

**BACHELOR OF INFORMATICS PROGRAM**  
**DEPARTMENT OF INFORMATICS**  
**FACULTY OF INTELLIGENT ELECTRICAL AND INFORMATICS TECHNOLOGY**  
**INSTITUT TEKNOLOGI SEPULUH NOPEMBER**

Module name	<b>Computer Graphics</b>
Module level	Undergraduate
Code	IF184502
Courses (if applicable)	<b>Computer Graphics</b>
Semester	Fall (Gasal) (5)
Contact person	Dr. Nanik Suciati, S.Kom, M.Kom
Lecturer	Hadziq Fabroyir, PhD Anny Yuniarti, S.Kom, M.Comp.Sc Wijayanti Nurul Khotimah, S.Kom, M.Sc
Language	Bahasa Indonesia and English
Relation to curriculum	1. Undergraduate degree program; mandatory; 3 <sup>rd</sup> , 5 <sup>th</sup> , or 7 <sup>th</sup> semester. 2. International undergraduate program; mandatory; 3 <sup>rd</sup> , 5 <sup>th</sup> , or 7 <sup>th</sup> semester.
Type of teaching, contact hours	1. Undergraduate degree program: lectures, < 60 students, 2. International undergraduate program: lectures, < 40 students
Workload	1. Lectures: 3 x 50 = 150 minutes (2 hours 30 minutes) per week. 2. Exercises and Assignments: 3 x 60 = 180 minutes (3 hours) per week. 3. Private study: 3 x 60 = 180 minutes (3 hours) per week.
Credit points	3 credit points (sks).
Requirements according to the examination	A student must have attended at least 80% of the lectures to sit in the exams.

regulations	
Mandatory prerequisites	Object Oriented Programming
	After completing this module, a student is expected to:

Learning outcomes and their corresponding PLOs	Students are able to explain the basics of graphics systems and graphics pipeline in a graphics library.	
	Students are able to demonstrate a simple graphics program, based on the example.	
	Students are able to create graphics programs that take advantage of the World Windows and Viewport.	
	Students are able to create a simple interactive graphics application program.	
	Students are able to explain the vector tools.	
	Students are able to explain the concept of geometry, representation, and object transformations.	
	Students are able to create a graphics program that involves the concept of object transformations.	
	Students are able to explain the concept of object modeling using Polygonal Meshes.	
	Students are able to explain the concept of a hierarchy of objects in 2D and 3D modeling.	
	Students are able to apply the concept of 3D viewing into a graphics program.	
	Students are able to apply the concept of rendering into a graphics program.	
	Students are able to explain the concept of raster display.	
	Students are able to apply the concept of depiction curves and surfaces into a graphics program.	
Content	<p>Knowledge:</p> <p>Mastering the concepts and principles of computer graphics including modeling, rendering, animation, and visualization, also mastering the concepts and principles of human computer interaction.</p> <p>Specific Skill:</p> <p>Able to develop application using computer graphics principles including modeling, rendering, animation, and visualization, implement human computer interaction principles, and evaluate the efficiency of the appropriate interface in the application developed.</p>	
Study and examination requirements and forms of examination	Mid-terms examination and Final examination.	
Media employed	LCD, whiteboard, websites, books (as references), etc.	

Assessments and Evaluation	<p>CO1: Problem 1 in mid-term exam (5%) and exercise 1 (5%) - 10%</p> <p>CO2: Problem 2 in mid-term exam (5%) and exercise 2 (5%) - 10%</p>
	<p>CO3: Problem 3 in mid-term exam (5%); problem 4 in mid-term exam (5%); assignment 1: make an algorithm and computer program (5%); and exercise 3 (5%) - 20%</p> <p>CO4: Problem 5 in mid-term exam (5%); problem 1 in final exam (5%) and exercise 4 (5%) - 15%</p> <p>CO5: Problem 2 in final exam (5%); assignment 2: make a function and recursive (5%); and exercise 5 (5%) - 15%</p> <p>CO6: Problem 3 in final exam (5%) and exercise 6 (5%) - 10%</p> <p>CO7: Problem 4 in final exam (5%) and exercise 7 (5%) - 10%</p> <p>CO8: Problem 5 in final exam (5%) and assignment 3: make a program based on a real-life problem (5%) - 10%</p>
Reading List	<p>FS Hill Jr, "Computer Graphics using OpenGL".</p> <p>Edward Angel, "Interactive Computer Graphics: A Top-Down Approach Using OpenGL", Sixth Edition, Pearson International Inc, 2012.</p> <p>Edward Angel, "OpenGLTM: A Primer", Third Edition, AddisonWesley, 2002.</p> <p>Frank Luna, "Introduction to 3D Game Programming with DirectX 11", Mercury Learning &amp; Information, 2012.</p> <p>Jason Zink, "Practical Rendering and Computation with Direct3D", A K Peters, 2011.</p> <p>Donald Hearn and M. Pauline Baker, "Computer Graphics with OpenGL", 3rd Edition.</p> <p>Alan Watt, "3D Computer Graphics", Addison-Wesley.</p>