



P.E.S. COLLEGE OF ENGINEERING, MANDYA

(An Autonomous Institution affiliated to V.T.U. Belagavi, Aided by Govt. of Karnataka)
(Approved by AICTE, Accredited by NBA (UG Programmes) and NAAC, New Delhi)

Department: Civil Engineering

Processes followed to improve quality of Teaching & Learning

Teaching learning process followed by the Civil Engineering department has been standardized in line with the guidelines for autonomy issued by Visvesvaraya Technological University.

The evaluation process consists of Continuous Internal Evaluation (CIE -50% weightage of total marks) and Semester End Examination (SEE – 50% weightage of total marks). Giving 50% weightage to CIE is a specialty and strength of our examination system which is quite different from the University system. The CIE is based on assessment which includes two tests, quizzes and assignments/self-study components/lab. The average of two CIE (tests, quizzes and assignments/self-study components/lab) performances will be considered for the award of final CIE marks.

The Semester End Examination (SEE) is conducted for the entire syllabus. The question papers for the SEE are set by both the Internal and the External examiners. Two or three papers from external and one paper from internal examiner are set and one paper is picked by the Controller of Examination.

Internal examiner evaluates the answer scripts and External examiners are invited for moderating 30% of the valued answer scripts. If in case, the marks obtained by valuator and the moderator are more than 10 marks, then the answer scripts are valued by third valuator.

The final grade will be awarded based on the combined marks obtained in both CIE and SEE. Grading on a 10 point scale has been adopted in the Evaluation system. SGPA (Semester Grade Point average) and CGPA (Cumulative Grade Point Average) are awarded at the end of every SEE. The sample of SEE Evaluation is shown in Figure 2.4.



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Section : B

To be filled by the Chief Superintendent Only when Malpractice case is booked

Yashwanth · M · S
Candidate Signature After Script Viewing

A 14483

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ANSWER BOOKLET FOR THEORY EXAMINATION

Examination : RE	4 P S 2 1 C V 4 3 3
B.E / M.Tech. / M.B.A / M.C.A	UNIVERSITY SEAT NUMBER
Branch : CIVIL ENGINEER	0 4 0 3 2 0 2 3
Semester : 5TH	DATE D D M M Y Y Y Y
Course Title : Analysis of Indeterminate Structure	F 1 8 C V S 3
I abide by the rules and regulations of PESCE, Mandya	COURSE CODE
Signature of the Candidate : Yashwanth · M · S	No. of Graph/Dwg. _____
	Signature of Room Superintendent : Shree Balaji

FOR OFFICE USE ONLY

I : PART - A						For Valuator's Use Only	
Q.No.	Examiner	Marks Awarded				Valuator Total Marks	Moderator Total Marks
		a	b	c	d		
1	V	07	00	02	01	00	04
	M	01	02	01			
Total Marks in Words							
Zero Five Nil							
Signature : _____							
Name : Shivraj G Nayak							
Institution : P.E.S.C.E. Mandya							
II : PART - B						For Moderator's Use Only	
Q.No.	Examiner	Marks Awarded			Valuator Total Marks	Moderator Total Marks	
		a	b	c			
2	V		07		07	06	
	M	06					
3	V	06			06	06	
	M						
4	V	18			18	16	
	M	16					
5	V	18			18	18	
	M	18					
6	V	06			06	06	
	M	06					
Total Marks Awarded (Part - A+Part -B)							
59							
For Moderator's Use Only							
Zero Five Six							
Signature : _____							
Name : SATISH K. H. G.							
Institution : ATMECE Mysuru							

Bar Code **CSTA**

Dr. MAHENDRA BABU, K. J.
Controller of Examinations
P.E.S. College of Engineering
(An Autonomous Institution under VTU, Belagavi)
Mandya - 571401, Karnataka.



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Section : B

To be filled by the Chief Superintendent
Only when Malpractice case is booked

Meghana M.E.
Candidate Signature After Script Viewing

A0035

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ANSWER BOOKLET FOR THEORY EXAMINATION

Examination : B.E		4 P 8 2 0 C V 0 5 2	
B.E / M.Tech. / M.B.A / M.C.A		UNIVERSITY SEAT NUMBER	
Branch : Civil	Semester : II	0 4 0 3 2 0 0 3	DATE D D M M Y Y Y Y
Analysis of indeterminate structures		COURSE CODE	
I abide by the rules and regulations of PESCE, Mandya		No. of Graphs/Drg. : 2	
Signature of the Candidate : Meghana M.E.		Signature of Room Superintendent : Meghana M.E.	

FOR OFFICE USE ONLY

I : PART - A						For Valuator's Use Only		
Q.No.	Examiner	Marks Awarded				Valuator Total Marks	Moderator Total Marks	
		a	b	c	d	e		
1	V	2	2	2	2	2	10	
	M	02	02	02	02	02	10	
II : PART - B						For Valuator's Use Only		
Q.No.	Examiner	Marks Awarded			Valuator Total Marks	Moderator Total Marks	Zero Seven Two	
		a	b	c				
2	V		10		10	09	Total Marks in Words	
	M		09					
3	V		17		17	17	Signature : Alivetha	
	M		17					
4	V	10			10	10	Name : Alivetha M.P	
	M	10						
5	V	15			15	13	Institution : PESCE, Mandya	
	M	13						
6	V	10			10	09	For Moderator's Use Only	
	M	09						
Total Marks Awarded (Part - A + Part - B)						72	68	Zero Six Eight
Bar Code						Dr. MAHENDRA BABU, K.J		Signature : C. K. H. S. S. S.
TUJL						P.E.S. College of Engineering		Name : SHRUBHA.H.G
						(An Autonomous Institution under VTU, Belagavi)		Institution : PESCE, Mandya
						Mandya - 571401, Karnataka.		

Fig. 2.4: Sample of SEE Evaluation

Processes to improve the teaching learning process:

The process involves curriculum design and development, planning, implementing, reviewing & evaluating, inviting suggestions for improvement.

1. Curriculum design and development
2. Planning
3. Implementing
4. Reviewing and Evaluating
5. Suggestions for Improvement

The process of teaching learning is achieved by courses, projects, technical seminar, etc.

Teaching and learning process is summarized in following steps.

