	Universitas Negeri Surabaya **Faculty of Engineering** **, Electrical Engineering Education Undergraduate Study Program**	**Document Code**

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Telecommunications Practicum	8320101258		**T=1**	**P=0**	**ECTS=1.59**	4	July 17, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
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Learning model	**Project Based Learning**

Program Learning Outcomes (PLO)

PLO study program that is charged to the course

PLO-6	Able to plan, implement, and evaluate effective and efficient innovative learning programs in electrical engineering vocational education that are relevant to global industrial developments (Education).
PLO-10	Have a responsible character and be committed to professional ethics (General/SSC4.6).

Program Objectives (PO)

PO - 1	Sub-CPMK1 Students are able to practice and analyze LPF filters using software and hardware; Sub-CPMK2 Students are able to understand HPF; Sub-CPMK3 Students are able to understand HPF; Sub-CPMK4 students are able to understand band pass filters and band stop filters; Sub-CPMK5 students are able to understand Band pass filters and band stop filters Sub-CPMK6 students are able to understand Band pass filters and band stop filters

PLO-PO Matrix

P.O	PLO-6	PLO-10
PO-1		

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																

Short Course Description	This lecture discusses basic telecommunications practices, LPF, HPF, BPF, BSF filter planning, phase shift oscillators, Amplitude Modulation and Demodulation, Frequency Modulation, and PAM.

References

Main :

1. Simon Haykin. 2001. Communication Systems, 4th edition. New York: John Wiley & Sons
2. Tarmo Anttalainen. 2003. Introduction to telecommunications network engineering. 2nd edition. Norwood : Artech House telecommunications library
3. Martin Sauter. 2006. Communication Systems for the Mobile Information Society. John Wiley & Sons
4. M.R. Karim . 2002. W-CDMA and cdma2000 for 3G Mobile Network. McGraw-Hill

Supporters:

Supporting lecturer	Dr. Nurhayati, S.T., M.T. Dr. Lusia Rakhmawati, S.T., M.T. Dr. Farid Baskoro, 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	Students are able to understand and practice low pass series and parallel passive filters using software		**Criteria:** according to the assessment rubric **Form of Assessment** : Participatory Activities, Practical Assessment	Students are able to understand and practice low fitting series and parallel passive filters using 1x100 software		**Material:** according to the Library Practicum module **:** *Simon Haykin. 2001. Communication Systems, 4th edition. New York: John Wiley & Sons*	5%
2	Students are able to understand and practice series and parallel passive highpass filters using software	according to the assessment rubric	**Criteria:** according to the assessment rubric **Form of Assessment** : Participatory Activities, Practical Assessment	Students are able to understand and practice series and parallel highpass filter passive filters using 1x100 software		**Material:** according to the Library Practicum module **:** *Simon Haykin. 2001. Communication Systems, 4th edition. New York: John Wiley & Sons* **Material:** Telecommunications Practicum module, UNESA Electrical Engineering **Library:**	5%
3	Students are able to understand and practice series and parallel passive filter bandstops using software	according to the assessment rubric	**Criteria:** according to the assessment rubric **Form of Assessment** : Participatory Activities, Practical Assessment	Students are able to understand and practice bandstop filters for series and parallel passive filters using 1x100 software		**Material:** according to the Library Practicum module **:** *Simon Haykin. 2001. Communication Systems, 4th edition. New York: John Wiley & Sons* **Material:** Telecommunications Practicum module, UNESA Electrical Engineering **Library:**	5%
4	Students are able to understand and practice series and parallel passive bandpass filters using software	according to the assessment rubric	**Criteria:** according to the assessment rubric **Form of Assessment** : Participatory Activities, Practical Assessment	Students are able to understand and practice series and parallel passive filter bandpass filters using 1x100 software		**Material:** according to the Library Practicum module **:** *Simon Haykin. 2001. Communication Systems, 4th edition. New York: John Wiley & Sons* **Material:** Telecommunications Practicum module, UNESA Electrical Engineering **Library:**	5%

