

Walchand College of Engineering, Sangli

(Government Aided Autonomous Institute)



Course Contents (Syllabus) for

Second Year M. Tech.

Civil

(Environmental Engineering)

Sem – III to IV

AY 2020-21

Title of the Course: Professional Elective 4 Project Management (3EV611)	L	T	P	Cr
	3	-	-	3

Pre-Requisite Courses: Nil

Textbooks:

1. Jack Gido, James P Clements, *Project Management*, Cengage Learning India Pvt. Ltd., 2nd Reprint 2011, ©2007

References:

1. John Adair, *Strategic Leadership*, Kogan Page Ltd., 1st ed. 2010.
2. *Project Management, Achieving Competitive Advantage*, Jeffrey K. Pinto, Dorling Kindersley India Pvt. Ltd. Ed. 2009.
3. B.C. Punmia and Khandelwal, *Project Planning and Control with PERT and CPM*, Lakshmi Publications Pvt. Ltd., 4th Edition, 2008
4. K. Nagarajan, *Project Management*, New Age Int., 2nd ed. 2004.

Course Objectives :

1. To develop a holistic, integrated approach to manage projects, exploring both technical and managerial challenges in environmental / structural engineering projects.
2. To inculcate leadership, and ethical qualities in dealing with real life project environment and develop positive attitude towards individual response-ability in project execution.
3. To induce qualities for supporting industry's life-long learning programs, working in interdisciplinary and cross functional teams with effective communication skills and managerial challenges.

Course Learning Outcomes:

CO	After the completion of the course the student should be able to	Bloom's Cognitive	
		Level	Descriptor
CO1	Perceive critically the project characteristics, project management principles and apply them in the context to real world problems.	III	Applying
CO2	Formulate and solve projects in context of scheduling and controlling with time and cost as constraints using the imparted knowledge of network scheduling techniques and applications using software.	III	Applying
CO3	Demonstrate leadership skills and communicate effectively in convincing various stakeholders to accomplish project objectives ethically.	III	Applying

CO-PO Mapping:

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

Assessments:

Teacher Assessment:

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

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

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

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

ESE: Assessment is based on 100% course content with 60-70% weightage for course content

Title of the Course: Professional Elective 4 Operation and Maintenance of Environmental Facilities (3EV612)		L	T	P	Cr		
		3	-	-	3		
Pre-Requisite Courses: Courses on Water and Wastewater Treatment, Air pollution, Solid Waste Management							
Textbooks:							
1. Quasim S. R., Motley E. M. and Zhu G., "Water works engineering", PHI learning private limited, 2000.							
2. Wark K. And Warner C.F., "Air Pollution", H.R. Publication, 1 st Edition, 1978.							
References:							
1. "Manual on water supply and Treatment", CPHEEO, Ministry of Urban Development, Govt. of India, New Delhi, 1999.							
2. "Manual on Sewerage and Sewage Treatment", CPHEEO, Ministry of Urban Development, Govt. of India, New Delhi, 1993.							
Course Objectives :							
1. Provide in-depth knowledge of operation and maintenance of infrastructural facilities in environmental engineering.							
2. To enhance the technical competency and apply the acquired knowledge for research and development, industry, and consultancy activities.							
Course Learning Outcomes:							
CO	After the completion of the course the student should be able to	Bloom's Cognitive					
		Level	Descriptor				
CO1	Explain concepts of operation and maintenance for environmental facilities.	II	Understanding				
CO2	Apply the imparted knowledge to effectively operate the system.	III	Applying				
CO3	Solve operation and maintenance problem associated with real life environmental facility.	V	Evaluating				
CO-PO Mapping:							
	PO	1	2	3	4	5	6
	CO1			2			
	CO2				3		
	CO3				2		3
Assessments:							
Teacher Assessment:							
Two components of In Semester Evaluation (ISE), One Mid Semester Examination (MSE) and one End Semester Examination (ESE) having 20%, 30% and 50% weights respectively.							
	Assessment		Marks				
	ISE 1		10				
	MSE		30				
	ISE 2		10				
	ESE		50				
ISE 1 and ISE 2 are based on assignment/declared test/quiz/seminar etc.							
MSE: Assessment is based on 50% of course content (Normally first three modules)							
ESE: Assessment is based on 100% course content with 60-70% weightage for course content (normally last three modules) covered after MSE.							
Course Contents:							
Module 1: Introduction					5 Hrs.		
Need of Operation and Maintenance (O & M), Basic principles, corrective and preventive maintenance, Detailed plans, drawings, operation manuals, computer usage in O and M.							
Module 2: Water Supply System					8 Hrs.		