Step 1: Department Advisory Committee (DAC) analyses the results and the feedback from the students, alumni, exit survey, course end survey, employers and faculty members. The



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findings of the feedback and attainments are discussed along with the course coordinators for designing/refinement of the curriculum. The HoD in consultation with DAC, conducts subject allotment meeting to allot the courses to the faculty based on their specialization and their passion for the courses before the commencement of next semester.

Step 2: The Dean academics prepares the Academic Calendar of Events before the commencement of every academic year, including course registration, commencement of classes, CIE, project presentation, seminars, last working day of the semester, list of holidays, etc. The sample academic calendar of events is shown in Figure 2.5.



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P.E.S COLLEGE OF ENGINEERING, MANDYA - 571 401


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TENTATIVE ACADEMIC CALENDAR FOR THE ACADEMIC YEAR 2022-23 (EVEN SEMESTER) B.E. - II and IV Semester

Sl. No.	Date	Day	Events
1.	15/05/2023	Monday	Commencement of Semester and Course Registration (For BE - II & IV Semester)
2.	22/05/2023	Monday	Submission of course registration form to COE office through Mentor / HoDs
3.	24/06/2023	Saturday	Submission of Application form SEE
4.	26/06/2023	Monday	Last date to withdraw from the course
5.	28/06/2023	Wednesday	Submission of Assignment-I
6.	30/06/2023	Friday	Test - I & Quiz - I
7.	01/07/2023	Saturday	Test - I & Quiz - I
8.	03/07/2023	Monday	Test - I & Quiz - I
9.	04/07/2023	Tuesday	Test - I & Quiz - I
10.	22/07/2023	Saturday	Submission of BE - II & IV Semester Test - I & Quiz - I marks to COE office through ERP software
11.	22/08/2023	Tuesday	Submission of Assignment-II
12.	19/08/2023	Saturday	Test - II & Quiz - II
13.	21/08/2023	Monday	Test - II & Quiz - II
14.	22/08/2023	Tuesday	Test - II & Quiz - II
15.	23/08/2023	Wednesday	Test - II & Quiz - II
16.	28/08/2023	Monday	Posting of Attendance online
17.	28/08/2023	Monday	Submission of Test - II & Quiz - II marks to COE office through ERP software
18.	29/08/2023	Tuesday	Makeup Test & Quiz
19.	30/08/2023	Wednesday	Makeup Test & Quiz
20.	31/08/2023	Thursday	Makeup Test & Quiz
21.	09/09/2023	Saturday	Last teaching Day
22.	11/09/2023 to 16/09/2023		CIE Assessment (On par with SEE)
23.	16/09/2023	Saturday	Submission of CIE marks through ERP software
24.	19/09/2023 to 23/09/2023		SEE Practical Examinations
25.	25/09/2023 to 07/10/2023		SEE Theory Examinations
26.	16/10/2023 to 21/10/2023		Make - up Examinations
27.	25/10/2023 to 11/11/2023		Supplementary Semester / Examination
28.	15/11/2023	Wednesday	Commencement of Next Academic year 2023 - 24

Total number of Odd semester working days:	99
No. of days for Test/Quiz:	08
No. of days for departmental activities:	03
No. of days for AICTE Activities	03
No. of days for placement activities	06
No. of days for Skill Development Activities	06
Total number of Regular Class workdays weeks:	73 days 12 weeks
No. of classes per subject in an semester:	4 Classes per week X 12 weeks = 48 Classes


Dr. Mahendra Babu K J
Controller of Examinations
Dr. MAHENDRA BABU. K. J
Controller of Examinations
P.E.S. College of Engineering
(An Autonomous Institution under VTU, Belagavi)
Mandya - 571401, Karnataka.


Dr. R Girisha
Dean - Academic
Dr. R. Girisha
Dean (Academic)
P.E.S.C.E., Mandya.

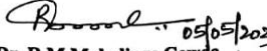

Dr. R M Mahalinge Gowda
Principal PRINCIPAL
PES College of Engineering
Mandya - 571 401.

Fig. 2.5: Sample Academic Calendar of Events

Step 3: The HoD along with DAC prepares department time table keeping the academic calendar of events as reference. The HoD conducts staff meeting atleast one week before the commencement of the semester to: (i) distribute the time table and academic calendar of events to all the faculty members; (ii) to assign the different roles to the faculty members like staff advisor, laboratory coordinator, project coordinator, mentors for students, test coordinator, survey camp officer and etc. and (iii) to discuss about any additional plan of action for the next semester.



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Faculty members are informed about the performance of the results of each subject and the lacuna / gap / drawback are identified so that necessary steps can be taken in the current semester in teaching-learning method / delivery method.

Knowing/ analyzing / fixing the targets based on the results of the previous semester, faculty members are informed to plan the suitable delivery method of teaching for the respective course keeping in mind to improve the learning levels of students.

Step 4: Time table and the course syllabus are distributed to the students on the registration day of the semester.

Step 5: The classes start from the first day of the commencement of the semester as mentioned in the calendar of events. Students are also informed in the beginning itself about the calendar of events. Classes are conducted as per the time table and the course contents are delivered using different pedagogical methods like PPT's and notes prepared by the concerned faculty members.

Atleast one course in every semester has tutorials. Complex problems are solved in the tutorial classes and special attention is given to weak students.

In each course, assignments are given so that students can apply the basic knowledge to solve, analyze, design and develop solutions for the given problems. The sample assignment question paper is shown in Figure 2.6.

Self-study components are introduced for some courses one in each semester so that students can study on their own and make documentations.



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DEPARTMENT OF CIVIL ENGINEERING
(Accredited by National Board of Accreditation)
P.E.S. COLLEGE OF ENGINEERING, MANDYA - 571 401
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Assignment No.: 1 Course Code: P18CV51 Course Title: Construction Management & Entrepreneurship

Semester: V Section: B Date of Issue: 03.12.2022 Submission: 14.12.2022

Instructions: 1. Answer all questions in Assignment Book only.
2. Assume missing data, suitably.

