



Universitas Negeri Surabaya
Faculty of Engineering,
Electrical Engineering Undergraduate Study Program

Document
Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Research methodology	2020102089	Compulsory Study Program Subjects	T=2	P=0	ECTS=3.18	6	July 17, 2024
AUTHORIZATION	SP Developer		Course Cluster Coordinator			Study Program Coordinator	
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Learning model	Project Based Learning
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Program Learning Outcomes (PLO)	PLO study program that is charged to the course	
	PLO-3	Develop logical, critical, systematic and creative thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned
	PLO-5	Able to apply knowledge of mathematics, natural sciences, information technology, and engineering to gain a thorough understanding of the principles of electrical engineering
	PLO-6	Able to design system components and/or processes to be applied in the field of electrical engineering
	PLO-10	Able to convey ideas and/or ideas resulting from work and innovation in the field of electrical engineering effectively, both orally and in writing
	Program Objectives (PO)	
	PO - 1	Able to explain the meaning and objectives of scientific research, types of research (quantitative, qualitative and mixed), and ethics in research
	PO - 2	Able to identify research problems, write objectives and problem formulations, as well as examples of research cases in the field of electrical engineering
	PO - 3	Able to explain the definition and function of a hypothesis, the process of developing a hypothesis, the criteria for a good hypothesis
	PO - 4	Able to carry out techniques for searching and collecting literature, evaluating and synthesizing relevant literature, and writing literature reviews
	PO - 5	Able to explain types of quantitative research designs, choose the right design, determine sampling techniques and sample size
	PO - 6	Able to explain types of qualitative research designs, qualitative data collection techniques (observation, interviews, etc.), validity and reliability in qualitative research
	PO - 7	Able to develop questionnaires and measurement scales, observation and interview techniques, validation of research instruments
	PO - 8	Able to complete midterm exams
	PO - 9	Able to explain survey methods, experiments and quasi-experiments, case studies
	PO - 10	Carrying out descriptive statistical analysis techniques, inferential statistical analysis techniques, and using data analysis software (for example, SPSS)
	PO - 11	Able to apply content analysis techniques, thematic analysis, use of qualitative data analysis software (for example, NVivo)
	PO - 12	Able to write the structure of research reports, good scientific writing techniques, as well as presenting research data and results
	PO - 13	Able to prepare and structure presentations, Effective communication techniques, use of visual aids (e.g., PowerPoint)
	PO - 14	Able to present research proposals, discuss and provide feedback
PO - 15	Able to carry out the publication process in scientific journals, write journal articles, and explain publication ethics and plagiarism	
PLO-PO Matrix		

P.O	PLO-3	PLO-5	PLO-6	PLO-10
PO-1	✓			✓
PO-2		✓		✓
PO-3		✓		✓
PO-4	✓	✓		
PO-5		✓	✓	
PO-6	✓			✓
PO-7	✓		✓	
PO-8	✓	✓	✓	✓
PO-9			✓	✓
PO-10		✓	✓	
PO-11	✓	✓		
PO-12	✓			✓
PO-13	✓			✓
PO-14				✓
PO-15		✓	✓	✓

PO Matrix at the end of each learning stage (Sub-PO)

P.O	Week															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PO-1	✓															
PO-2		✓														
PO-3			✓													
PO-4				✓												
PO-5					✓											
PO-6						✓										
PO-7							✓									
PO-8								✓								
PO-9									✓							
PO-10										✓						
PO-11											✓					
PO-12												✓				
PO-13													✓			
PO-14														✓		
PO-15															✓	

Short Course Description Research Methodology contains knowledge about various types of research, scientific research steps starting from determining topics, identifying problems, reviewing literature, determining problem focus, determining variables, design and design, data collection techniques, analysis and drawing conclusions and their application in preparing the Final Project. /Thesis

References

Main :

- Hasibuan, Zainal A, 2007, Metode Penelitian pada Bidang Ilmu Komputer dan Teknologi Informasi, Jakarta: Universitas Indonesia
- Indrajit, Richardus Eko, 2016, Informatika Dari Sudut Pandang Filsafat Ilmi: Studi Empiris Terhadap Rumpun Ilmu, Jakarta:Universitas Negeri Jakarta.
- Jatmiko, Wisnu, 2015, Panduan Penulisan Artikel Ilmiah, Jakarta: Universitas Indonesia
- Kothari, 2004, Research Methodology, New Delhi: New Age International Publishers
- Tim Penyusun, 2014, Pedoman Penulisan Skripsi, Surabaya: Universitas Negeri Surabaya.

