



Universitas Negeri Surabaya
Faculty of Mathematics and Natural Sciences
Physics Education Undergraduate Study Program

Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Eldas II Practicum	8420301242	Compulsory Study Program Subjects	T=0	P=1	ECTS=1.59	4	January 31, 2024
AUTHORIZATION	SP Developer		Course Cluster Coordinator			Study Program Coordinator	
		Drs. Imam Sucahyo, M.Si.			Mita Anggaryani, M.Pd., Ph.D.	
Learning model	Case Studies						
Program Learning Outcomes (PLO)	PLO study program that is charged to the course						
	Program Objectives (PO)						
	PLO-PO Matrix						
		P.O					
Short Course Description	Basic Electronics Practicum 2 course includes: a. Emitter Amplifier Grounded. b. Amplifier with feedback, c. JFET characteristics, d. JFET amplifier, e. Operational Amplifier (O-Amp) Inverting, f. Operational Amplifier (O-Amp) Non Inverting, g. Oscillator and h. Digital Electronic Circuits.						
	<p>References Main :</p> <ol style="list-style-type: none"> 1. Tim Elektronika Dasar. 2010. Panduan Praktikum Elektronika Dasar 2. Surabaya: JDS 2. Sutrisno. 1978. Elektronika 2. Teori dan Penerapannya. Penerbit ITB Bandung 3. Tooley, M. 2006. Electronics Circuit: Fundamentals and Applications. Third Edition. Elsevier Ltd. 4. Boylestad, R., and Nashelsky, L. Electronics Devices and Circuits: Theory. Seventh Edition. Prentice Hall. 5. Floyd, T. L. 2012. Electronics Devices. Prentice Hall <p>Supporters:</p>						
Supporting lecturer	Drs. Imam Sucahyo, M.Si. Dzulkifli, S.Si., M.T. Abd. Kholiq, S.Pd., M.T. Meta Yantidewi, S.Si., M.Si.						
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 analyze measurement data during the Grounded Emitter Amplifier practicum	<p>1. Students can use multimeter, oscilloscope and AFG measuring instruments correctly</p> <p>2. Students can find experimental data on the emitter amplifier being grounded correctly</p> <p>3. Students can analyze experimental data on properly grounded emitter amplifiers</p>	<p>Criteria:</p> <p>1. Students are able to use multimeter, oscilloscope and AFG measuring instruments correctly.</p> <p>2. Students are able to find experimental data on the emitter amplifier being grounded correctly.</p> <p>3. Students are able to analyze experimental data on grounded emitter amplifiers correctly.</p> <p>Form of Assessment : Participatory Activities</p>		Online (120 minutes)	<p>Material: Earthed emitter amplifier</p> <p>Reference: <i>Sutrisno. 1978. Electronics 2. Theory and Application. ITB Bandung Publisher</i></p> <hr/> <p>Material: Earthed emitter amplifier</p> <p>References: <i>Boylestad, R., and Nashelsky, L. Electronics Devices and Circuits: Theory. Seventh Edition. Prentice Hall.</i></p>	4%
2	Able to analyze measurement data during the Grounded Emitter Amplifier practicum	<p>1. Students can use multimeter, oscilloscope and AFG measuring instruments correctly</p> <p>2. Students can find experimental data on the emitter amplifier being grounded correctly</p> <p>3. Students can analyze experimental data on properly grounded emitter amplifiers</p>	<p>Criteria:</p> <p>1. Students are able to use multimeter, oscilloscope and AFG measuring instruments correctly.</p> <p>2. Students are able to find experimental data on the emitter amplifier being grounded correctly.</p> <p>3. Students are able to analyze experimental data on grounded emitter amplifiers correctly.</p> <p>Form of Assessment : Practical Assessment, Practice/Performance</p>	Practicum in basic electronics laboratory in groups. (120 minutes)		<p>Material: Earthed emitter amplifier</p> <p>Reference: <i>Sutrisno. 1978. Electronics 2. Theory and Application. ITB Bandung Publisher</i></p> <hr/> <p>Material: Earthed emitter amplifier</p> <p>References: <i>Boylestad, R., and Nashelsky, L. Electronics Devices and Circuits: Theory. Seventh Edition. Prentice Hall.</i></p>	6%