Q. No.	Questions	BL	CO	PO																
1	Explain Break-Even analysis with graph.	2	1	1,2																
2	State law of demand and supply. Briefly explain supply demand curve.	2	1	1,2																
3	Explain time value of money.	2	1	1,2																
4	What do you mean by depreciation? Explain the methods of computing depreciation charges.	2	1	1,2																
5	Explain with neat diagram, the various stages in the construction of a project.	2	2	2,4																
6	List out the different types of organization. Explain any two with flow chart.	2	2	2,4																
7	Explain the functions and uses of materials management.	2	2	2,4																
8	State the importance and causes of accidents in safety management.	2	2	2,4																
9	Mention the different quality assurance techniques. Explain them in brief.	2	2	2,4																
10	Briefly explain classification of construction works.	2	2	2,4																
11	Explain the advantages of value engineering.	2	2	2,4																
12	Explain the following: a) Revenue-dominated cash flow diagram. b) Cost-dominated cash flow diagram.	2	1	1,2																
13	Explain quality documentation.	2	2	2,4																
14	A piece of equipment is available for purchase for Rs. 12,000/-, has an estimated useful life of five years and an estimated salvage value of Rs. 2,000. Determine the depreciation and book value for each of the five years using straight line method and sum of year digits method.	2	1	1,2																
15	Alpha industry is planning to expand its pre-fabricated production operation. It has identified three different technologies to meet the business requirement. The initial outlay and annual revenues with respect to each of the technologies are summarized in the following Table. Suggest the best technology which is to be implemented based on the present worth method of comparison. Assuming 20% interest rate, compounded annually.	3	1	1,2																
	<table border="1"> <thead> <tr> <th></th> <th>Initial outlay</th> <th>Annual revenue</th> <th>Life years</th> </tr> </thead> <tbody> <tr> <td>Technology-1</td> <td>12,00,000</td> <td>4,00,000</td> <td>10</td> </tr> <tr> <td>Technology-2</td> <td>20,00,000</td> <td>6,00,000</td> <td>10</td> </tr> <tr> <td>Technology-3</td> <td>18,00,000</td> <td>5,00,000</td> <td>10</td> </tr> </tbody> </table>		Initial outlay	Annual revenue	Life years	Technology-1	12,00,000	4,00,000	10	Technology-2	20,00,000	6,00,000	10	Technology-3	18,00,000	5,00,000	10			
	Initial outlay	Annual revenue	Life years																	
Technology-1	12,00,000	4,00,000	10																	
Technology-2	20,00,000	6,00,000	10																	
Technology-3	18,00,000	5,00,000	10																	

Faculty: Dr. S. Poorna Prajna

Page 1 of 1

Fig. 2.6: Sample Assignment Question Paper

Step 6: Facilities like training on pedagogy, workshops, training on various advanced courses are provided to the faculty as a part of quality improvement. Invited talks on latest developments in the specific course/specialization are arranged and delivered by leading industry experts from time to time.

Step 7: Feedback from students is taken at regular intervals in order to assess and improve the quality of teaching process. The sample faculty feedback from students is shown in Figure 2.7.



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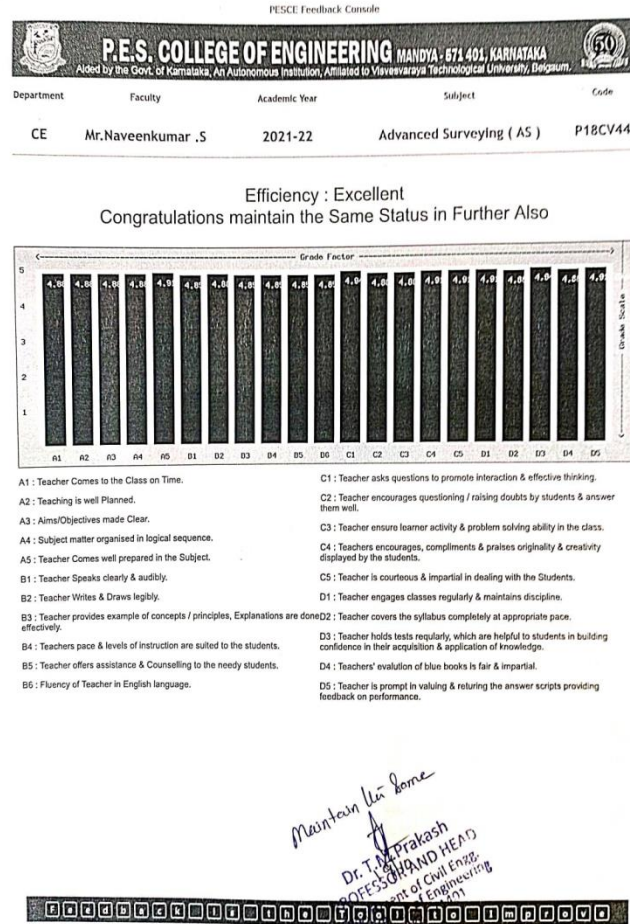


Fig. 2.7: Sample Faculty Feedback from students

Step 8: Two CIEs are conducted for each course which are spread over the entire semester containing quiz and descriptive questions. This is to assess the quality of students learning continuously. Instructions are given by the COE that 40% of the portions should be covered for each CIE and every faculty is adhered to complete the portions accordingly. The course instructor sets the CIE question paper keeping in mind the attainment of the COs and corresponding POs.

After evaluation of CIE, students having attendance shortage and internal marks less than 50% are considered as weak students. Remedial classes by concerned faculty members of that course will be conducted for such weak students so that they can improve in the academics.

The sample CIE question paper and CIE scheme & solution is shown in Figure 2.8 and 2.9 respectively.



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DEPARTMENT OF CIVIL ENGINEERING
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P.E.S. COLLEGE OF ENGINEERING
(An autonomous institute under VTU Belgaum)

Construction Management and Entrepreneurship (P18CV51)

Semester & Section: V A/B/C

Date: 08/12/2021

Staff: GBA/Dr.SPP/SS

CIE: I

Max Marks: 4+36

Duration: 1 hour 15 min

Note: Part A is compulsory, In Part B answer any two sub questions (from a,b,c) for maximum of 18 marks from each unit.

