

Semester: VII

Year: 2021-22

Course Title: Research Experience for undergraduates	Course Code: 17EXXE490
L-T-P: 0-0-6	Duration of ESA: 1hr
ESA Marks: 50	CIE Marks: 50
Lesson Plan Author: Dr. Uma Mudenagudi	Date:
Checked By: Dr. Ashok Shettar	Date:

Preamble:

This is an initiative to promote research and innovation culture in undergraduate students by introducing the ‘Research Experience for undergraduates’ course. The research problems are a part of the institution/ industry/government-funded research projects sponsored by the agencies like DST, AICTE, DRDO, Agriculture universities, etc. The course is the first of its kind in India has created a lot of excitement in the students towards choosing research as their career and has lead to a substantial increase in their skillset. The students can work in their interested research areas and have the freedom to choose the interdisciplinary domains. Publication of research outcomes in reputed conferences and journals is part of the course evaluation.

Course Outcomes (COs):

At the end of the course student will be able to:

1. Identify the scope of the problem based on the literature survey bringing out the contemporary issues in the defined area.
2. Learn and use the tools required for the defined problem.
3. Define process/methodology/steps towards solving the defined problem.
4. Establish flowchart/test bench/block diagram etc towards solving the defined problem.
5. Conduct/simulate, analyze and interpret the data/input for the defined problem.
6. Communicate effectively in written and oral form of the research findings

Course Articulation Matrix: Mapping of Course OUCOMES (CO) with Program outcomes (PO)

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Course Outcomes : CO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Identify the scope of the problem based on the literature survey bringing out the contemporary issues in the defined area.	H	H	H			M		H		M		L			M
2 Learn and use the tools required for the defined problem.	M	M			H							M			
3 Define process/methodology/steps towards solving the defined problem.		H	M	M		M	M		M	M	M		M	M	
4 Establish flowchart/test bench/block diagram etc towards solving the defined problem.		H	M	M			M	L					M		
5 Conduct/simulate, analyze and interpret the data/input for the defined problem.	M	H		M	M			L		M				M	M
6 Communicate effectively in written and oral form of the research findings.									M	H		H			

Degree of compliance L: Low M: Medium H: High

Course Content

Course Code

L-T-P:

Course Title: Research Experience for Undergraduates (REU)

ISA:

Teaching Hours:

- 1 Name of the School:
- 2 Name of the faculty: (i). (ii).
- 3 Title of the research work:
- 4 Problem summary (*Brief summary 100 words*):
- 5 Approaches and/or methodologies for the work plan Phase-1 (*weekly activity chart, summer semester*):
- 6 Approaches and/or methodologies for the work plan Phase-2 (*weekly activity chart, Odd semester*):
- 7 Availability of equipment's/items required to carry out the experiments:
- 8 Identify the work place to carry out the experiment:
- 9 Likely expectation of research problem (*product/prototype, expected points on which inference are likely to be drawn*):

REU courses

Course on Research Methodology (RM)

Sl no.	Topic	Time
1	Overview of course on research methodologies	2 hrs (First week)
1	How to carry out literature review	3 hrs (First week)
2	Problem definition/formulation Data Interpretation	2 hrs (First week)
3	Research Design	2 hrs (First week)
4	Report writing	1hrs (Mid of summer sem)
5	Paper writing	1hrs (Mid of summer sem)

Details of Phases of REU Courses

Sl No.	Phases	Reviews	Items to be reviewed	Outcome Elements	Max Marks	CLO	BL
1	Phase-1 During summer semester	Review-1 Before the end of 2 week	Idea-Generation: Literature survey, (familiarity of the problem), different solutions, Tool learning, expt setup, requirement analysis and RoadMap	1.1.4, 2.1.2, 2.4.1, 3.1.3, 4.1.1, 4.2.1, 4.3.1, 5.2.1, 5.3.1, 6.1.1, 6.2.2, 8.2.2, 10.1.1, 12.3.1	25	1,2	4,5
		Review-2 Before the end of 6 week	Procedures/Design Implementation - p1	Phase 2.1.2, 2.4.1, 3.1.3, 4.1.1, 4.2.1, 4.3.1, 5.2.1, 5.3.1, 6.1.1, 6.2.2, 8.2.2, 10.1.1, 11.1.1 13.1.1	25	3,4	4,5
		Review-3 End of the semester	Implementation -p2 continuation with the course	2.1.2, 2.4.1, 3.1.3, 4.1.1, 4.2.1, 4.3.1, 5.2.1, 5.3.1, 6.1.1, 6.2.2, 8.2.2, 10.1.1,	25	3,4,5	4,5,6

				11.1.1 13.1.1			
2	Phase-2 During odd semester	Review-4	Demonstration of results, report writing, presentation, paper writing	1.1.4, 2.1.2, 2.4.1, 4.1.1, 4.2.1, 4.3.1, 5.2.1, 5.3.1, 9.1.1, 10.1.1, 12.3.1 14.1.1 14.1.2 15.1.1.	25	3,4,5,6	4,5,6
3	Phase-3 End of the odd semester	Viva-voce At the beginning of 8 th semester	Viva-voce with the external examiner		100		

Evaluation Rubrics

Name of the student:

Name of the guide/s:

Name of the committee members:

Note:

1. For the final grading total marks are normalized to 100: 50% (50 from 100) marks from the CIE and 50% (50 from 100) marks from SEE shall contribute.
2. 20% of CIE (20 marks from 100) are from course on research methodology.
3. Review committee shall be appointed by DUGC with HOD/HOS as chairman.
4. Use the REU style file already given to the students
5. Evaluate the contribution as weak (W), moderate (M) and strong (S).

Sl. no.	Reviews	Details		Contribution	Remarks
1	Course on RM (20)	3 Assignments			
Phase-1 Summer sem CIE-50M	Review -I (10 M), by guide	Problem Formulation	Literature survey		
			Identify gaps		
			Problem definition		
		Pre- requisites	Requirements		
			Demonstration of ability to use the tools/expt. setup		
			Planned activity chart		
Review-II (10 M) by guide /s	Review of implementation-p1				
Review-III (20 M) by committee	Committee review to decide continuation of the registration				
Phase-2 7 th sem	Review-IV (20M) by guide/s	Review of implementation-p2			

CIE-50M	Review-V(20M) by committee	Demonstration of results, report writing, paper writing and presentation			
Phase-3 SEE	Dissertation (50 M) By guide/s	Citations,			
	Viva-voce(50 M) External +guide/s				
	Total: 200Marks				

Date:

Head of School

Evaluation sheet of SEE exam for REU courses

Name of the student:

USN:

School:

Title:

Name of the guide/s:

Evaluation report:

Indicate the corrections that students need to carry out before the submission of the final copy (hard binding).

The corrections endorsed by the Guide/s and HOD/HOS: This is to certify that the corrections suggested by the examiners are incorporated by the candidate.

Indicative rubrics for evaluation of project report of the REU courses is enclosed
Final marks obtained by the candidate need to be submitted to HOD/HOS in the marks sheet.

Name and signature of the examiners:

1.

2.

Indicative rubrics for ESA of REU courses

Sl no.	Details	Max marks	Marks Obtained
1.	Viva-voce		
	Presentation	10	
	Understanding	30	
	Question answers	10	
2	Dissertation report		
	Literature survey	10	
	Problem formulation	10	
	Methodologies	10	
	Experimentation	10	
	Result analysis and publications	10	
3	Total	100	

Name and signature of the examiners:

1.

2.