Department of Civil Engineering

	Year 1	Year 2	Year 3	Year 4	Year 5
EES	4	4	4	4	4
Courses	64	69	67	65	66
Percentage	6.3	5.8	6.0	6	6

18UHUC500	**Management, Entrepreneurship & Protection of Intellectual Property**	**(4-0-0) 4**

Contact Hours:52

Course Learning Objective (CLOs): Management, Entrepreneurship & Protection of Intellectual Property is taught as one of the core subjects in Civil Engineering program.In this course, topics on Management, Planning, Organizing, Staffing, Directing and Controlling, SSI, Government/ Institutional support and Project Formulation, Copyright, Patent, Trademark and Industrial Design and their protection through the intellectual property laws are dealt. The delivery of the topics is made through lecture classes. The evaluation will be carried out through Internal evaluation and Semester End Examination.

Course Outcomes (COs):

Description of the Course Outcome: At the end of the course the student will be able to:		**Mapping to POs (1,12)/ PSOs (13,15)**		
		Substantial Level (3)	**Moderate Level (2)**	**Slight Level (1)**
CO-1	Define and explain the management and concepts of planning, forecasting and decision making.		11	
CO-2	Define and explain the concepts of organizing, staffing, motivating		9,11	

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	and controlling.			
CO-3	Define and explain the concepts of entrepreneurship and the small-scale industries (SSI).		6,8,11	
CO-4	Explain the Government and institutional support to SSI, formulate a project report by identifying the business opportunities.		11	
CO-5	Define and explain the different forms of intellectual properties viz. copy right, patent, trade mark and industrial design		6,8	

POs	PO-6	PO-8	PO-9	PO-11
Mapping Level	2	2	2	2

Contents:

Unit–I

Engineering and Management: Historical Development of Engineering, Management, Engineering & Management a synthesis.

Planning, Forecasting and Decision Making: Nature of Planning, Planning concepts, Forecasting, Decision making, Tools for decision making. **10 Hrs.**

Unit–II

Organizing and staffing: Nature of organizing, Concepts of Organization, Technical and Modern organization structures, Staffing process in technical organizations, Authority and Power; Delegation, Meeting & Committees.

Motivating and Controlling: Motivation, Process of Motivation, Motivational theories, Leadership and styles, Process of control, Requirements of Effective control system, Financial and non-financial controls. **10Hrs.**

Unit–III

Foundations of Entrepreneurship: Meaning of entrepreneur, Functions of entrepreneur, Types of entrepreneur, Concept of entrepreneurship, Role of entrepreneurs in economic development, Barriers of entrepreneurship.

Small Scale Industry (SSI): Definition, Characteristics, Objectives, Role of SSI in economic development, Advantages of SSI, Steps to start SSI, Impact of liberalization, privatization and globalization on SSI, Definition of Ancillary and Tiny industry. **10 Hrs.**

Unit–IV

Government and Institutional Support: Government and Institutional support to SSI, Objectives and functions of MSME Development Institute, SIDBI, DIC, Single window agency, KIADB, KSSIDC, KSFC.

Preparation of Project: Meaning of project, Importance of project report, Contents of a standard project, Identification of business opportunities, Feasibility studies, Types and purpose. **10 Hrs.**

Unit–V

Introduction: Meaning and forms of intellectual property right, Competing rationale for protection, International conventions, World court.

Copyright and Patent: Meaning and content of copyright, Ownership and rights, Period of copyright, Assignment and relinquishment of copyright, License, Infringement of copy right, Offenses and penalties, Fair use. Concept of patent, Patentable and non-patentable inventions, Procedure for obtaining patent, Rights and obligations of patent holder, Infringements, Remedies, Offenses and penalties.

