#### 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	ICT-Based Physics Learning				
Module Level, if Applicable	Bachelor				
Code	KFI620213				
Sub-Heading, (*if Applicable)	-				
Classes, (*if Applicable)	-				
Description	The ICT-Based Physics Learning course aims to provide an in-depth				
	understanding of the ICT-Based Physics Learning in physics, as well				
	as their linkages to Social Science Issues (SSI), Technological				
	Pedagogical Content Knowledge (TPACK), and Nature of Science				
	(NOS). In this course, students will learn concepts such as				
	computer-based learning, Blended E-learning, WEB-based learning,				
	various ICT-based media, characteristics of each ICT-based learning				
	media, selection of learning media, development of physics teaching				
	materials, making physics learning presentations with PowerPoint,				
	designing / design blended learning physics, Videos and physics				
	animations, experimental simulations Phet.colorado.edu, physics				
	teaching material e-modules, physics learning blogs and e-learning,				
	analyzing various LMS, CBT physics. This learning is very important				
	because there are several main problems in ICT-based physics learning				
	including limited access to devices and the internet, teachers' digital				
	skills, limited virtual practicum, low student motivation, evaluation				
	challenges, lack of social interaction, difficulty choosing effective				
	learning resources, dependence on paid platforms, and data security				
	issues. In addition, students will be taught to integrate technology into				
	learning, students will learn how to select and use appropriate ICT				
	tools, such as simulations, learning apps, and social media, to support				
	the teaching of physics concepts. Students use apps and platforms such				
	as PowerPoint Text, Google Classroom, Learning Management				

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	System, Moodle, etc. Through an understanding of NOS, students will
	be trained to teach students to think critically about scientific
	knowledge and educate them on how physics theories can change with
	the development of research and technology.
Semester	5th
Module Coordinator	Prof. Dr. Agus Suyatna, M.Si.
Lecturers	Team Teaching of ICT-based Physics Learning
Language	Indonesian/English
Classification With in the	Study Program Compulsory Course
Curriculum	
Teaching Format/Class Hours	Learning activity can be carried out in the form of
Per Week During the Semester	1. Lecture or students' response:
	a. Face to face: 50 minutes/SKS
	b. Structured activity: 60 minutes/SKS
	c. Independent activity: 60 minutes/SKS
	2. Laboratory activity: 170 minutes/SKS
Teaching methods	In class activity: Team Based Project, presentation
	Structured activity: Group Discussion
	Independent activity : Expository
Workload	1 CU (SKS) for bachelor degree equal to 3 work hours per week or
	170 minutes for lecture or students' response. 2x50 minutes face to
	face, 2x60 minutes structured tasks, 2x60 minutes independent
	learning. 1 CU (SKS) for bachelor degree equal to 1 work hours per
	week or 170 for laboratory activity. for 16 weeks (including mid and
	final exam), a total of 136 hours/semester. One CU
	equals to 1.51 ECTS
Credit Points	3 (2-1) CU (SKS) = 3 x 1.51 = 4.53 ECTS
Prerequisites Courses	-

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Course	Outcomes (	(CO)	)
Course	Outcomes (	(CC)	,

- 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. CO-1: Students are able to identify the characteristics of ICT-based physics learning in schools based on research results
- 4. CO-2 : Students are able to identify the characteristics of digital teaching materials for learning physics in schools based on research results.
- 5. CO-3 : Students are able to optimally develop physics learning presentation materials for high school level with Power Point.
- 6. CO-4 : Students are able to make blended learning designs for physics learning for high school level including offline synchronous, online synchronous, offline asynchronous, online asynchronous learning settings.
- 7. CO-5 : Students are able to have the skills to download physics teaching materials from various online sources.
- 8. CO-6: Students are able to analyze the advantages and disadvantages of high school physics e-learning from various sources.
- 9. CO-7: Students are able to identify the characteristics of the LMS plate forms that are suitable for learning physics at school.
- 10. CO-8 : Students are able to develop computer-based tests for learning physics at school.
- 11. CO-9 : Students are able to visualize simple physical phenomena using macromedia flash or others
- 12. CO-10: Making physics learning e-modules at school.
- 13. CO-11 : Students are able to develop school physics learning videos with a YouTube plate form.

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14. CO-12 : Students are able to make LMS-based e-learning for					
school physics learning.					
This course will study computer-based learning, Blended E-learning,					
WEB-based learning, various ICT-based media, characteristics of each					
ICT-based learning media, selection of learning media, development of					
physics teaching materials, making physics learning presentations with					
PowerPoint, designing / design blended learning physics, Videos and					
physics animations, experimental simulations Phet.colorado.edu,					
physics teaching material e-modules, physics learning blogs and					
e-learning, analyzing various LMS, CBT physics.					
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.					
1. Midterm Exam (UTS)					
✓ UTS is held at the 8th meeting					
✓ UTS is a written test in the form of objective and essay, and carried					
out in the classroom with an implementation time of 120 minutes					
according to the module schedule					
✓ UTS is carried out to see the achievements of the PLO and CO					
which are in accordance with the characteristics of the ICT-based					
Physics Learning module					
2. Final Exam (UAS)					
✓ UAS is held at the 16th meeting					

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	✓ UAS is exam 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 ICT-based						
	Physics Learning module.						
	3. Project Assignment						
	✓ Project assignment is given as group task						
	✓ 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						
	ICT-based Physics Learning module.						
	4. Assignments						
	✓ Assignments are given as exercise in each meeting in the form of						
	worksheet and independent task						
	✓ Assignments are about analyzing simple problems in physics and						
	solving them with the concept of ICT-based Physics Learning						
	✓ 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						
	ICT-based Physics Learning module						
Forms of Media	LCD, whiteboard, and online resources						
Literature	1. Agus Suyatna. 2016. Visualisasi Fenomena Fisika:Membuat Fisika						
	Menarik. Innosains. Yogyakarta						
	2. Mukhtar dan Iskandar. 2012. Desain Pembelajaran Berbasis TIK.						
	Jakarta: Referensi.						

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3	8. Rusman. 2012. Belajar dan Pembelajaran Berbasis Komputer.
	Bandung: Alfabeta.
4	Sutrisno. 2012. Kreatif Mengembangkan Aktivitas Pembelajaran
	Berbasis TIK. Jakarta: Referensi.



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PLO and CO Mapping

	PLO	1appimg 	PLO	PLO	PLO 5	PLO	PLO	PLO	PLO	PLO	PLO	
	1	TLU 2	PLU 2	3	3 4	PLU 5	6	7	8	9	10	11
CO 1	√											
CO 2	1											
CO 3		V										
CO 4		V										
CO 5		V										
<b>CO</b> 6		V										
CO 7		V										
CO 8		V										
CO 9		V										
CO		V										
10												
CO		V										
11												
CO		V										
12												