3	Able to analyze measurement data during the Grounded Emitter Amplifier practicum with feedback	<ol style="list-style-type: none"> 1. Students can use multimeter, oscilloscope and AFG measuring instruments correctly. 2. Students can find experimental data on grounded emitter amplifiers with correct feedback. 3. Students can analyze experimental data on a grounded emitter amplifier with feedback correctly. 	<p>Criteria:</p> <ol style="list-style-type: none"> 1. Students are able to use multimeter, oscilloscope and AFG measuring instruments correctly. 2. Students are able to find experimental data on grounded emitter amplifiers with correct feedback. 3. Students are able to analyze experimental data on grounded emitter amplifiers with feedback correctly. <p>Form of Assessment : Practice / Performance</p>	Practicum in basic electronics laboratory in groups. (120 minutes)		<p>Material: Grounded emitter (CE) amplifier circuit with feedback Reader : <i>Sutrisno. 1978. Electronics 2. Theory and Application. ITB Bandung Publisher</i></p> <hr/> <p>Material: Grounded emitter (CE) amplifier circuit with feedback References: <i>Tooley, M. 2006. Electronics Circuit: Fundamentals and Applications. Third Edition. Elsevier Ltd.</i></p> <hr/> <p>Material: Grounded emitter (CE) amplifier circuit with feedback References: <i>Boylestad, R., and Nashelsky, L. Electronics Devices and Circuits: Theory. Seventh Edition. Prentice Hall.</i></p> <hr/> <p>Material: Grounded emitter (CE) amplifier circuit with feedback References : <i>Floyd, TL 2012. Electronics Devices. Prentice Hall</i></p>	5%
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4	Able to analyze measurement data during the Grounded Emitter Amplifier practicum with feedback	<ol style="list-style-type: none"> 1. Students can use multimeter, oscilloscope and AFG measuring instruments correctly. 2. Students can find experimental data on grounded emitter amplifiers with correct feedback. 3. Students can analyze experimental data on a grounded emitter amplifier with feedback correctly. 	<p>Criteria:</p> <ol style="list-style-type: none"> 1. Students are able to use multimeter, oscilloscope and AFG measuring instruments correctly. 2. Students are able to find experimental data on grounded emitter amplifiers with correct feedback. 3. Students are able to analyze experimental data on grounded emitter amplifiers with feedback correctly. <p>Form of Assessment : Practical Assessment</p>		Online (120 minutes)	<p>Material: Grounded emitter (CE) amplifier circuit with feedback Reader : <i>Sutrisno. 1978. Electronics 2. Theory and Application. ITB Bandung Publisher</i></p> <hr/> <p>Material: Grounded emitter (CE) amplifier circuit with feedback References: <i>Tooley, M. 2006. Electronics Circuit: Fundamentals and Applications. Third Edition. Elsevier Ltd.</i></p> <hr/> <p>Material: Grounded emitter (CE) amplifier circuit with feedback References: <i>Boylestad, R., and Nashelsky, L. Electronics Devices and Circuits: Theory. Seventh Edition. Prentice Hall.</i></p> <hr/> <p>Material: Grounded emitter (CE) amplifier circuit with feedback References : <i>Floyd, TL 2012. Electronics Devices. Prentice Hall</i></p>	5%
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5	Able to analyze measurement data during JFET Characteristics practicum.	<ol style="list-style-type: none"> 1. Students can use multimeter, oscilloscope and AFG measuring instruments correctly. 2. Students can find experimental data on JFET characteristics correctly. 3. Students can analyze experimental data on JFET characteristics correctly. 	<p>Criteria:</p> <ol style="list-style-type: none"> 1. Students are able to use multimeter, oscilloscope and AFG measuring instruments correctly. 2. Students are able to find experimental data on JFET characteristics correctly. 3. Students are able to analyze experimental data on JFET characteristics correctly. <p>Form of Assessment : Practice / Performance</p>	Practicum in basic electronics laboratory in groups. (120 minutes)		<p>Material: JFET Characteristics Reader: <i>Sutrisno. 1978. Electronics 2. Theory and Application. ITB Bandung Publisher</i></p> <hr/> <p>Material: JFET Characteristics References: <i>Tooley, M. 2006. Electronics Circuits: Fundamentals and Applications. Third Edition. Elsevier Ltd.</i></p> <hr/> <p>Material: JFET Characteristics References: <i>Boylestad, R., and Nashelsky, L. Electronics Devices and Circuits: Theory. Seventh Edition. Prentice Hall.</i></p> <hr/> <p>Material: JFET Characteristics Reference: <i>Floyd, TL 2012. Electronics Devices. Prentice Hall</i></p>	5%
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6	Able to analyze measurement data during JFET Characteristics practicum.	<ol style="list-style-type: none"> 1.Students can use multimeter, oscilloscope and AFG measuring instruments correctly. 2.Students can find experimental data on JFET characteristics correctly. 3.Students can analyze experimental data on JFET characteristics correctly. 	<p>Criteria:</p> <ol style="list-style-type: none"> 1.Students are able to use multimeter, oscilloscope and AFG measuring instruments correctly. 2.Students are able to find experimental data on JFET characteristics correctly. 3.Students are able to analyze experimental data on JFET characteristics correctly. <p>Form of Assessment : Practical Assessment</p>		Online (120 minutes)	<p>Material: JFET Characteristics Reader: <i>Sutrisno. 1978. Electronics 2. Theory and Application. ITB Bandung Publisher</i></p> <hr/> <p>Material: JFET Characteristics References: <i>Tooley, M. 2006. Electronics Circuits: Fundamentals and Applications. Third Edition. Elsevier Ltd.</i></p> <hr/> <p>Material: JFET Characteristics References: <i>Boylestad, R., and Nashelsky, L. Electronics Devices and Circuits: Theory. Seventh Edition. Prentice Hall.</i></p> <hr/> <p>Material: JFET Characteristics Reference: <i>Floyd, TL 2012. Electronics Devices. Prentice Hall</i></p>	5%
7	Able to analyze measurement data during JFET Amplifier practicum.	<ol style="list-style-type: none"> 1.Students can use multimeter, oscilloscope and AFG measuring instruments correctly. 2.Students can find the experimental data for the JFET amplifier correctly. 3.Students can analyze JFET amplifier experimental data correctly. 	<p>Criteria:</p> <ol style="list-style-type: none"> 1.Students are able to use multimeter, oscilloscope and AFG measuring instruments correctly. 2.Students are able to find the JFET amplifier experimental data correctly. 3.Students are able to analyze JFET amplifier experimental data correctly. <p>Form of Assessment : Practical Assessment, Practice/Performance</p>	Practicum in basic electronics laboratory in groups. (120 minutes)			6%
8	Midterm Exam/Midterm Evaluation	Students present data from the practicum results that have been carried out in the form of a practicum report (lab report).	<p>Criteria: Students are able to present data from practicum results that have been carried out in the form of a practicum report (lab report).</p> <p>Form of Assessment : Portfolio Assessment, Practical Assessment</p>		Online (120 minutes)		8%