Industrial Design and Trademark: Concept and significance of Industrial Design and Trademark. **12 Hrs.**

Reference Books:

1) Naidu N.V.R. and T. Krishna Rao, “Management and Entrepreneurship”, I.K. International Publishing House, Bangalore.
2) Babcock Daniel L., “Managing Engineering and Technology”, PHI.
3) Drucker Peter, “The Practice of Management”, Harper Business.
4) Acharya N.K., “Textbook on Intellectual Property Rights”, Asia Law House.

18UCVL603	Software Laboratory	(0-0-2)1

Contact Hours: 24

Course Learning Objective (CLOs): Software Laboratory is taught as a laboratory course for Civil Engineering Program. In this course, analysis and design of RC building using FEM based software, plotting of survey data using Survey software, preparation of shape and thematic maps using GIS software package are dealt. The evaluation will be carried out through continuous evaluation & Semester End practical examination.

Course Outcomes (COs):

Description of the Course Outcome: At the end of the course the student will be able to:		**Mapping to POs (1,12)/ PSOs (13,15)**		
		Substantial Level (3)	**Moderate Level (2)**	**Slight Level (1)**
CO-1	Design a RC building using FEM based software.	5	6	9
CO-2	Preparation of maps using Total Station/GPS data.	5	6	9
CO-3	Prepare shape and thematic files of features using GIS software.	5	6	9

POs	PO-5	PO-6	PO-9
Mapping Level	3	2	1

Mapping level: 1 = Low, 2=Moderate, 3=Substantial

Contents:

1) **Reinforced Concrete buildings:** Analysis and design of RC buildings using FEM based software package.
2) **Preparation of maps:** Use of Total Station and GPS data.
3) **GIS applications:** Create shape files for point, line, and polygon features with a map as reference. Create decision maps for specific purpose.

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18UHUL605	Soft Skills & Aptitude	(0-0-2) 1

Contact Hours:24

Course Learning Objectives (CLOs): This is included with the objective of improving the communication skills, proficiency in English language and aptitude ability of the student to enhance the employability.

Course Outcomes (COs):

Description of the Course Outcome: At the end of the course the student will be able to:		**Mapping to POs(1,12)/ PSO(1,2,3)**		
		Substantial Level (3)	**Moderate Level (2)**	**Slight Level (1)**
CO-1	Explain the significance of communication in the profession.		10	
CO-2	Use the English language with proficiency		10	12
CO-3	Solve Aptitude related problems		9	12
CO-4	Demonstrate the competency in the placement activities.		9	

POs	PO-9	PO-10	PO-12
Mapping Level	2.0	2.0	1.0

Contents:

Training on communication skills, proficiency in English language and aptitude ability involving the internal and external resource.

Evaluation:

Both the internal and external resource persons shall be engaged in imparting the related knowledge and shall have only CIE as the evaluation component. There shall be one test conducted at the end for 25 marks in Aptitude testing and there shall be one presentation by the student for 25 marks or any other suitable testing components. The arrangement for CIE evaluation is to be done by the department and maintain the relevant documents.

18UCVE818 Principles and Practice of Construction Project Management (2-0-2) 3

Contact Hours:39

Course Learning Objectives (CLOs): Principles and Practice of Construction Project Management is taught as one of the elective courses in Civil Engineering program. In this course, various concepts of construction project management viz. planning, scheduling, resource analysis, optimizing and executing are dealt with. Practical training using project management software is imparted. The course is taught through lecture classes and computer laboratory practical. The evaluation will be carried out through IAs & Semester End Examination.

Course Outcomes (COs):

Description of the Course Outcome: At the end of the course the student will be able to:		**Mapping to POs (1,12)/ PSO (1,2,3)**		
		Substantial Level (3)	**Moderate Level (2)**	**Slight Level (1)**
CO-1	Explain construction projects, project management techniques, planning and scheduling principles, methods of scheduling.			1,11
CO-2	Create a network schedule, CPM and PERT Network diagram for a construction project using the defined rules.		3,11	
CO-3	Understand costs and Resources of a construction project and to effect Resource smoothing, leveling and updating of the Project.			11
CO-4	Create a project, build a work break down structure, add activities and create relationships.	3,11		
CO-5	Assign resources, analyze schedule dates, resource allocation, execute the project plan and create reports.	4,9		

PO's	PO-1	PO-3	PO-4	PO-9	PO-11

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Mapping Level	1	0.83	3	3	1.75

Contents:

Unit-I

Introduction: Introduction to Construction Projects and Project Management, Project Phases & Life Cycle of a Project. Introduction to Project management techniques- CPM, PERT and Project Management Software.