Part A

Q No	Quiz Question	Marks	BL	CO	PO
1	Define cash flow diagram.	1	L1	1	1,2
2	For a loan amount of 1.00 lakh rupees at 11% per annum, repayable in 15 years, calculate the EMI.	1	L1	1	1,2
3	Define Value Engineering.	1	L2	2	2,4
4	List the quality assurance techniques.	1	L1	2	2,4

Part B

Unit- I

Q NO	Question	Marks	BL	CO	PO																				
1a)	Explain i) Demand and Supply ii) Nominal and Effective Interest Rate	9	L2	1	1,2																				
b)	A construction firm wants to purchase equipment. Three dealers have responded to the tender called whose particulars are given in below table. Determine the best alternative based on annual equivalent method by assuming interest rate of 12% compounded annually.	9	L3	1	1,2																				
	<table border="1"> <thead> <tr> <th>Manufacturer</th> <th>Down payment</th> <th>Yearly equal installments</th> <th>Salvage value</th> <th>No. of years of useful life</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>8,00,000</td> <td>2,25,000</td> <td>0</td> <td>10</td> </tr> <tr> <td>Y</td> <td>7,00,000</td> <td>2,00,000</td> <td>0</td> <td>10</td> </tr> <tr> <td>Z</td> <td>5,00,000</td> <td>2,50,000</td> <td>0</td> <td>10</td> </tr> </tbody> </table>	Manufacturer	Down payment	Yearly equal installments	Salvage value	No. of years of useful life	X	8,00,000	2,25,000	0	10	Y	7,00,000	2,00,000	0	10	Z	5,00,000	2,50,000	0	10				
Manufacturer	Down payment	Yearly equal installments	Salvage value	No. of years of useful life																					
X	8,00,000	2,25,000	0	10																					
Y	7,00,000	2,00,000	0	10																					
Z	5,00,000	2,50,000	0	10																					
c)	Find the book value at the end of each year of equipment by straight line method and declining balance method. It costs Rs 25,000, expected useful life 6 years and salvage value Rs.4000	9	L3	1	1,2																				

Unit- II

Q NO	Question	Marks	BL	CO	PO
2a)	Classify the construction works. Bring out various stages in construction works.	9	L2	2	2,4
b)	List out the different types of organization. Explain any one with flow chart	9	L2	2	2,4
c)	State the importance and causes of accidents in safety management	9	L2	2	2,4

Fig. 2.8: Sample CIE Question Paper



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CONSTRUCTION MANAGEMENT AND ENTREPRENEURSHIP (P18CV51)

Semester & Section: V A/B/C

Date: 08/12/2022

Staff: Prof. GBA/ Dr. SPP/Prof. SS

CIE: I

Max Marks: 40

Duration: 1 hour 30 min

SCHEME AND SOLUTION

PART-A

Q No	Quiz Question	Marks	BL	CO	PO
1	Definition of Cash Flow Diagram The costs and benefits of engineering projects over time are summarized on a cash flow diagram (CFD). Specifically, CFD illustrates the size, sign, and timing of individual cash flows, and forms the basis for engineering economic analysis.	1	L1	1	1,2
2	1131.57Rs	1	L1	1	1,2
3	Definition of Value Engineering Value Engineering (VE, or Value Analysis) is a management technique that seeks the best functional balance between cost, reliability and performance of a product, project, process or service.	1	L2	2	2,4
4	<ul style="list-style-type: none"> Inspection Testing Sampling 	1	L1	2	2,4

PART-B

Unit - I

Q NO	Question	Marks	BL	CO	PO
1a)	Explanation on <ul style="list-style-type: none"> Demand and supply with graph indicating all major points (4.5m) Nominal and Effective interest rate (4.5m) 	9	L2	1	1,2
b	<p>• Cost dominated cash flow diagram. - (2M)</p> <p>• Alternative ①</p> $A_0 = P(A/P, i\%, N) + A - S(A/P, i\%, N)$ $= P[0.1770] + A - 0$ $X = 3,66,600/- \quad - (2M)$ $Y = P(A/P, i\%, N) + A - S(A/P, i\%, N)$ $= P[0.1770] + A - 0$ $= 3,23,900/- \quad - (2M)$ $Z = 3,38,500/- \quad - (2M)$ <p>∴ Y is the best alternative. - (1M)</p>	9	L3	1	1,2



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Q NO	Question	Marks	BL	CO	PO
2a)	Classification of construction works (2m) Various stages in the construction of a project <ul style="list-style-type: none"> The conceptual or Initiation stage Analysis and development of the idea Design stage Awarding the contract for construction The construction stage Commissioning of the project (7m) 	9	L2	2	2,4
b)	Types of organizations <ul style="list-style-type: none"> Functional organization Line organization Line and staff organization Matrix organization (2m) Explanation on any one with flowchart (7m)	9	L2	2	2,4
c)	Importance of accidents (4.5m) <ul style="list-style-type: none"> Humanitarian concern Economic reasons Laws and Regulations Organizational Image Causes of accidents (4.5m) <ul style="list-style-type: none"> Planning, Organization Execution of work Equipment Management and conduct of work Workers Behavior 	9	L2	2	2,4

Fig. 2.9: Sample CIE Scheme and Solution

Step 9: At the end of each semester, the course end survey is made and the feedback is taken by the students. The sample course end survey is shown in Figure 2.10.



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COURSE END SURVEY (2021-2022)

NAME OF THE FACULTY: Dr. S POORNA PRAJNA

SEMESTER & SECTION: V C

TOTAL NUMBER OF STUDENTS: 46

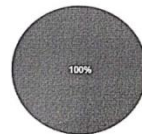
	Code	Sub.	CO	High	Medium	Low
1	P18CV51	Construction Management & Entrepreneurship	1	34	10	02
			2	36	09	01
			3	33	10	03
			4	33	11	02

GOOGLE FORM RESPONSES

Semester 6, Section

46 responses

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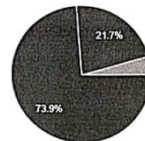


● 5-C

1. Are you able to apply the knowledge of engineering fundamentals to calculate present and future worth of money using different interest factors and comparisons? (PO1 and PO2)

Copy

46 responses



● HIGH
● MEDIUM
● LOW

PROFESSOR AND HEAD
Department of Civil Engg
P.E.S. College of Engineering
Mandya-571401