Title of the Course:		L	T	P	Cr			
Dissertation Phase I (3EV690) & Phase II (3EV691 & 3EV692)		-	-	20	10			
Pre-Requisite Courses: Core courses in Environmental Engineering								
References:								
<ol style="list-style-type: none"> 1. National and International journals in Environmental Engineering <ol style="list-style-type: none"> a. Journal of Indian water works association, b. Journal of environmental science and engineering (NEERI), c. Journal of environmental engineering (ASCE), d. Water research, e. Water science and technology, f. Journal of Water supply: Research and technology-AQUA, g. Journal of environmental management, h. Journal of waste management, i. Water science and technology –Water supply, j. Journal of Water Reuse and Desalination, k. Journal of American water works association. l. Building and Energy (Elsevier) 								
Course Objectives :								
<ol style="list-style-type: none"> 1. Provide in-depth knowledge to tackle real world problems of societal concerns. 2. Impart flexibility to the student to have increased control over his/ her learning. 3. Enhance student’s learning through increased interaction with peers and colleagues. 								
Course Learning Outcomes:								
CO	After the completion of the course the student should be able to	Bloom’s Cognitive						
		Level	Descriptor					
CO1	Defend the objectives of the dissertation by grasping and analyzing through an extensive literature review in the area of study.	II IV V	Understanding Analyzing Evaluating					
CO2	Formulate the methodology and Execute the study through conduct of analytical/Experimental work to achieve the objectives.	III VI	Applying Creating					
CO-PO Mapping:								
		PO	1	2	3	4	5	6
		CO1	1		2			
		CO2	2			3	2	3
Assessments:								
Teacher Assessment:								
In Semester Evaluation (ISE) and End Semester Evaluation (ESE)								
	Assessment		Marks					
	ISE 1		100					
	ISE 2		100					
	ESE		100					
ISE 1 is based on the efforts by the student for synopsis preparation. It shall be evaluated using the parameters extent of literature review, scope defined, objectives, fundamental concepts, quality of presentation, and interaction during presentation, effort/work done, quality of report and interaction with guide.								

Title of the Course: Dissertation Phase III (3EV693) & Phase IV (3EV694 & 3EV695)	L	T	P	Cr
	-	-	32	16

Pre-Requisite Courses: Core courses in Environmental Engineering

References:

1. National and International journals in Environmental Engineering
 - a. Journal of Indian water works association,
 - b. Journal of environmental science and engineering (NEERI),
 - c. Journal of environmental engineering (ASCE),
 - d. Water research,
 - e. Water science and technology,
 - f. Journal of Water supply: Research and technology-AQUA,
 - g. Journal of environmental management,
 - h. Journal of waste management,
 - i. Water science and technology –Water supply,
 - j. Journal of Water Reuse and Desalination,
 - k. Journal of American water works association.
 - l. Building and Energy (Elsevier)

Course Objectives :

1. Provide in-depth knowledge to tackle real world problems of societal concerns.
2. Impart flexibility to the student to have increased control over his/ her learning.
3. Enhance student’s learning through increased interaction with peers and colleagues.

