short term Sources of finance- Trade Credit, Accruals, Commercial Paper, Bank credit, Public Deposit, Inter-Corporate Deposits, Private Institutions, Factoring. Working capital management, Importance of Working capital management in construction projects.	
Unit-5 Financial Statement Analysis:	6
Financial Statements (Trading & Profit & Loss A/c, Balance Sheet etc.) and its uses, Techniques of financial statement analysis- comparative financial statement, common size statement, ratio analysis, Ratio Analysis- computation of liquidity ratios, leverage ratios, activity ratios & profitability ratios.	
Unit – 6 Practical Accounting:	4
Book Keeping & Accountancy, Preparation of different Site accounts for receiving materials, allocation of materials for various activities, stock records, day to day expenditures etc. Preparation of reports, budgets and budgetary control system in construction firms.	

Tutorial: One hour per week.

References:

1. Basics of Engineering Economy- by Leland Blank and Anthony Tarquin, Tata McGraw Hill, New Delhi.
2. Business Environment by D. M. Mithani, Himalaya publication.
3. Managerial Economics by D. M. Mithani, Himalaya publication.
4. Financial Management by Khan and Jain.
5. Financial Management by Prasanna Chandra, Tata McGraw Hill, New Delhi.
6. Financial Management by I. M. Pande.
7. Projects planning, Analysis Selection, Implementation and Review by Prasanna Chandra, Tata McGraw Hill, New Delhi.





Rajarambapu Institute of Technology, Rajaramnagar

(An Autonomous Institute) Teaching

and Evaluation Scheme for

Program Elective II

First Year M. Tech-Civil/Construction Management

Course Code	Course	Teaching Scheme				Evaluation Scheme					
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical (Marks %)		
							Max	Min for Passing	Max	Min for Passing	
CCM5061	Operations Research in Construction	3	1	-	4	ISE	20	40	%	--	--
						MSE	30			--	--
						ESE	50			40	--

Course Description:

Operation research as such is applicable to all fields, here we are emphasizing on construction applications of OR, this course will help students to take optimal decisions in favor of the project.

Learning Outcomes:

After successful completion of this subject students should be able to:-

1. Identify the need of operations research for effective decision-making.
2. Formulate and analyze the managerial problem through OR models and arrive at an optimal solution or decision.
3. Discuss the characteristics of different types of decision-making environments and the appropriate decision making approaches and tools to be used in each type.
4. Justify the optimal solution of LP problems.
5. Apply various methods to select and execute optimal strategies to win the game.
6. Explain various dynamic programming models and their applications in solving a decision-problem.
7. Explain applications of Queuing theory and waiting theory to industries.





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and Evaluation Scheme for

CCM5061: Operations Research in Construction

Unit 1 Introduction	04
Introduction to OR history, nature, scope and phases of OR, classification of OR models. Use of Operations Research in Civil Engineering and Managerial Decision making process. Introduction to Optimization Techniques and their application in Engineering Planning, Design and Construction	
Unit 2 Linear programming	07
Linear programming: Formulation of Linear optimization models, Civil engineering Applications. Simplex method, special cases in simplex method, Method of Big M, Two phase method, duality, sensitivity analysis	
Unit 3 Models:	08
Transportation Model and its variants, Assignment Model and its variants.	
Unit 4 Decision strategies	06
Decision strategies – decision under certainty – decision under risk – decision under uncertainty – formulation – decision criterion and decision under competitive situation	
Unit 5 Games Theory	06
Games Theory-Classification of games. Two – person, zero – sum games – formulation of pay off matrix – saddle points – games with pure strategies and mixed strategies – value of the game. Solution to 2 x 2 matrix, 2 x n matrix, m x 2 matrix and m x n pay-off matrix. Graphical method, Decision theory.	
Unit 6 Non-Linear programming	05
Queuing theory and waiting time – application to industries. Introduction to dynamic programming and network analysis, Monte Carlo Simulation	

References

1. Operations Research for Management by G.V. Shenoy, U.K. Srivastav, S.C. Sharma - Wiley Eastern Limited
2. Operations Research by Gupta Premkumar and Dr.Hira
3. Taha, H.A., Operations Research - An Introduction, Prentice Hall, (7th Edition), 2002.
4. Optimization – S. S. Rao, Wiley Eastern Ltd.
5. Operation Research Theory And Applications by Sharma J.K.