5	Students are able to understand and practice series and parallel LowPass Active filters using software	according to the assessment rubric	**Criteria:** according to the assessment rubric **Form of Assessment** : Participatory Activities, Practical Assessment	Students are able to understand and practice series and parallel LowPass Active filters using 1x100 software		**Material:** according to the Library Practicum module **:** *Simon Haykin. 2001. Communication Systems, 4th edition. New York: John Wiley & Sons* **Material:** Telecommunications Practicum module, UNESA Electrical Engineering **Library:**	5%
6	Students are able to understand and practice HighPass filters, series and parallel Active filters using software	according to the assessment rubric	**Criteria:** according to the assessment rubric **Form of Assessment** : Participatory Activities, Practical Assessment	Students are able to understand and practice HighPass filters, series and parallel Active filters using 1x100 software		**Material:** according to the Library Practicum module **:** *Simon Haykin. 2001. Communication Systems, 4th edition. New York: John Wiley & Sons* **Material:** Telecommunications Practicum module, UNESA Electrical Engineering **Library:**	5%
7	Students are able to understand and practice HighPass filters, series and parallel Active filters using software	according to the assessment rubric	**Criteria:** according to the assessment rubric **Form of Assessment** : Participatory Activities, Practical Assessment	Students are able to understand and practice bandstop filters, series and parallel active filters using 1x100 software		**Material:** according to the Library Practicum module **:** *Simon Haykin. 2001. Communication Systems, 4th edition. New York: John Wiley & Sons* **Material:** Telecommunications Practicum module, UNESA Electrical Engineering **Library:**	5%
8	Students are able to understand and practice series and parallel active filter bandpass filters using software	according to the assessment rubric	**Criteria:** according to the assessment rubric **Form of Assessment** : Participatory Activities, Practical Assessment	Students are able to understand and practice series and parallel active filter bandpass filters using 1x100 software		**Material:** according to the Library Practicum module **:** *Simon Haykin. 2001. Communication Systems, 4th edition. New York: John Wiley & Sons* **Material:** Telecommunications Practicum module, UNESA Electrical Engineering **Library:**	5%
9			**Form of Assessment** : Practical Assessment	UTS		**Material:** Telecommunications Practicum module, UNESA Electrical Engineering **Library:**	10%
10		according to the assessment rubric	**Criteria:** according to the assessment rubric	Students are able to study and practice phase shifts through the 1x100 software		**Material:** Telecommunications Practicum module, UNESA Electrical Engineering **Library:**	5%

11	Students are able to understand and practice Amplitude Modulation circuits through software	according to the assessment rubric	**Criteria:** according to the assessment rubric **Form of Assessment** : Participatory Activities, Practical Assessment	Students are able to understand and practice the Amplitude Modulation circuit using the 1x100 software		**Material:** Telecommunications Practicum module, UNESA Electrical Engineering **Library:**	5%
12	Students are able to understand and practice Amplitude Modulation circuits through software	according to the assessment rubric	**Criteria:** according to the assessment rubric **Form of Assessment** : Participatory Activities, Practical Assessment	Students are able to understand and practice the Amplitude Modulation circuit using the 1x100 software		**Material:** Telecommunications Practicum module, UNESA Electrical Engineering **Library:**	5%
13	Students are able to understand and practice frequency modulation circuits through software	according to the assessment rubric	**Criteria:** according to the assessment rubric **Form of Assessment** : Participatory Activities, Practical Assessment	Students are able to understand and practice frequency modulation circuits using 1x100 software		**Material:** Telecommunications Practicum module, UNESA Electrical Engineering **Library:**	5%
14	Students are able to understand and practice frequency modulation circuits through software	according to the assessment rubric	**Criteria:** according to the assessment rubric **Form of Assessment** : Participatory Activities, Practical Assessment	Students are able to understand and practice frequency modulation circuits using 1x100 software		**Material:** Telecommunications Practicum module, UNESA Electrical Engineering **Library:**	5%
15	Project makes active and passive filters	according to the assessment rubric	**Criteria:** according to the assessment rubric **Form of Assessment** : Participatory Activities, Tests	Project to make active and passive filters, AM, FM 1x100 series		**Material:** Telecommunications Practicum module, UNESA Electrical Engineering **Library:**	30%
16							0%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	45%
2.	Practical Assessment	40%
3.	Test	15%
		100%

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.