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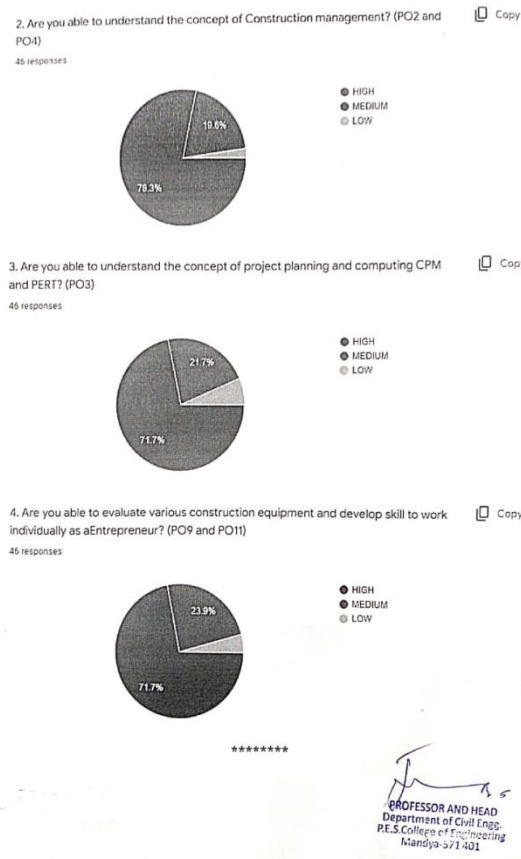


Fig. 2.10: Sample course end survey

Step 10: After the announcement of SEE results, the attainment of each COs is calculated in order to assess whether the students have attained the target fixed by the course coordinator from individual courses. The course end survey and the CO attainment help in revising the curriculum and improving the teaching – learning process in the next semester.

Step 11: The teaching-learning process includes several practices to attain the efficient outcome. Printed booklet which includes Rules & Regulations, the entire course structure and overview of the program for UG is provided to each student in the beginning of the semester.

Step12: The semester runs for 18 weeks, where a student can plan approximately for 24 credits including theory, laboratory practices, project work, field work / Humanities. Each course of four credits contains approximately 48-52 hours of syllabus, a laboratory of 3 hours is considered as one and half credit, a tutorial of 2 hours is considered as one credit, and major project carries 10 credits.



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The role of the faculties in Teaching - Learning process.

- The faculty members should understand the conceptual content of the course before the commencement of the classes.
- Faculty should have clear understanding about the Course Learning Objectives (CLOs) and Cos.
- Faculty should strictly adhere to the lesson plan and time table.
- Faculty adopts their own innovative techniques to comprehend the attainment of COs.
- Faculty must be aware of safety concerns in the laboratory.

Teaching plan: Teaching plan involves the preparation of lesson plan, model question papers, study materials, presentation methods, well in advance. Every faculty should provide lesson plan containing hourly planned calendar of the course, at the start of the semester. Topics for projects are given well in advance for the students to study and prepare for early start. A sample of lesson plan is shown in Figure 2.11.



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Course Title: Transportation Engineering			
Course Code: P18CV43	Semester: IV	L-T-P: H: 3-0-0 : 3	Section: B
Contact Period : Lecture: 52 Hrs.	Exam Hours: 03 Hours	Weightage: CIE: 50 %; SEE: 50%	
Faculty Name: Dr. S. POORNA PRAJNA	Credits: 03	Academic Year: 2021-2022	

LESSON PLAN

Unit - I

Sl. No.	Topics	Hrs.
1	Principles of transportation engineering.	01
2	Highway development & planning: Importance of transportation.	01
3	Different modes of transportation, characteristics and	01
4	Comparison of different modes	01
5	Scope of highway engineering, classification of roads	01
6	Highway alignment	01
7	Design of highway pavements: Object of highway pavements,	01
8	Requirements of highway pavements	01
9	Types of pavement structures and comparisons & their limitations	01
10	Types of pavement structures and comparisons & their limitations	01
11	Flexible pavement - components and their functions.	01
12	Rigid pavements - components and their functions.	01

12 Hrs.

Unit - II

Sl. No.	Topics	Hrs.
1	Geometric design of highways: Importance of geometric design, design control and criteria.	01
2	Highway cross section elements - cross slope or camber, medians, carriageway.	01
3	Kerbs, road margins	01
4	cross section details, right of way	01
5	Sight distance, stopping sight distance (SSD)	01
6	Overtaking sight distance (OSD)	01
7	Design of horizontal alignment - design speed, horizontal curves	01
8	Super elevation	01
9	Widening of pavement on horizontal curves	01
10	Transition curves, Gradient	01

10 Hrs.

Unit - III

Sl. No.	Topics	Hrs.
1	Highway materials and highway drainage: Materials used in highway construction.	01
2	Soil compaction, CBR test	01
3	Stone aggregates, properties and tests.	01
4	Bituminous binders- types, functions and tests.	01
5	Bitumen emulsion, Portland cement and cement concrete, Bituminous paving mixes.	01
6	Highway drainage- objects of highway drainage, requirements and importance, surface drainage system and design.	01
7	Cross drainage structures, sub-surface drainage system.	01
8	Design of filter material.	01
9	Drainage of slopes and erosion controls.	01
10	Design problems.	01

10 Hrs.

Unit - IV

Sl. No.	Topics	Hrs.
1	Railway engineering: Permanent Way, Requirements of an ideal permanent way, Gauges in Railway Track.	01
2	Selection of Gauges, Railway Track Cross-sections.	01
3	Coning of Wheels, Functions of Rails.	01
4	Requirements of Rails, Types of Rail Sections.	01
5	Comparison of Rail Types, Rail Failures, Rail Joints.	01
6	Requirements and types of joints.	01
7	Welding of Rails, Creep of Rails.	01
8	Sleepers-function and requirements.	01
9	Classification of Sleepers, Comparison of Different types of sleepers.	01
10	Spacing of sleepers and sleeper density.	01

10 Hrs.

Unit - V

Sl. No.	Topics	Hrs.
1	AIRPORT PLANNING AND RUNWAY DESIGN: Introduction to airport engineering, Regional planning.	02
2	Airport site selection	02
3	Runway Design - Orientation of runway by using wind rose diagram	02
4	Basic runway length, Corrections for Elevation, Temperature and Gradient to runway length by ICAO and FAA specification - runway cross sections problems on above.	02
5	Numerical Problems on basic runway length	02
6	Numerical Problems on basic runway length	02
7	Tunnels and harbors: Introduction - types of tunnels, advantages and disadvantages.	02
8	Methods of tunneling in soft soil Liner Plate.	02
9	Harbors-Introductions, classifications,	02
10	Natural phenomenon affecting the design of harbor viz. wind, wave.	02
11	Natural phenomenon affecting the design of harbor viz. tide and currents.	02
12	Harbor layout with component parts.	02

10 Hrs.

Faculty

T.M. Prakash
Prof. & HOD
PROFESSOR AND HEAD
Department of Civil Engg.
P.E.S. College of Engineering
Mandya-571404

Fig. 2.11: Sample Lesson Plan



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Evaluation: In a semester, there are two CIEs consisting of two assignments, two tests and two quizzes. Average of the two tests and two assignments is considered for final CIE. The weightage is equally given to the SEE and CIE.