Tutorial:- One hour per Week-Covers problems on all units.





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Program Elective II First Year M. Tech-Civil/Construction Management

Course Code	Course	Teaching Scheme				Evaluation Scheme					
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical (Marks %)		
							Max	Min for Passing	Max	Min for Passing	
CCM5081	Materials Management	3	1	-	4	ISE	20	40	%	--	--
						MSE	30			--	--
						ESE	50			--	--

Course Description:

The course floated as elective subject in second semester of M. Tech. Civil Construction Management deals with most costly resource for any project; Materials, materials consume about 60-70 % of project cost. This course will help students to find, procure, store, manage and utilize materials in an optimized manner. Students will also be familiar with international purchase, negotiation and decision making related to materials.

Course Learning Outcomes

After successful completion of this subject students should be able to:-

1. Describe need, objectives and functions of Materials Management,
2. Apply supplier selection methods,
3. Produce optimal stores layout,
4. Perform codification and classification,
5. Use BEP for material management
6. Perform material requirement planning,
7. Apply inventory control techniques for materials management,





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and Evaluation Scheme for

CCM5081: Materials Management

Unit 1 Introduction	06
Introduction, Need, Objectives and functions and scope of materials management. Integrated concept of materials management, Types of materials. Material management organization.	
Unit 2 Purchase and supply chain Management	06
Introduction, objectives and functions of purchasing. Types of purchasing purchase procedure, Supplier selection, supplier's evaluation and performance measurement, Vendor rating methods.	
Unit 3 Stores management and control	06
Classification, objectives and functions, types and organization for stores management. Stores layout, Standardization and Codification, systems of codification. Purchase process and negotiation	
Unit 4 Break Even analysis	06
Introduction, Break even chart and Point, Computing Breakeven Point and margin of Safety, Graphical representation of BEP, Cost volume and profit analysis, Make or buy decision.	
Unit 5 Inventory and Material requirement planning	06
Introduction, Necessity, Types and functions of Inventory. Inventory costs, advantages and disadvantages of Inventory carrying. Inventory planning and control systems. Introduction to MRP, M.R.P. system, Development of M. R. P. M.R.P. Flow chart, Application of MRP.	
Unit 6 Inventory Control	06
Introduction, Types of Inventory control Systems, Safety Stock, Essentials of Inventory control, Classification and characteristics of Inventory problems, Inventory control models I, II & III. Economic order quantity, EOQ Models.	

References

1. L. C. Jhamb, Materials and Logistic Management, EPH Publisgning, 12th revision 2011,
2. P. Gopalkrishnan & M. Sundaresan, Materials Management an Integrated Approach, PHI, 2005
3. K. Datta, Materials Management: Procedures, Text and Cases, PHI Learning Pvt. Ltd., 2004.
4. Arnold, Introduction To Materials Management, Pearson Education India, 2009
5. Richard J. Tersine, Principles Of Inventory And Materials, Management, Prentice Hall, 1994
6. P. Gopalakrishnan, Handbook of Materials Management, PHI Learning Pvt. Ltd. 2004
7. Materials and Financial Management, C. M. Sadiwala, Ritesh C. Sadiwala, New Age International Publishers. 2007
8. Introduction to Materials Management, J. R. Tony Arnold, Stephen N. Chapman and Lloyd M. Clive, Pearson Publication, 2008, Sixth Edition.





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Program Elective II

First Year M. Tech-Civil/Construction Management

Course Code	Course	Teaching Scheme				Evaluation Scheme					
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical (Marks %)		
							Max	Min for Passing	Max	Min for Passing	
CCM5101	Environmental Impact Assessment	3	1	-	4	ISE	20	40	%	--	--
						MSE	30			--	--
						ESE	50	40	40	--	--

Course Description:

Environmental impact Analysis is offered as program Elective for post graduate course (M. Tech) semester II. It deals with definitions and concepts, rationale and historical development of EIA, EIA in Engineering, Initial environmental examination, environmental impact statement, environmental appraisal, environmental impact factors and areas of consideration, measurement of environmental impact, organization, scope and methodologies of EIA, status of EIA in India.

