



KEMENTERIAN PENDIDIKAN TINGGI,
SAINS, DAN TEKNOLOGI
UNIVERSITAS LAMPUNG

FAKULTAS KEGURUAN DAN ILMU PENDIDIKAN

Jalan Prof. Dr. Sumantri Brojonegoro No.1 Gedong Meneng - Bandar Lampung 35145

Telp./Fax: (0721) 704624 *e-mail*: fkip@unila.ac.id,

laman: <http://fkip.unila.ac.id>

Bachelor of Education in Physics

MODULE HANDBOOK

Module Name	Development of Practical Simulation
Module Level, if Applicable	Bachelor
Code	KFI620319
Sub-Heading, (*if Applicable)	-
Classes, (*if Applicable)	-
Description	The Practicum Simulation Development course aims to prepare students to design and develop effective simulations for practicum learning in various disciplines. The application of the Socio-Scientific Issues (SSI) approach in this course allows students to integrate relevant social issues into the simulation, thus encouraging students to think critically and consider the social impact of scientific knowledge. In addition, the integration of TPACK (Technological Pedagogical and Content Knowledge) is essential in simulation development, as students must be able to effectively combine technology, pedagogy, and content to create interactive and engaging learning experiences. An understanding of the Nature of Science (NOS) is also a key element, as it helps students understand the scientific process and how science develops, so that the simulations developed are not only scientifically accurate but also enrich students' understanding of scientific practices. Overall, this course plays an important role in preparing educators who are able to use technology and contemporary approaches in science education.
Semester	6 th
Module Coordinator	Prof. Dr. Agus Suyatna, M.Pd.
Lecturers	Individual Teaching of Development of Practical Simulation
Language	Indonesian/English



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Classification With in the Curriculum	Study Program Elective Courses in the third year (6 th semester) Bachelor Degree
Teaching Format/Class Hours Per Week During the Semester	Learning activity can be carried out in the form of lecture or students' response a. Face to face : 50 minutes/SKS b. Structured activity : 60 minutes/SKS c. Independent activity : 60 minutes/SKS
Teaching methods	In class activity : Case Method Structured activity : Group Discussion using worksheet Independent activity : Individual task, lecture, test and assignment.
Workload	1 CU (SKS) for bachelor degree equal to 3 work hours per week or 170 minutes. 3x50 minutes face to face, 3x60 minutes structured tasks, 3x60 minutes independent learning, for 16 weeks (including midterm and final exam), a total of 136 hours/semester. One CU equals to 1.51 ECTS
Credit Points	3 (3-0) CU (SKS) = 3 x 1,51 = 4,53 ETCS
Prerequisites Courses	-
Course Outcomes (CO)	1. PLO 3 : Applying Technology, Pedagogy, and Content Knowledge (TPACK) in planning, teaching, and evaluating physics learning 2. PLO 6 : Able to develop physics learning resources according to the needs and development of science and technology. 3. PLO 7: Able to manage, use, and develop physics learning laboratory tools. 4. CO 1. Students are able to design practical simulations that meet specific training or learning needs in their professional context.



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	5. CO 2. Students are able to select and apply appropriate simulation tools to effectively improve skills and concept understanding. 6. CO 3. Students are able to analyze and evaluate simulation results, and integrate them with related theories or concepts to enhance their practical understanding in the specific field. 7. CO 4. Students are expected to be able to use simulation to develop analytical skills in facing real-world challenges through a safe and structured approach.
Content	Development of Practical Simulation course is a 3 (2-1) credit course. includes an introduction to basic simulation principles and techniques applied in various disciplines, such as education, business, and engineering, creating and utilizing simulations to replicate real-world situations, identifying training needs, and developing realistic scenarios that support real-world learning and experimentation.
Study/Exam Achievements	Participants are evaluated based on ; Midterm Exam 20% Final Exam 20% Assignment 10% Project Assignment 50 % The initial cut - off points for grades A, B+ , B, C+ ,C, and D should not be less than 85%, 80%, 75%, 70%, 65%, 60%, 55%, 50%, and 40%, respectively.
Examination Methods	1. Midterm Exam (UTS) ✓ UTS is held at the 8th meeting ✓ UTS is a oral test in the form of objective, and carried out in the classroom with an implementation time of 120 minutes according to the module schedule



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	✓ UTS is carried out to see the achievements of the PLO and CO which are in accordance with the characteristics of the Measurement and Testing 2. Final Exam (UAS) ✓ UAS is held at the 16th meeting ✓ UAS is a oral test in the form of objectiv, and carried out in the classroom with an implementation time of 120 minutes which follows the UAS implementation schedule of the department ✓ UAS is carried out to see the achievements of the PLO and CO which are in accordance with the characteristics of the Measurement and Testing. 3. Assignments ✓ Assignments are given as individual tasks or group tasks and submitted in a limited time. ✓ The assignments are carried out to see the achievements of the PLO and CO which are in accordance with the characteristics of the Measurement and Testing. 4. Project Assignment ✓ Project assignment is given as group task in making some of simple article and lesson plan about physics material ✓ Project assignment is carried out for one semester and presented at the end of semester ✓ Project assignment is carried out to see the achievements of the PLO and CO which are in accordance with the characteristics of the Evaluation of Educational Programme.
Forms of Media	LCD, whiteboard, and online resources



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Literature	1. Jaya, H. (2012). <i>Pengembangan laboratorium virtual untuk kegiatan praktikum</i>. Yogyakarta: Universitas Negeri Yogyakarta. 2. Kurniati, K. (2020). <i>Pengembangan Panduan Praktikum Laboratorium Spektroskopi pada Mata Kuliah Fisika Modern</i>. Jurnal Inovasi dan Pembelajaran Fisika, 2(1), 77-87. 3. Nisa, F., & Adi, S. (2020). <i>Simulasi Pembelajaran Interaktif pada Praktikum</i>. Multinetics, 3(2), 124-130. 4. Zeidler, D. L. (2019). New directions in socioscientific issues research. <i>International Journal of Science Education</i>, 41(12), 1624-1646. 5. Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. <i>Teachers College Record</i>, 108(6), 1017-1054. 6. Lingga. W. 2006. Mikrokontroler AVR Seri ATmega8535 Simulasi, Hardware, dan Aplikasi. Andi Offset. Yogyakarta Link. 7. Wolfgang. 1993. Pengukuran, Pengendalian dan Pengaturan dengan PC. PT Elexmedia Komputindo. Jakarta
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PLO and CO Mapping

	PLO1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	PLO 11
CO 1			✓								
CO 2			✓								
CO 3						✓					
CO 4							✓				