Supporters:

- Jurnal penelitian yang relevan

Supporting lecturer Dr. Rina Harimurti, S.Pd., M.T.
Ibrohim, S.T., M.T.
Dr. Lilik Anifah, S.T., M.T.
Dr. Lusia Rakhmawati, S.T., M.T.

Week	Final abilities of each learning stage (Sub-PO)	Evaluation		Help Learning, Learning methods, Student Assignments, [Estimated time]		Learning materials [References]	Assessment Weight (%)
		Indicator	Criteria & Form	Offline (offline)	Online (online)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

1	Able to explain the meaning and objectives of scientific research, types of research (quantitative, qualitative and mixed), and ethics in research	Know about basic concepts in research, the benefits of methodology, the difference between methodology and research methods and the research process in general.	<p>Criteria:</p> <ol style="list-style-type: none"> 1. The assessment criteria are carried out by looking at aspects: 2.1. Participation: carried out by observing student activities (weight 2) 3.2. UTS: carried out with an assessment during the middle of the semester (weight 2) 4.3. UAS: carried out every semester to measure all indicators (weight 3) 5.4. Task: carried out on each indicator (weight 3) 6. Student Final Grade: 7. Participation Score (2)%2 Lever Score (3)%2 UTS Score (2)%2 UAS Score (3) divided by 10. <p>Form of Assessment : Participatory Activities</p>	DI, Presentation, group discussion, and reflection 2 X 50		<p>Material: Basic concepts in research, benefits of methodology, differences between methodology and research methods and the research process in general. References: <i>Kothari, 2004, Research Methodology, New Delhi: New Age International Publishers</i></p>	2%
2	Understand and know the basic concepts in research, the benefits of methodology, the differences between methodology and research methods and the research process in general.	Know about basic concepts in research, the benefits of methodology, the difference between methodology and research methods and the research process in general.	<p>Criteria:</p> <ol style="list-style-type: none"> 1. The assessment criteria are carried out by looking at aspects: 2.1. Participation: carried out by observing student activities (weight 2) 3.2. UTS: carried out with an assessment during the middle of the semester (weight 2) 4.3. UAS: carried out every semester to measure all indicators (weight 3) 5.4. Task: carried out on each indicator (weight 3) 6. Student Final Grade: 7. Participation Score (2) x Lever Score (3) x UTS Score (2) x UAS Score (3) divided by 10. <p>Form of Assessment : Participatory Activities</p>	DI, Presentation, group discussion, and reflection 2 X 50		<p>Material: basic concepts in research, benefits of methodology, differences between methodology and research methods and the research process in general. References: <i>Kothari, 2004, Research Methodology, New Delhi: New Age International Publishers</i></p>	0%
3	Identify problems and hypotheses	<ul style="list-style-type: none"> - Identifying the problem - Knowing the steps in formulating the problem - Giving an example of the problem formulation - Creating a research hypothesis 	<p>Criteria: Scale assessment score 0-100</p> <p>Form of Assessment : Participatory Activities</p>	DI, Presentation and reflection 2 X 50		<p>Material: Identifying problems and hypotheses References: <i>Kothari, 2004, Research Methodology, New Delhi: New Age International Publishers</i></p>	2%