Course Learning Outcomes

1. Discuss importance of Environmental Impact Assessment.
2. Develop EIA method for construction project.
3. Analyze the Development related problem through EIA
4. Prepare EIA report for submission to concerned authority.
5. Evaluate the impacts and draw meaningful conclusions from the results of the EIA.





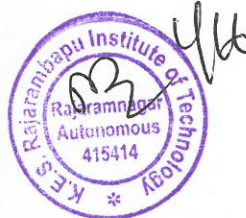
Rajarambapu Institute of Technology, Rajaramnagar

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and Evaluation Scheme for

CCM5101: ENVIRONMENTAL IMPACT ASSESSMENT

UNIT 01	Evolution of EIA:	06
	Environmental Impact Assessment: Introduction, Stages Of EIA, Origin of EIA, Establishments of Procedure: Legislative Option, Project Screening for EIA, Methods, Projects thresholds, Sensitive area criteria Matrices .Scope studies for Environmental Impact Studies (EIS). Preparation for EIS Planning, Public Participation and Review of EIS.	
UNIT 02	Methods for impact assessment:	06
	Background information, interaction matrix methodologies, network methodologies, environmental setting, environmental impact assessment methodology, documentation and selection process, environmental indices and indicators for describing affected environment, Life cycle assessment	
UNIT 03	Prediction and assessment of impact for air and noise environment:	06
	Basic information of air quality, identification of type and quantity of air pollutant, existing air quality and air quality standards, impact prediction and assessment, mitigation. Basic information of noise, existing noise levels and standards, prediction of noise levels and assessment of impact, mitigations	
UNIT 04	Prediction and assessment of impact for water and soil environment:	06
	Basic information of water quality (Surface water and ground water), water quality standards, identification of impact, prediction of impact and assessment, mitigations. Background information of soil environment, soil and ground water standards, prediction and assessment of impact for ground water and soil, mitigations.	
UNIT 05	Prediction and assessment of impact on cultural and socioeconomic environment	06
	Basic information on cultural resources, rules and regulations for cultural resources like archaeological, historical structures, Cultural system, prediction and assessment of impact, mitigations. Basic information of socioeconomic environment, description of existing socioeconomic environment, prediction and assessment of impact, mitigation, resettlement and rehabilitation.	
UNIT 06	Decision Methods for Evaluation of Alternative:	06
	Public participation in environmental decision making, Regulatory requirements, environmental impact assessment process, objectives of public participation, techniques for conflict management and dispute resolution, verbal communication in EIA studies Categorization of Industries for seeking environmental clearance from concerned authorities, procedure for environmental clearance, procedure for conducting environmental impact assessment report, Rapid and Comprehensive EIA, general structure of EIA document, Environmental management plan, post environmental monitoring.	





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and Evaluation Scheme for

Reference:-

1. Canter R.L., Environmental Impact Assessment, McGraw Hill International Edition, 1997.
2. John G. Rau and David C. Wooten (Ed), Environmental Impact Analysis Handbook, McGraw Hill Book Company.
3. R. R Barthwal " Environmental Impact Assessment "By (New Age International publishers)
4. Peter Wathern " Environmental Impact Assessment, Theory and practice" Taylor & Francis e-Library ,London and New York





Rajarambapu Institute of Technology, Rajaramnagar

(An Autonomous Institute) Teaching
and Evaluation Scheme for

Program Elective II

First Year M. Tech-Civil/Construction Management

Course Code	Course	Teaching Scheme				Evaluation Scheme				
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical (Marks %)	
							Max	Min for Passing	Max	Min for Passing
CCM5121	Energy Conservation Techniques in Building Construction	3	1	-	4	ISE	20	40%	--	--
						MSE	30		--	--
						ESE	50		40%	--

Course Description:

Social and environmental changes have increased focus on conservation of natural resources and sustainable living. Recent economic changes have also caused consumers to reevaluate how they use energy, with new attention being given to maximizing efficiency. Employing more efficient building methods in new construction and in renovation could reduce the amount of energy consumed, thereby saving money and reducing electric load growth and air emissions resulting from electric generation. There have been many developments in the promotion of energy efficiency in the construction sector, much of which is organized around the guidelines of the Leadership in Energy and Environmental Design Green Building Rating System.

