

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

Document Code

SEMESTER LEARNING PLAN

		1									
Courses		CODE	Cours Family	e /	Credit We		ight	SEMES	TER	Compilatio Date	n
Electrical Materials		4520103015	520103015		T=3	P=0	ECTS=4.77	6		July 18, 202	24
AUTHORIZATION		SP Developer		Cou	Course Cluster Coordinator			Study P Coordir	Study Program Coordinator		
									Prof. Dr. Munasir, S.Si., M.Si.		
Learning model	Project Base	ect Based Learning									
Program	PLO study program that is charged to the course										
Learning Outcomes	Program Objectives (PO)										
(PLO)	PLO-PO Matrix										
	P.O										
	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	
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Short Course Description	This course discusses a review of the basic concepts of atomic theory (Bohr's atomic theory, and Schrodinger's model) and reveals the energy band models (conduction-valence), explains the concept of electrical conductivity in metallic materials (Drude model, Hall effect and so on), explains Fermi distribution concept, charge carriers (electrons and holes), electrical conduction concept (drift current, hole current), pn connection model, examples of applications in solar cells; explain the concept of magnetization of materials, magnetic properties of materials, examples of applications of magnetic materials; explains the physics concepts of capacitors and dielectric materials as well as examples of their applications; explains the physical concepts of battery work, battery materials, and material applications for batteries. Strategy to achieve competition: by implementing discussions and activating students in the process of exploring learning resources independently.										
References	Main :										
	 Williem D. Callister, Jr. 2003. Materials Science and Engineering an Introduction., Sixth Edition, Wiley International Editions, John Wiley & Sons. Inc. Jasprit Singh. 2005. Semikonduktor Optoelectronic, Physics and Technology. McGRAW-Hill International Editions. Kwork K. Ng. 2005. Complete Guide to Semiconductor Devices. International Editon. Terry P. Orlando dan Kevin A. Delin. 2005. Foundations of Applied Supercoductivity. Massachusett Institute of Technology. S.M. Sze. 2005. Semiconductor Devices, Physics and Technology, John Wiley and Sons. K. Takahashi dan M. Konagai. 2005. Amorphous Silicon Solar Cells., Tokyo Institute of Technology. North Oxford Academic. 										
	Supporters:										
Supporting lecturer	ASNAWI Dzulkiflih, S.S Meta Yantidev	i., M.T. vi. S.Si M.Si.									

Week-	Final abilities of each learning stage (Sub-PO)	Evaluation		Lo Stu	Help Learning, earning methods, dent Assignments, [Estimated time]	Learning materials	Assessment
		Indicator	Criteria & Form	Offline (<i>offline</i>)	Online (<i>online</i>)	References	Weight (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1							0%
2							0%
3							0%
4							0%
5							0%
6							0%
7							0%
8							0%
9							0%
10							0%
11							0%
12							0%
13							0%
14							0%
15							0%
16							0%

Evaluation Percentage Recap: Project Based Learning

No Evaluation Percentage 0%

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.