Planning and Scheduling for Construction Projects: Introduction, Steps involved in Planning, Objectives, Principles and Advantages of Planning, Preparation of construction schedules, Uses and advantages of scheduling, Methods of scheduling – Bar charts, Mile stone charts, Job lay out, Work break down structure, Line of balance technique. **7 hrs**

Unit-II

Project Management through Networks: Introduction and definition of a network, Objectives, Interrelationship of events, Interrelationship of activities, Types of networks, Assumptions for creating a network schedule, Rules for drawing a network. Fulkerson's rule.

Program Evaluation and Review Technique (PERT): Introduction, Time estimates, Earliest expected time, Latest allowable occurrence time, Tabular format and computations, Slack, Critical path, Probability of completion time for a project. **9 hrs**

Unit-III

Critical Path Method (CPM): Introduction, Difference between CPM and PERT, Earliest and latest event times, Activity time, Float, Criticality and critical activity, Tabular format and computations

Time: Cost Relationship and Resource Allocation: Introduction, Direct costs, Indirect costs, Total Project costs, Optimization of cost through network contraction, Resource smoothing and leveling, Project updating.

9 hrs

Following chapters under Unit no's-IV & V shall have Laboratory Practical using Project Management software

Unit-IV

Structuring of the Project: Create a Project, Describe the Enterprise Project Structure (EPS),Set up and understand the Organizational Breakdown Structure (OBS), Set up User Preferences, Navigate in the Project window, Modify Project Information, Create a Work Breakdown Structure (WBS) and Multiple levels of WBS hierarchy, Understand Activity types, Describe Activity components, Add

activities, Set up Project Parameters, Assign Project Codes, Resource Codes, Activity Codes, Modify activity Information.

Scheduling and Resource Management of the Project: View Network logic diagram, Apply activities relationships (Logical connection), Describe Relationship Types, Scheduling, Describe the Forward and Backward Pass, Understand Total Float, Calculate schedule, Assign constraints, Describe and Apply activity level Constraints, Format schedule data, Create layouts, Utilize grouping, sorting and filtering, Understand Resource types, Assign Resource to activities, Analyze and resolve resource over allocation.

7 hrs

Unit-V

Optimizing and Executing of the Project: Optimize the Project Plan- Analyze schedule dates, Shorten the Project Plan, Analyze Resources and Cost, Create a Baseline Plan, Assign the baseline to the Project, Display baseline bars in the Gantt chart, Project Execution- Describe methods of applying Progress, Progress Update, Update activity information, Set up Project Thresholds, Level the Project Resources, Project Tracking.

Reporting: Reporting- Describe available Reporting Methods, Run a schedule Report, Procurement Report, Project Progress Report, Schedule Comparison Report, Weekly Report, Project Cost Report, Project Closing Report, Client Report. **7hrs**

Reference Books:

1) Chitkara, K.K.," Construction Project Management: Planning, Scheduling and Control", McGraw Hill Publishing Company, New Delhi, 1998.

2) S. Seetharaman, "Construction Engineering and Management", Umesh Publications, Delhi,2005

3) Feigenbaum, L.," Construction Scheduling with Primavera Project Planner", Prentice Hall Inc.

4) RainaV.K., "Construction Management Practices: The inside story", Tata McGraw Hill Publishing Company Ltd.New Delhi 1998.

5) Project Management Software and relevant user manuals.

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