Course Learning Outcomes

After successful completion of this subject students should be able to:-

1. Ability to apply knowledge of Engineering fundamentals,
2. Identify, Formulate and solve civil engineering problems
3. Interpret social, cultural, global and environmental issues for sustainable development.
4. Analyze and design civil Engineering Structures.
5. Apply the techniques, skills, and engineering tools necessary for engineering practice.





Rajarambapu Institute of Technology, Rajaramnagar

(An Autonomous Institute) Teaching

and Evaluation Scheme for

CCM15121: ENERGY CONSERVATION TECHNIQUES IN BUILDING CONSTRUCTION

UNIT 01 Introduction	06
Fundamentals of energy- Energy Production Systems-Heating, Ventilating and Air-conditioning – Solar Energy and Conservation – Energy Economic Analysis – Energy conservation and audits – Domestic energy consumption – savings - challenges – primary energy use in buildings - Residential – Commercial – Institutional and public buildings – Legal requirements for conservation of fuel and power in buildings	
UNIT 02 Environmental	06
Energy and resource conservation – Design of green buildings – Evaluation tools for building energy – Embodied and operating energy – Peak demand – Comfort and Indoor Air quality – Visual and acoustical quality – Land, water and materials - Airborne emissions and waste management	
UNIT 03 Design	06
Natural building design consideration – Energy efficient design strategies – Contextual factors – Longevity and proCECs Assessment – Renewable Energy SourCEC and design – Advanced building Technologies – Smart buildings - Economies and cost analysis.	
UNIT 04 Service	06
Energy in building design – Energy efficient and environment friendly building – Thermal phenomena – thermal comfort – Indoor Air quality – Climate, sun and Solar radiation, - Psychometrics – passive heating and cooling systems - Energy Analysis – Active HVAC systems - Preliminary Investigation – Goals and policies	
UNIT 05 Energy Audit	06
Energy audit – Types of Energy audit – Analysis of results – Energy flow diagram – Energy consumption / Unit Production – Identification of wastage- Priority of conservative measures – Maintenance of energy management programme	
UNIT 06 Energy Management	06
Energy management of electrical equipment - Improvement of power factor – Management of maximum demand – Energy savings in pumps – Fans – Compressed air systems – Energy savings in Lighting systems – Air conditioning systems – Applications – Facility operation and maintenance – Facility modifications – Energy recovery dehumidifier – Waster heat recovery – Steam plants and distribution systems – Improvement of boiler efficiency – Frequency of blow down – Steam leakage – steam Flash and condense return	

REFERENCE BOOKS

1. Moore F., Environmental Control system Mc Graw Hill, Inc. 1994.
2. Brown, GZ, Sun, Wind and light: Architectural design strategies, John Wiley & Sons, 1985.
3. Cook, J, Award – Winning passive Solar Design, Mc Graw Hill, 1984.
4. J.R. Waters, Energy conservation in Buildings: A Guide to part L of the Building Regulations, Blackwell Publishing, 2003.





Rajarambapu Institute of Technology, Rajaramnagar

(An Autonomous Institute) Teaching

and Evaluation Scheme for

First Year M. Tech-Civil/Construction Management

Course Code	Course	Teaching Scheme				Evaluation Scheme					
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical (Marks %)		
							Max	Min for Passing	Max	Min for Passing	
SHP506	Advanced Engineering Mathematics	4	-	-	4	ISE	20	40	%	--	--
						MSE	30			--	--
						ESE	50	40	%	--	--

Course Description:

Advanced Engineering Mathematics is a core subject introduced at Semester II of First year M. Tech. Construction Management. This course will help students to take decisions by using Statistical techniques and Optimization requirements.

Course Learning Outcomes

After successful completion of this subject students should be able to:-

1. Identify, formulate and analyze the engineering problem; and apply Mathematical concepts effectively to engineering fields.
2. Explain and identify random variables, discriminate between discrete and continuous random variables; and fit probability distributions.
3. Apply the techniques of Data Interpolation to solve specific engineering problems.
4. To understand the concept of Regression analysis; and apply the techniques of Correlation to solve specific engineering problems.
5. To understand the concept of Game Theory and Decision Theory; and apply the techniques of Decision Theory to solve specific engineering problems.
6. Explain and apply the concept of Graph Theory to solve specific engineering problems.