4	Identify problems and hypotheses	- Identifying the problem - Knowing the steps in formulating the problem - Giving an example of the problem formulation - Creating a research hypothesis	Criteria: sda Form of Assessment : Participatory Activities	DI, Presentation and reflection 2 X 50		Material: Identifying problems and hypotheses References: Kothari, 2004, <i>Research Methodology</i> , New Delhi: New Age International Publishers	5%
5	Reviewing literature relevant to the formulation of the problem that has been created	- Understanding the meaning of literature review - Understanding the benefits of literature review - Understanding the steps of literature review - Understanding sources of literature review - Carrying out citations or citations	Criteria: sda Form of Assessment : Participatory Activities	Presentation, discussion and reflection 2 X 50		Material: Review paper according to thesis topic Bibliography: Kothari, 2004, <i>Research Methodology</i> , New Delhi: New Age International Publishers Material: Review papers according to the thesis topic. Literature: <i>Relevant research journals</i>	2%
6	Reviewing literature relevant to the formulation of the problem that has been created	- Understanding the meaning of literature review - Understanding the benefits of literature review - Understanding the steps of literature review - Understanding sources of literature review - Carrying out citations or citations	Criteria: sda Form of Assessment : Project Results Assessment / Product Assessment	Presentation, discussion and reflection 2 X 50		Material: Stages of Exploration/ Literature Review Literature: Kothari, 2004, <i>Research Methodology</i> , New Delhi: New Age International Publishers	5%
7	Reviewing literature relevant to the formulation of the problem that has been created	- Understanding the meaning of literature review - Understanding the benefits of literature review - Understanding the steps of literature review - Understanding sources of literature review - Carrying out citations or citations	Criteria: sda	Presentation, discussion and reflection 2 X 50		Material: Stages of Exploration/Literature Review Literature: Material: Stages of Exploration/Literature Review Literature: <i>Relevant research journals</i>	0%
8	Design ideas/schemes/research flow diagrams to solve problems in the field of Electrical Engineering (CPL-KU1) (CLO2)	Able to design research (thesis draft)	Criteria: Assessment score 0-100 Form of Assessment : Project Results Assessment / Product Assessment	PjBl, Discussion, Presentation 2 X 50		Material: Research design and planning Reference: Kothari, 2004, <i>Research Methodology</i> , New Delhi: New Age International Publishers Material: Research design and planning Reference: <i>Relevant research journals</i>	5%
9	Design ideas/schemes/research flow diagrams to solve problems in the field of Electrical Engineering (CPL-KU1) (CLO2)	Able to design research (thesis draft)	Criteria: Assessment score 0-100 Form of Assessment : Project Results Assessment / Product Assessment	PjBl, Discussion, Presentation 2 X 50		Material: Research design and planning Reference: Kothari, 2004, <i>Research Methodology</i> , New Delhi: New Age International Publishers Material: Research design and planning Reference: <i>Relevant research journals</i>	5%
10	Design ideas/schemes/research flow diagrams to solve problems in the field of Electrical Engineering (CPL-KU1) (CLO2)	Design ideas/schemes/research flow diagrams to solve problems in the field of Electrical Engineering	Criteria: Scale assessment score 0-100 Form of Assessment : Project Results Assessment / Product Assessment	Presentation, discussion and reflection 2 X 50		Material: Data collection techniques Bibliography: Kothari, 2004, <i>Research Methodology</i> , New Delhi: New Age International Publishers Material: Data collection techniques References: <i>Relevant research journals</i>	10%

11	Design ideas/schemes/research flow diagrams to solve problems in the field of Electrical Engineering (CPL-KU1) (CLO2)	Design ideas/schemes/research flow diagrams to solve problems in the field of Electrical Engineering	Criteria: Scale assessment score 0-100 Form of Assessment : Project Results Assessment / Product Assessment	Presentation, discussion and reflection 2 X 50		Material: Data collection techniques Bibliography: <i>Kothari, 2004, Research Methodology, New Delhi: New Age International Publishers</i> <hr/> Material: Data collection techniques References: <i>Relevant research journals</i>	10%
12	Able to prepare research drafts in the field of Electrical Engineering (CPL-P2) (CLO4)	Able to prepare research drafts in the field of Electrical Engineering	Criteria: Scale assessment score 0-100 Form of Assessment : Project Results Assessment / Product Assessment	PjBl, Presentation, discussion and reflection 2 X 50		Material: Preparation of research in the field of Electrical Engineering (final assignment/thesis draft) References: <i>Kothari, 2004, Research Methodology, New Delhi: New Age International Publishers</i> <hr/> Material: Preparation of research in the field of Electrical Engineering (final assignment/thesis draft) Library: <i>Relevant research journals</i>	10%
13	Able to prepare research drafts in the field of Electrical Engineering (CPL-P2) (CLO4)	Able to prepare research drafts in the field of Electrical Engineering	Criteria: Scale assessment score 0-100 Form of Assessment : Project Results Assessment / Product Assessment	PjBl, Presentation, discussion and reflection 2 X 50		Material: Preparation of research in the field of Electrical Engineering (final assignment/thesis draft) References: <i>Kothari, 2004, Research Methodology, New Delhi: New Age International Publishers</i> <hr/> Material: Preparation of research in the field of Electrical Engineering (final assignment/thesis draft) Library: <i>Relevant research journals</i>	10%
14	Able to prepare research drafts in the field of Electrical Engineering (CPL-P2) (CLO4)	Able to prepare research drafts in the field of Electrical Engineering	Criteria: Scale assessment score 0-100 Form of Assessment : Project Results Assessment / Product Assessment	PjBl, Presentation, discussion and reflection 2 X 50		Material: Preparation of research in the field of Electrical Engineering (final assignment/thesis draft) References: <i>Kothari, 2004, Research Methodology, New Delhi: New Age International Publishers</i> <hr/> Material: Preparation of research in the field of Electrical Engineering (final assignment/thesis draft) Library: <i>Relevant research journals</i>	10%

