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

Module Name	*Physics Visualization*
Module Level, if Applicable	Bachelor
Code	KFI620328
Sub-Heading, (*if Applicable)	-
Classes, (*if Applicable)	-
Description	Physics Visualization is a course that focuses on the techniques and tools used to visualize complex physics concepts to make them easier to understand. In this course, students will learn various visualization methods, including graphics, simulations, animations, and the use of specialized software to illustrate physics phenomena. The course also addresses Technological Pedagogical and Content Knowledge (TPACK), integrating knowledge of technology with physics pedagogy and content to create interactive and engaging learning experiences. In addition, social issues such as equal access to digital educational resources, as well as the impact of visualization on concept understanding across different social backgrounds, will be analyzed. Through practical projects and real case studies, students will develop visualization tools that can be applied in educational contexts, such as creating interactive simulations to help students understand motion, forces, or waves. With the acquired skills, students are expected to be able to apply physics visualization techniques in teaching and promote better understanding of physics concepts among students.
Semester	6th

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Module Coordinator	Prof. Dr. Agus Suyatna, M.Si
Lecturers	Team Teaching of Physics Visualization
Language	Indonesian/English
Classification With in the Curriculum	Study Program Elective Courses in the third year (6th 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 d. Laboratorium activity : 170 minutes/SKS
Teaching methods	In class activity : Team Based Project Structured activity : Group Discussion using worksheet Independent activity : Individual task Laboratorium activity : Practicum
Workfload	1 CU (SKS) for bachelor degree equal to 3 work hours per week or 280 minutes. 2x50 minutes face to face, 2x60 minutes structured tasks, 2x60 minutes independent learning/ 1x170 minutes laboratorium activity, for 16 weeks (including midterm 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	
Course Outcomes (CO)	PLO 3 : Applying Technology, Pedagogy, and Content Knowledge (TPACK) in planning, teaching, and evaluating physics learning. PLO 6 : Able to develop physics learning resources according to the needs and development of science and technology.

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	CO 1 : *Students have the skills to visualize physical phenomena through independent analysis of subject matter (Pedagogical Content Knowledge) in accordance with instructional design principles, scientific approaches, utilizing ICT.* CO 2 : *Students master the principles of science-based physics learning media development, contextual technology, especially ICT and the surrounding environment.*
Content	
Study/Exam Achievements	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 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 Solid State Physics module

	2. Final Exam (UAS) ✓ UAS is held at the 16th meeting ✓ UAS is a written test in the form of objective and essay, 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 Solid State Physics 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 Solid State Physics 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 Solid State Physics

	✓ 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 Solid State Physics module
Forms of Media	E-learning, e-book, video
Literature	1. Agus Suyatna. 2016. *Visualisasi Fenomena Fisika:Membuat Fisika Menarik*. Innosains. Yogyakarta. 2. Astuti, Dwi. 2006. *Teknik Membuat Animasi Profesional Menggunakan Macromedia Flash 8*. Andi. Yogyakarta. 3. Dwi Satya Palupi, Suharyanto, Karyono. 2008. *Fisika untuk SMA dan MA Kelas XI Jilid 2*. Pusat Perbukuan Depdiknas. Jakarta. 4. Karyono, Dwi Satya Palupi, Suharyanto. 2008. *Fisika untuk SMA dan MA Kelas X Jilid 1*. Pusat Perbukuan Depdiknas. Jakarta. 5. Mukhtar dan Iskandar. 2012. *Desain Pembelajaran Berbasis TIK*. Jakarta: Referensi. 6. Rusman. 2012. *Belajar dan Pembelajaran Berbasis Komputer*. Bandung: Alfabeta. 7. Sutrisno. 2012. *Kreatif Mengembangkan Aktivitas Pembelajaran Berbasis TIK*. Jakarta: Referensi. 8. Pramono, Andi. 2004. *Berkreasi Animasi dengan Macromedia Flash MX Professional 2004*. Andi: Yogyakarta. 9. Prasetyo, Fransiskus Hadi. 2007. *Desain dan Aplikasi Media Pembelajaran dengan Menggunakan Macromedia FLASH MX*. Ardana Media: Yogyakarta.

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PLO and CO Mappimg

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