Rajarambapu Institute of Technology, Rajaramnagar

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and Evaluation Scheme for

SHP506: Advanced Engineering Mathematics

Unit 1	PROBABILITY: Introduction, Sample space and events, Random variables. Discrete distribution, Continuous distribution. Binomial distribution, Poisson distribution, Normal distribution-Related properties.	08
Unit 2	DATA INTERPOLATION: Introduction, Errors in Polynomial Interpolation, Finite differences, Forward, Backward and Central differences, Difference Equations –Newton’s formulae for interpolation, Central difference interpolation Formulae, Gauss Central Difference Formulae, Interpolation with unevenly spaced points-Lagrange’s Interpolation formula.	08
Unit 3	CORRELATION AND REGRESSION ANALYSIS: Correlation, Karl Pearson’s coefficient of correlation, Correlation coefficient for a bivariate distribution, Regression coefficient, regression lines, Reliability of regression estimates.	08
Unit 4	GAME THEORY: Introduction, Pay-off, Types of Games, The Maximin-Minimax Principle, Games without Saddle Points, Graphical Method for $2 \times n$ or $m \times 2$ Games.	08
Unit 5	DECISION THEORY: Introduction, Basic Terminology in Decision Theory, Steps in the Decision Making Process, Decision Making Environment, Decision Under Uncertainty.	08
Unit 6	GRAPHS, DIGRAPHS AND CONNECTIVITY: Introduction, Graph Isomorphism, Subgraphs, Degree Vectors of Simple Graphs. Paths, Circuits and Cycles. Connected Graphs and Digraphs. Trees and Spanning Trees.	08

Text Books:

1. Kreyszig E., Advanced Engineering Mathematics, Wiley Eastern, 8th edition, 2007
2. Schaum’s Outline of Graph Theory, V. K. Balkrishnan, McGraw-Hill Publication.
3. Operations Research, S Kalavathy, Third Edition, Vikas Publishing House Pvt. Ltd.
4. Sastry, S. S., Engineering Mathematics, Vol. I and II, Prentice hall of India, 4th edition, 2009
5. Peter V. O’Neil, Advanced Engineering Mathematics, / Cole Publishing House 4th Edition 2002
6. B. S. Grewal, Higher Engineering Mathematics, Khanna Publishers 39th edition: 2005





Rajarambapu Institute of Technology, Rajaramnagar

(An Autonomous Institute) Teaching
and Evaluation Scheme for

First Year M. Tech-Civil/Construction Management

Course Code	Course	Teaching Scheme				Evaluation Scheme				
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical (Marks %)	
							Max	Min for Passing	Max	Min for Passing
CCM5521	Computer Lab II (Primavera)			2	1	ISE	-	--	50	50
						ESE	-		50	

Course Description:

Project management software has the capacity to help plan, organize, and manage resource tools and develop resource estimates. Depending on the sophistication of the software, it can manage estimation and planning, scheduling, cost control and budget management, resource allocation, collaboration software, communication, decision-making, quality management and documentation or administration systems. Microsoft Project is one of the computer based PM software used worldwide to handle construction projects. By this software complex civil engineering problems are handled. Microsoft Project lab course offered in first semester of F.Y. M. Tech. is designed to make graduates familiar with the current planning software's used in industry; in this course students will acquire knowledge and expertise/hands-on in Microsoft project software.

Learning Outcomes: After completion of this lab students should be able to

1. Discuss significance of primavera software in project management.
2. Plan construction project in primavera software.
3. Carry-out resource optimization.
4. Analyse construction projects through primavera.

Lab work will consist of:

1. Learning basics of Primavera.
2. Solving assignments given in Construction planning and control course
3. Planning of any two projects





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Course Code	Course	Teaching Scheme				Evaluation Scheme				
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical (Marks %)	
							Max	Min for Passing	Max	Min for Passing
CCM5541	Advance Surveying and GIS Lab			2	1	ISE	--	--	50	50
						ESE	--		50	

Course Description:

This lab course offered in first semester of F. Y. M. Tech. is designed to make graduates familiar with Advanced surveying equipments and Geographic information system software's and its application in civil engineering.