Based on the academic calendar of events, the CIEs are conducted and students plan their curricular and co-curricular activities according to the schedule given. Make-up CIE are given for the students who have missed, first / second CIE due to genuine reason (like participation in sports, extracurricular, co-curricular activities, NCC or serious medical ailments) and who have taken prior permission.

Invited talks by Experts

Technical lectures/talks are organized on regular basis by experts from industries and academic institutions to make the students to understand current trends and industrial expectations.

Pedagogy Initiative:

The department conducts Faculty Development Program (FDP) in different areas to fulfill the competency gaps and to enhance knowledge. The department also encourages the faculty to attend Pedagogy training program which enables the faculty to adopt the modern teaching processes.

Academic Environment Improvement:

Apart from usual black board teaching and power point presentations, the teachers also make use of models to demonstrate the concepts for better understanding. Site visits are arranged to supplement the class room teaching.

The curriculum includes two laboratory courses per semester. The theoretical concepts are experimented in laboratory classes so that theory and laboratory sessions go hand-in-hand. Laboratory evaluation is based on overall performance of students in each experiment which includes conduction of experiment, calculations, interpretation of data, record writing, viva voce, internal evaluation and final evaluation. Each lab has a study experiment which helps the students to apply the knowledge to solve societal problems. In this process, the faculty provides all necessary guidelines.

Methods to support low performers (weak students) and encourage bright Students:



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After evaluating the CIE-1, students who have secured less than 50% of the total marks are identified and treated as weak students / low performers. Such students are supported with remedial classes.

Meritorious students are rewarded with medals constituted in the department. Topper in surveying subject is awarded with “*Honnegowda medal*”, Topper in concrete technology is awarded with a “*cash prize from Ultratech cements*” and Topper in Bachelor of Civil Engineering is awarded with “*Prof. N.T. Chaluvegowda Gold medal*”.

Experiential Learning

Digital Library facility and high speed Wi-Fi Internet connectivity helps the students to gain knowledge about the latest developments. Students are encouraged to participate in National and International conferences, workshops to enhance their knowledge and communication skills.

Carrier guidance program has been organized to take up competitive examinations and abroad studies.

The impact can be seen through:

- Improved results and pass percentage.
- Improved student understanding in domain knowledge and overall development.
- Reduced backlogs and detention.
- Remarkable increase in number of students joining higher studies.

The progress of a project is monitored by the guide on day to day basis and they have to report the updates to the respective guide regularly. The continuous progress is assessed through periodic review by panel based on Rubrics, given below Projects will be evaluated



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on the basis of Working principle, implementation methodology, design process of components, performance of the system, application of projects and future scopes, Demonstration of the project work, Presentation, regularity and Viva-Voce by panel Members.

2018 Scheme Project Phase-1 Evaluation Process

2018 Scheme project Evaluation process is done framing a committee consisting of Head of the department, senior faculty member and guide. Committee members and guide are given equal weightage. Project Phase- I is Evaluated for 100 Marks is presented in Table 2.15 below Consisting of

- Synopsis Phase (20 Marks / Both Guide & Committee)
- Design Phase (30 Marks/ Both Guide & Committee)
- Report (20 Marks/ only Guide)
- Final Presentation (30 Marks/ only Committee Members)

Table 2.15: Project Phase-1 Evaluation Process

Synopsis Phase Evaluation				
Identification of Problem Domain and Objectives of their work.	Excellent (4)	Good(3)	Average (2)	Poor(1)
Technical Knowledge, Awareness related to the Project.	Excellent (4)	Good(3)	Average (2)	Poor(1)
Presentation	Excellent (2)	Good (1.5)	Average (1)	Poor (0.5)

Design Phase Evaluation				
Visual aid Identification with explanation and assignments.	Excellent(6)	Good(5)	Average(3)	Poor(2)
Principles and Elements of Design with Regularity.	Excellent(5)	Good(4)	Average(3)	Poor(2)
Effort and Presentation	Excellent(4)	Good(3)	Average(2)	Poor(1)

Report Evaluation				
Project Report Organization	Excellent (10)	Good (9)	Average (8)	Poor (6)



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Description of Concepts and Technical Details.	Excellent(10)	Good (9)	Average (8)	Poor (6)
--	---------------	----------	-------------	----------

2018 Scheme Project Phase-2 Evaluation Process

Project Phase-2 Rubrics Evaluated for 100 Marks Internal is presented in Table 2.16 Consisting of

- Implementation Phase(30 Marks / Both Guide & Committee)
- Demonstration Phase (40 Marks/ Both Guide & Committee)
- Report (25 Marks/ only Guide)
- Technical Paper (5 Marks/ only Committee Members)

Course Articulation Matrix (CAM)

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
#1			2		2								2		
#2		2			2									2	
#3			2									2		2	
#4								2	2		2				2

Table 2.5: Laboratory Project Component Evaluation

Laboratory Project Component Evaluation				
Identification of Problem Domain and Detailed Analysis (5 Marks)	Excellent (5)	Good (4)	Average (3)	Poor (2)
Design /Methodology (5 Marks)	Excellent (5)	Good (4)	Average (3)	Poor (2)



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Project Demonstration (5 Marks)	Excellent (5)	Good (4)	Average (3)	Poor (2)
Project Report Organization including Description of Concepts and Technical Details(5 Marks)	Excellent (5)	Good (4)	Average (3)	Poor (2)

Describe processes followed to improve quality of teaching and learning

It is a well-known fact that to accomplish a goal in education, the necessary actions are Teaching and Learning. One acts as the Cause and the other as the Effect. (Teaching is the cause and Learning is the effect). The process followed to improve the quality of teaching and learning in the department of Civil Engineering is described in following Figure 2.5