9	Able to analyze measurement data during inverting and non-inverting Operational Amplifier (OP-Amp) practicum.	<p>1. Students can use multimeter, oscilloscope and AFG measuring instruments correctly.</p> <p>2. Students can find inverting and non-inverting Operational Amplifier (OP-Amp) experimental data correctly.</p> <p>3. Students can analyze inverting and non-inverting Operational Amplifier (OP-Amp) experimental data correctly.</p>	<p>Criteria:</p> <p>1. Students are able to use multimeter, oscilloscope and AFG measuring instruments correctly.</p> <p>2. Students are able to find inverting and non-inverting Operational Amplifier (OP-Amp) experimental data correctly.</p> <p>3. Students are able to analyze inverting and non-inverting Operational Amplifier (OP-Amp) experimental data correctly</p> <p>Form of Assessment : Practice / Performance</p>	Practice		<p>Material: Inverting and non-inverting Operational Amplifiers (OP-Amp). Reader: <i>Sutrisno. 1978. Electronics 2. Theory and Application. ITB Bandung Publisher</i></p> <hr/> <p>Material: Inverting and non-inverting Operational Amplifiers (OP-Amp). References: <i>Tooley, M. 2006. Electronics Circuits: Fundamentals and Applications. Third Edition. Elsevier Ltd.</i></p> <hr/> <p>Material: Inverting and non-inverting Operational Amplifiers (OP-Amp). References: <i>Basic Electronics Team. 2010. Basic Electronics Practical Guide 2. Surabaya: JDS</i></p>	5%
10							0%
11							0%
12							0%
13							0%
14							0%
15							0%
16							0%

Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
1.	Participatory Activities	4%
2.	Portfolio Assessment	4%
3.	Practical Assessment	20%
4.	Practice / Performance	21%
		49%

Notes

1. **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.
2. **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.

3. **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.
4. **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.
5. **Indicators for assessing** ability in the process and student learning outcomes are specific and measurable statements that identify the ability or performance of student learning outcomes accompanied by evidence.
6. **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.
7. **Forms of assessment:** test and non-test.
8. **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.
9. **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.
10. **Learning materials** are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
11. **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%.
12. TM=Face to face, PT=Structured assignments, BM=Independent study.