Learning Outcomes:

After successful completion of this subject students should be able to:-

1. Use total station and GPS instruments for survey
2. Identify applications of GIS in civil engineering
3. Perform analysis using GIS.

Lab work will consist of:

1. Survey project in group of 3/6 students using Total Station and GPS
2. Learning GIS (Quantum GIS)
3. Import survey data in GIS environment,
4. Real time study and modifications
5. Digitizing, analyzing and generating maps.
6. Exercise solving (one)





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and Evaluation Scheme for

First Year M. Tech-Civil/Construction Management

Course Code	Course	Teaching Scheme				Evaluation Scheme				
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical (Marks %)	
							Max	Min for Passing	Max	Min for Passing
CCM5561	Seminar/Mini Project			2	2	ISE	--	--	100	50

Course Description:

This lab course offered in first semester of F.Y. M. Tech. It is in common interest of guide and students to decide among seminar and mini project. The course is designed to make graduates perform self study in the area of their interest to understand and acquire expert knowledge in the area. A report is expected on completion of the course.

Learning Outcomes:

After successful completion of this subject students should be able to:-

1. Identify research problem
2. Prepare and present statement of Purpose,
3. Perform analysis work
4. Communicate with outside agencies
5. Generate report and
6. Present the work carried out





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First Year M. Tech-Civil/Construction Management

Course Code	Course	Teaching Scheme				Evaluation Scheme				
		L	T	P	Credits	Scheme	Theory (Marks %)		Practical (Marks %)	
							Max	Min for Passing	Max	Min for Passing
CCM5581	Comprehensive Viva-voce				1	ESE	--	--	100	50

Course Description:-

Viva voce will be conducted at the end of first year which will be covering the complete syllabus. This will test the student's learning and understanding during the course of their post graduate program such as Advanced Construction Techniques and Equipment's, Construction Project Management, Financial management, Material management, Human Resource Management, Research Methodology etc. In doing so, the main objective of this course is to prepare the students to face interview both at the academic and the industrial sector. A panel of examiners will conduct the comprehensive viva voce examination. The examiner panel will be appointed by the HoP. The panel jointly assesses the student for maximum of 100 marks.

Learning Outcomes:

After successful completion of this subject students should be able to:-

1. Acquire in-depth knowledge of courses,
2. Develop ability to analyze the problem,
3. Provide solution to Civil Engineering problems,
4. Communicate with outside agencies,
5. Expert in using modern tools,
6. Develop self-learning ability



Forwarded through Head

**To,
The Director/Dean Academics,
RIT, Rajaramnagar**

Subject: Submission of revised curriculum for Academic year 2016-17

Reference: M Tech Civil-Construction Management

Respected Madam/Sir

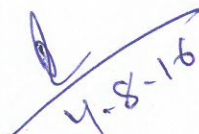
We are hereby submitting the final revised curriculum of Second Year M Tech Civil Construction Management to be applied from academic year 2016-2017. We request you to accept and acknowledge the same.

Thank you

Faithfully yours


Prof. D. S. Patil

**Head of Program
M. Tech. Civil Const. Mgmt.
RIT, Rajaramnagar.**


4-8-16



Rajarambapu Institute of Technology, Rajaramnagar

(An Autonomous Institute) Teaching
and Evaluation Scheme for

SEMESTER III & IV



Rajarambapu Institute of Technology, Rajaramnagar

(An Autonomous Institute) Teaching
and Evaluation Scheme for

Second Year M. Tech Civil-Construction Management

Semester III - 2016-17

Course Code	Course	Teaching Scheme				Evaluation Scheme			
		L	T	P	Credits	Scheme	Credits	Practical (Marks %)	
								Max	Min for Passing
CCM6011	Field/Professional Training	--	--	--	2	ISE	2	100	50
CCM6031	Dissertation Phase I	--	--		4	ISE	4	100	50
CCM6071	Dissertation Phase II	--	--	*	10	ISE	4	100	50
CCM6091						ESE	6	100	50

Total Credits: 16,

Second Year M. Tech Civil-Construction Management

Semester IV - 2016-17

Course Code	Course	Teaching Scheme				Evaluation Scheme			
		L	T	P	Credits	Scheme	Credits	Practical (Marks %)	
								Max	Min for Passing
CCM6021	Dissertation Phase III	--	--		08	ISE	8	100	50
CCM6041	Dissertation Phase IV	--	--	*	10	ISE	4	100	50
CCM6061						ESE	6	100	50

Total Credits: 18,

Grand Total of Credits: 24+24+16+18 = 82

* Hours required for the completion of the project will be mutually decided by the student and the supervisor.