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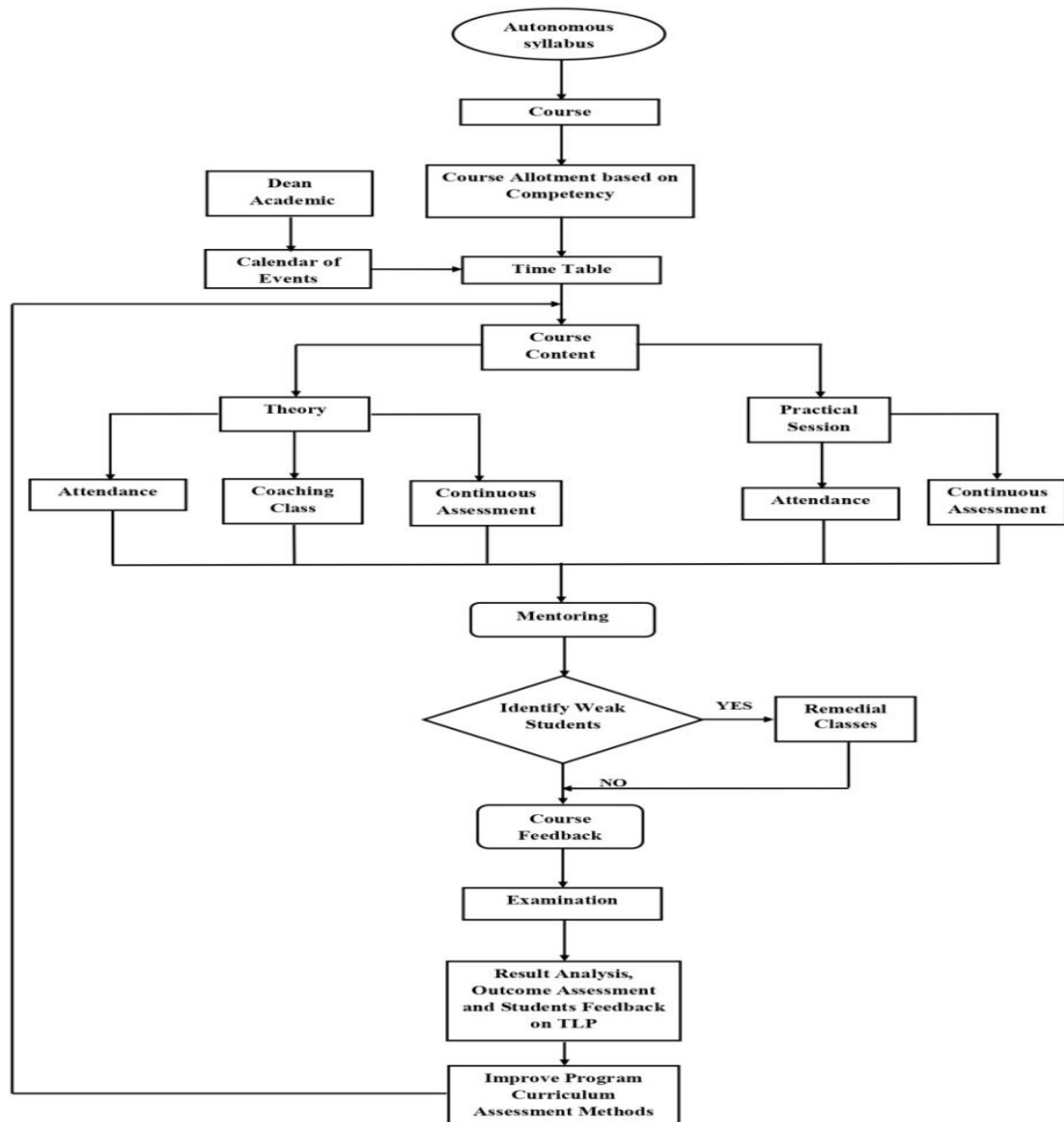


Figure2.5: Teaching Learning Process

To accomplish this, the department follows certain steps as mentioned below:

A. Adherence to Academic calendar (Institute calendar):

Department is aligned with Institute academic calendar prior to the commencement of



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the semester. An Academic Calendar is designed to streamline the activities of the institute through the duration of the term. The Academic year is divided into two semesters - even and odd. The calendar includes important information such as internal test dates, last dates for registration, dropping and withdrawing courses, final examination dates etc. Once the academic calendar is ready, the lesson plans for the subjects offered during that semester are designed. The lesson plan contains class-by-class topics that are to be covered, encompassing the syllabus. The lesson plan is also designed taking into account the Course Outcomes, thereby allocating the appropriate amount of time for each topic while restricting each unit to an almost equal number of classes. Some deadlines are to be followed for completing Internal Evaluations of projects/assignments etc. They have to be completed and evaluated before the final internal so that the student can get an idea of their marks in that particular course. Finally, during the last week of classes, deadlines are announced for the finalization of the internal marks component. A sample of Institute academic calendar is presented in Figure 2.6.



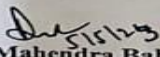
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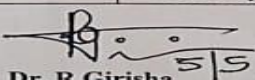
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P.E.S COLLEGE OF ENGINEERING, MANDYA – 571 401 (An Autonomous Institution Affiliated to VTU, Belagavi) TENTATIVE ACADEMIC CALENDAR FOR THE ACADEMIC YEAR 2022-23 (EVEN SEMESTER) B.E. – II and IV Semester

Sl. No.	Date	Day	Events
1.	15/05/2023	Monday	Commencement of Semester and Course Registration (For BE – II & IV Semester)
2.	22/05/2023	Monday	Submission of course registration form to COE office through Mentor / HoDs
3.	24/06/2023	Saturday	Submission of Application form SEE
4.	26/06/2023	Monday	Last date to withdraw from the course
5.	28/06/2023	Wednesday	Submission of Assignment-I
6.	30/06/2023	Friday	Test - I & Quiz - I
7.	01/07/2023	Saturday	Test - I & Quiz - I
8.	03/07/2023	Monday	Test - I & Quiz - I
9.	04/07/2023	Tuesday	Test - I & Quiz - I
10.	22/07/2023	Saturday	Submission of BE – II & IV Semester Test - I & Quiz - I marks to COE office through ERP software
11.	22/08/2023	Tuesday	Submission of Assignment-II
12.	19/08/2023	Saturday	Test - II & Quiz - II
13.	21/08/2023	Monday	Test - II & Quiz - II
14.	22/08/2023	Tuesday	Test - II & Quiz - II
15.	23/08/2023	Wednesday	Test - II & Quiz - II
16.	28/08/2023	Monday	Posting of Attendance online
17.	28/08/2023	Monday	Submission of Test - II & Quiz - II marks to COE office through ERP software
18.	29/08/2023	Tuesday	Makeup Test & Quiz
19.	30/08/2023	Wednesday	Makeup Test & Quiz
20.	31/08/2023	Thursday	Makeup Test & Quiz
21.	09/09/2023	Saturday	Last teaching Day
22.	11/09/2023 to 16/09/2023		CIE Assessment (On par with SEE)
23.	16/09/2023	Saturday	Submission of CIE marks through ERP software
24.	19/09/2023 to 23/09/2023		SEE Practical Examinations
25.	25/09/2023 to 07/10/2023		SEE Theory Examinations
26.	16/10/2023 to 21/10/2023		Make - up Examinations
27.	25/10/2023 to 11/11/2023		Supplementary Semester / Examination
28.	15/11/2023	Wednesday	Commencement of Next Academic year 2023 - 24