Course Learning Outcomes:

CO	After the completion of the course the student should be able to	Bloom’s Cognitive	
		Level	Descriptor
CO1	Execute the study through conduct of analytical/Experimental work to achieve the objectives.	III	Applying
CO2	Analyze, interpret and critique the findings of the study.	III IV V	Applying Analyzing Evaluating
CO3	Defend the outcomes of the dissertation through self-learning and justify the project work as per appropriate standards of documentation and presentation.	V	Evaluating

CO-PO Mapping:

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

Assessments:

Teacher Assessment:

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

Assessment	Marks
ISE 1	100
ISE 2	100
ESE	100

ISE 1 is based on the work done by the student during fourth semester. It shall be evaluated using

Title of the Course: Summer Internship (3EV696)	L	T	P	Cr
	-	-	-	1

Pre-Requisite Courses: Courses taught in Semesters I and II

Course Objectives :

1. To expose the students to real life environmental engineering problems encountered in industry/society.
2. To provide an opportunity to work in collaborative and multidisciplinary environment.

Course Learning Outcomes:

CO	After the completion of the course the student should be able to	Bloom's Cognitive	
		Level	Descriptor
CO1	Perceive knowledge of group dynamics and contribute to multidisciplinary work.	II	Understanding
CO2	Demonstrate knowledge to solve societal problems and apply it for efficient management of projects independently and in teams.	III	Applying
CO3	Communicate with industry/society regarding environmental engineering activities effectively and comprehend and write effective reports.	II	Understanding
CO4	Demonstrate ethical behavior with professional code of conduct and contribute to sustainable development of society.	III	Applying

CO-PO Mapping:

PO	1	2	3	4	5	6
CO1					2	
CO2				2		
CO3		2				
CO4					2	

Assessments:

Teacher Assessment:

In Semester Evaluation (ISE)

Assessment	Marks
ISE	100

ISE is based on extent of objectives defined; work done at the organization, outcome of training, and quality of report. DPGC shall carry out the evaluation.

Course Contents:

The objective of this training is to expose the students to industry environment and practices. Students are sent to leading Environmental Engineering organizations/Research laboratories/Design Consultancy organizations to undergo a rigorous training for a minimum period of one month during summer term/vacation.

(normally last three modules) covered after MSE.

Course Contents:

Module 1: Project Management Concepts	6 Hrs.
Factors Governing Modern Business, Effective Project Management, definition of project, Attributes of Project, Strategic Planning, Project Life Cycle, considerations for RFP, Project Process, Project Balancing, Project Environment, Programme and Portfolio.	
Module 2: Project Planning and Schedule	8 Hrs.
WBS, Responsibility matrix, Devp. of non-network and network schedules, Activity duration estimates, Schedule calculations, Probability considerations, PMS.	
Module 3: Schedule control	6 Hrs.
Project control process Updating schedule, Approaches to schedule control, Resource considerations.	
Module 4: Cost Planning and Performance	8 Hrs.
Project cost estimates, Budget, Actual cost, Cost Forecasting, Managing cash flows.	
Module 5: Project Manager and Project Team	6 Hrs.
Responsibilities and skills, Delegation, Managing Change, Devp. and effectiveness of project team, Ethics, Conflicts on Projects, Time Management.	
Module 6: Project communication and Documentation	6 Hrs.
Personal communication, Effective listening, Meeting, Presentations and Report preparation, Types of Project organizations- their merits and demerits, SWOT analysis.	
Module wise Outcomes:	
At end of each module students will be able to	
<ol style="list-style-type: none"> 1. Explain basic properties of projects; differentiate between project management practices and traditional business functions, project life cycle and concepts of project success. 2. Grasp the key scheduling terminologies, apply logic for developing network schedules, perform duration calculations and identify critical paths and floats. 3. Interpret the various steps involved in project control process, apply the changes in updating networks leading to new schedules in consideration to various resources. 4. Outline baseline budget, analyzing cost performance index, Cost forecasting. 5. Practice the responsibilities of project manager and develop skills and techniques to ethically manage and control projects with effective delegation. 6. Explain the characteristics of organizational structures, develop the art of enhancing personal communication, handle effective project presentations and prepare project reports. 	