Rajarambapu Institute of Technology, Rajaramnagar

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Semester III - 2016-17

Course Code	Course	Teaching Scheme				Evaluation Scheme			
		L	T	P	Credits	Scheme	Credits	Practical (Marks %)	
								Max	Min for Passing
CCM6011	Field/Professional Training	--	--	--	2	ISE	2	100	50

Field training (CCM6011):

Course Description

In the field training work, the student is expected to undergo training in industry, related to subject specialization for duration of 15 days (minimum) for at least 6 hrs per day. Student should write a report on the field training and submit to department for ISE evaluation at the beginning of third semester. Student should include the certificate from company regarding satisfactory completion of the field training.

Course outcome -

- 1 Identify training area
- 2 Prepare on site work report of training,
- 3 Perform analysis work
- 4 Communicate with agencies
- 5 Generate report and
- 6 Present the work





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Semester IV - 2016-17

Course Code	Course	Teaching Scheme				Evaluation Scheme			
		L	T	P	Credits	Scheme	Credits	Practical (Marks %)	
								Max	Min for Passing
CCM6031	Dissertation Phase I	--	--	*	4	ISE	4	100	50

Dissertation phase I (CCM6031)

Synopsis approval presentation:

Under the guidance of faculty called as 'Supervisor', PG student from second year is required to do innovative and research oriented work related to various theory and laboratory courses he/she studied during previous semesters. Dissertation work should not be limited to analytical formulation, experimentation or software based project. Student can undertake an interdisciplinary type project with the prior permission of DPGC from both departments.

Synopsis:

Student need to carry out exhaustive literature survey with consultation of his/her supervisor for not less than 25 reputed national international journal and conference papers. Student should make the Synopsis Submission Presentation (SSP) with literature survey report to DPGC and justify about the innovativeness, applicability, relevance and significance of the work. At the time of presentation, student shall also prepare Synopsis of the work and submit to department for approval. Student shall submit synopsis of dissertation as per the prescribed format in 02 copies to department.

Course Outcomes -

1. Identify research problem through literature survey.





Rajarambapu Institute of Technology, Rajaramnagar

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2. Prepare research design for above problem
3. Generate synopsis report
4. Present the work carried out





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Second Year M. Tech Civil-Construction Management Semester IV - 2016-17

Course Code	Course	Teaching Scheme				Evaluation Scheme			
		L	T	P	Credits	Scheme	Credits	Practical (Marks %)	
								Max	Min for Passing
CCM6071	Dissertation Phase II	--	--		10	ISE	4	100	50
CCM6091						ESE	6	100	50

Dissertation phase II (CCM6091 CCM6091):

Phase II evaluation is based on End semester Examination (ESE) which is based on the work during the semester. It is expected that student shall present preliminary results from his/her work during the semester with report as per prescribed format. DPGC including 1 external examiner as expert will approve the report and progress of student.

ISE will be evaluated DPGC and ESE will be evaluated by DPGC and one external expert. Student will submit a report (soft bound before 1 week of date of presentation) as per prescribed format and present to DPGC for ISE and ESE. If student is not showing satisfactory performance in then he/she will be given grace period of two weeks. After two weeks student will again evaluated with grade penalty.

Course Outcomes -

1. Prepare the set up for experimentation/software
2. Perform experimental/software analysis for validation of research work
3. Draft a report
4. Present the work carried out





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Second Year M. Tech Civil-Construction Management Semester IV - 2016-17

Course Code	Course	Teaching Scheme				Evaluation Scheme			
		L	T	P	Credits	Scheme	Credits	Practical (Marks %)	
								Max	Min for Passing
CCM6021	Dissertation Phase III	--	--	*	08	ISE	8	100	50

* Hours required for the completion of the project will be mutually decided by the student and the supervisor.