Total number of Odd semester working days:	99
No. of days for Test/Quiz:	08
No. of days for departmental activities:	03
No. of days for AICTE Activities	03
No. of days for placement activities	06
No. of days for Skill Development Activities	06
Total number of Regular Class workdays weeks:	73 days 12 weeks
No. of classes per subject in an semester:	4 Classes per week X 12 weeks = 48 Classes


Dr. Mahendra Babu K J
Controller of Examinations
DR. MAHENDRA BABU. K.J
Controller of Examinations
P.E.S. College of Engineering
(An Autonomous Institution under VTU, Belagavi)
Mandya - 571401, Karnataka.


Dr. R Girisha
Dean – Academic
DR. K. Girisha
Dean (Academic)
P.E.S.C.E., Mandya,

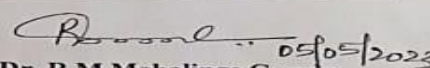

Dr. R M Mahalinge Gowda
Principal PRINCIPAL
PES College of Engineering
Mandya - 571 401.

Figure 2.6: Academic Calendar

Maintenance of Course files:

For each course, a course file is prepared by the concerned faculty to inculcate improvement by analyzing the course file content. Once the courses are allocated, the



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faculty members prepare a detailed lesson plan for a particular course. Lesson plan is prepared by the subject handling faculty before the commencement of the semester and is dually approved by the Head of the department. A sample copy of Lesson Plan is presented in Figure 2.7. According to the lesson plan, work done has been inculcated in the Attendance Register to ensure coverage of syllabus dually monitored by Head of the department. Coursehand-out and materials are prepared keeping in mind the lesson plan and course outcomes. Course hand-out and any other related material will be kept in drive by sharing the link to the students. The course file consists of following items.

- Institute Academic Calendar
- Time Table
- Student List
- Syllabus
- Lesson Plan
- CIE Papers with Scheme
- Assignment Questions
- Model Question Paper
- SEE Papers
- Result Analysis
- Feedback Report

B. Use of Various instructional methods and pedagogical initiatives:

Pedagogies play an important role in delivering of content and it varies with the audience. Course allocation is made based on the choice/ expertise of the faculty members one month before the commencement of semester. Faculty members use various pedagogical methods for effective teaching learning process. Project-based learning, ICT-supported learning, Collaborative/ Cooperative teaching Learning, Soft Skill training, Induction Program, industry internships etc., are some pedagogical



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techniques adopted to improve overall student learning levels. It is suitable for our curricula. Some specific cases of these elements at our department are listed below.

Project-based learning:

Project Based Learning (PBL) is significantly more effective than traditional instruction to train competent and skilled practitioners and it promotes long-term retention of knowledge and skills. It is an innovative practice that is used to implement Outcome Based Education, Students is encouraged to carry out project Component included in the laboratory and mini projects to apply their engineering knowledge from fifth semester onwards and are guided by the faculty members.

Laboratory Project Component

The Laboratory Project Component is evaluated for 20 marks and are evaluated as represented in Table 2.5. Laboratory Project Component list for various courses is given in Table 2.6.

Methodologies to support weak students and encourage bright students:

Guidelines to identify weak students

The mentors regularly conduct meetings regarding progress of their mentees and weaker student co-ordinator is responsible to identify students who scored less than 20 marks in the CIE's for more than 2 subjects. Under the HOD direction, the student's mentors and the coordinator evaluates the progress of those students who score below 20 marks in



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more than 2 subjects are considered as academically weak students and same is also intimated to their parents during parent's teachers meeting conducted after CIE.

MENTORING SYSTEM

Identification Criteria	Actions taken
Students scoring less than 20 marks in Internal Assessment	<ul style="list-style-type: none">• Student mentors follows their progress regularly advising students about attending classes, making up classes missed, reasons for securing less marks and getting additional help.• Intimating parents to counsel their wards through parents meeting conducted after Internal Assessment.• Conduction of Contact classes by the course instructor to clear the doubts of the weaker student.
Students who fail in semester exams	<ul style="list-style-type: none">• Conduction of extra contact classes to those who failed in previous semester subjects.• Counselling is given to the student.• Discussion on important concepts and question bank.



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Guidelines to identify Bright students

Identification Criteria	Actions taken
Students awarded with First Class with Distinction (FCD) in their Semester exams.	<ul style="list-style-type: none">• Students secured FCD's are being felicitated in the department level functions to motivate them to continue their Excellency in academics, to take up real world projects & encourage to participate in inter college national/international fests, write technical papers and also to motivate to take civil exams.• Involve fast learners for peer tutoring the slow learners.• Students are motivated to take up one additional advanced level MOOC/SWAYAM / NPTEL in that course.• Students are encouraged to take up competitive exams like GATE, GRE, TOEFL, IELTS, CAT, PG CET etc.• Bright and diligent students are motivated and inspired to get top ranks in their SEE and in competitive examinations.
Students securing ranks at College Level.	Distribution of Gold medals on Graduation ceremony

Impact Analysis of Weak Students:



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- Improvement in Semester end examinations.
- Develops positive attitude among students.
- Improvement in analytical and communication skills.
- Improvement in programming skills.

Impact Analysis of Bright students:

- Improvement in CGPA.
- Improvement in communication skills and interpersonal skills.
- Improvement in programming skills.
- Improvement in inter-institute event participation.
- Improvement in placement and higher studies.
- The students were able to do quality projects, present papers in conferences and

Journals