15	Able to prepare research drafts in the field of Electrical Engineering (CPL-P2) (CLO4)	Able to prepare research drafts in the field of Electrical Engineering	Criteria: Scale assessment score 0-100 Form of Assessment : Project Results Assessment / Product Assessment	PjBl, Presentation, discussion and reflection 2 X 50		Material: Preparation of research in the field of Electrical Engineering (final assignment/thesis draft) References: <i>Kothari, 2004, Research Methodology, New Delhi: New Age International Publishers</i> <hr/> Material: Preparation of research in the field of Electrical Engineering (final assignment/thesis draft) Library: <i>Relevant research journals</i>	10%
16	Able to prepare research drafts in the field of Electrical Engineering (CPL-P2) (CLO4)	Able to prepare research drafts in the field of Electrical Engineering	Criteria: Scale assessment score 0-100 Form of Assessment : Project Results Assessment / Product Assessment	PjBl, Presentation, discussion and reflection 2 X 50		Material: Preparation of research in the field of Electrical Engineering (final assignment/thesis draft) References: <i>Kothari, 2004, Research Methodology, New Delhi: New Age International Publishers</i> <hr/> Material: Preparation of research in the field of Electrical Engineering (final assignment/thesis draft) Library: <i>Relevant research journals</i>	14%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	11%
2.	Project Results Assessment / Product Assessment	89%
		100%

Notes

- Learning Outcomes of Study Program Graduates (PLO - Study Program)** are the abilities possessed by each Study Program graduate which are the internalization of attitudes, mastery of knowledge and skills according to the level of their study program obtained through the learning process.
- The PLO imposed on courses** are several learning outcomes of study program graduates (CPL-Study Program) which are used for the formation/development of a course consisting of aspects of attitude, general skills, special skills and knowledge.
- Program Objectives (PO)** are abilities that are specifically described from the PLO assigned to a course, and are specific to the study material or learning materials for that course.
- Subject Sub-PO (Sub-PO)** is a capability that is specifically described from the PO that can be measured or observed and is the final ability that is planned at each learning stage, and is specific to the learning material of the course.
- Indicators for assessing** abilities in the process and student learning outcomes are specific and measurable statements that identify the abilities or performance of student learning outcomes accompanied by evidence.
- Assessment Criteria** are benchmarks used as a measure or measure of learning achievement in assessments based on predetermined indicators. Assessment criteria are guidelines for assessors so that assessments are consistent and unbiased. Criteria can be quantitative or qualitative.
- Forms of assessment:** test and non-test.
- Forms of learning:** Lecture, Response, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning.
- Learning Methods:** Small Group Discussion, Role-Play & Simulation, Discovery Learning, Self-Directed Learning, Cooperative Learning, Collaborative Learning, Contextual Learning, Project Based Learning, and other equivalent methods.
- Learning materials** are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
- The assessment weight** is the percentage of assessment of each sub-PO achievement whose size is proportional to the level of difficulty of achieving that sub-PO, and the total is 100%.
- TM=Face to face, PT=Structured assignments, BM=Independent study.