Dissertation Phase III:

Student is required to give a presentation on the progress of his/her dissertation work in front of supervisor and DGPC. It is expected that up to this stage almost 90% of dissertation work is almost completed. Student will make the presentation and seek the suggestions from the supervisor and DPGC. Supervisor and DPGC will ensure that work carried out by the student till this stage is satisfactory and in compliance with synopsis of the dissertation submitted by student. This is In Semester Evaluation (ISE).

Course Outcomes-

1. Perform experimental/software analysis for developing research work
2. Communicate with outside agencies
3. Generate report
4. Present the work carried out





Rajarambapu Institute of Technology, Rajaramnagar

(An Autonomous Institute) Teaching
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Second Year M. Tech Civil-Construction Management

Semester IV - 2016-17

Course Code	Course	Teaching Scheme				Evaluation Scheme			
		L	T	P	Credits	Scheme	Credits	Practical (Marks %)	
								Max	Min for Passing
CCM6041	Dissertation Phase IV	--	--		10	ISE	4	100	50
CCM6061						ESE	6	100	50

Dissertation Phase IV (CCM6041 CCM6061):

In Dissertation Phase-IV, it is expected that student should complete

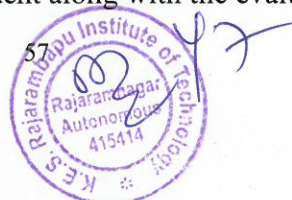
- 100% implementation of the proposed system
- Simulation/ experimentation work on the proposed system
- Performance evaluation of the proposed system
- Comparison of the proposed system with existing systems
- Writing of the conclusion
- Preparation of a draft-copy of the dissertation report with Plagiarism report

Course Outcomes-

1. Perform experimental/software analysis for developing research work
2. Communicate with outside agencies
3. Generate report
4. Publish a research paper in journals/conference
5. Prepare dissertation report
6. Present the work carried out

Evaluation of Dissertation Phase-IV (CCM6041):

The DPGC committee is advised to evaluate the dissertation pre-submission presentation and/or system demonstration given by the students at the end of semester –IV within the stipulated period and give approval/modifications to the work done by the student along with the evaluation score.





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and Evaluation Scheme for

The committee is advised to verify work completion as per the synopsis, and all committee members should remain present for the presentation.

The objective of the presentation/ demonstration is to understand techniques implemented by the student, student's own contribution in the development process, obtained results, comparison of results with existing systems, and deliverables of the dissertation work.

The committee can suggest modifications if it does not fulfill above-mentioned requirements in the system/ draft copy of the report. In this case, the student should modify the system in a given time span based on suggestions given by the members and give presentation again in front of committee members.

The members should ensure that student has incorporated all suggestions and gives him/her approval to submit the dissertation work for final evaluation.

Final evaluation of Dissertation work (CCM6061):

The final evaluation of the dissertation work shall be carried out by a three member committee, comprising of Chairman, External Examiner and concerned supervisor. This committee should be appointed by Controller of Examinations.

The student should give presentation and demonstration of work carried out in front of committee members. The external examiner and supervisor should evaluate student's performance based on following points

1. Justification and clarity of the problem statement and project objectives
2. Use of appropriate, applicable and justifiable methodology to solve problem undertaken
3. Reliability and validity of data collection instruments /resources used, critical data analysis and interpretation
4. Overall system design
5. Experimental Results and their comparison with existing systems
6. Critical analysis of obtained results and their interpretation and correlation with project deliverables
7. Scientific justification of conclusions
8. self contribution of the candidate in project development irrespective of use of readymade hardware/software
9. Presentation skills

The chairman shall ensure smooth conduct of the examination.





Rajarambapu Institute of Technology, Rajaramnagar

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M. Tech. Civil Construction Management

Grand Total of hours and credits - 04 semesters course

Sr No	Batch	Hours	Credits
1	F.Y.M.Tech, Sem-I (2015-16)	27	24
2	F.Y.M.Tech, Sem-II (2015-16)	26	24
Total		53	48
3	S.Y.M.Tech, Sem-III (2016-17)	*	16
4	S.Y.M.Tech, Sem-IV (2016-17)	*	18
Total		*	34
Grand Total of Sem -I to Sem -IV			82

* Hours required for the completion of the project will be mutually decided by the student and the supervisor

