UNIVERSITAS GADJAH MADA

Faculty of Mathematics and Natural Sciences

Department of Computer Science and Electronics

Sekip Utara Bulaksumur Yogyakarta 55281 Telp: +62 274 546194 Fax: +62 274 546194 Email: dep-ike.mipa@ugm.ac.id

Doctoral Programme of Computer Science

Telephone	: (0274)546194
Email	: s3ik.mipa@ugm.ac.id
Website	: http://dcse.fmipa.ugm.ac.id/site/id/s3-ilmu-komputer/

Module name	: REAL **T**IME **S**YSTEM
Module level, if applicable	: **D**OCTORAL
Code, if applicable	: MII 227845
Semester(s) in which the module is taught	: 1 (Odd)
Person responsible for the module	: Dr. Tri Kuntoro Priyambodo, M.Sc.
Lecturer(s)	: Dr. Tri Kuntoro Priyambodo, M.Sc.
Language	: Indonesia
Relation to curriculum	: -
Credit points	: 3
Type of teaching, contact hours	: 170 minutes every weeks for 14 class
Workload	: (1) Lectures and discussion: 3 x 50 = 150 minutes (2.5 hours) per week. (2) Exercises and assignments: 3 x 60 = 180 minutes (3 hours) per week. (3) Independent study: 3 x 60 = 180 minutes (3 hours) per week.
Requirements according to the examination regulations	: Students must attending the class at least 75%.
Recommended prerequisite	:
Module objectives/ intended learning outcomes	CO1: Able to explain the basic concept and state of the art of real time system deeply. CO2: Able to model a real time system from daily real problem. CO3: Able to analyse the requirements of hard wares, soft wares, and communication infrastructures to support real time system. CO4: Able to design and built IoT-based real time system.
Content	: Definition of real time system, applications of real time system (embedded system processed by microprocessor, real time system at

	system monitoring), basic characteristics of real time system (real time control, concurrent control of separate system components, low-level programming, support for numerical computation, largeness and complexity, extreme reliability, and safety). Topics: Basic Real Time Concept, Basic Architecture ang Hardware consideration, System interface and buses, Central Processing Unit, Memory, Programming Language for real time system (using C/Real time POSIX), and Real Time Specification for Java (RTSJ), programming schedulable system, and tolerating time fault.

Study and examination requirements and forms of examination :

CO	Assessment methods	Types	Percentage	Total of Percentage
1	Quiz 1 Assignment 1 Midterm 1	Formative Summative Summative	3% 10% 5%	18%
2	Quiz 2 Assignment 2 Midterm 2 Final term 1	Formative Summative Summative Summative	3% 10% 10% 5%	28%
3	Quiz 3 Assignment 3 Midterm 3 Final term 2	Formative Formative Summative Summative	4% 10% 5% 5%	24%
4	Teamwork Final term 3	Formative Summative	15% 10%	25%
				100%

Media employed	: The course will be delivered in the blended method, combining presentation and discussion in the class along with online asynchronous LMS (eLOK).
Reading List	: Babamir, Sayed Morteza., Real Time Systems, Architecture, Schedulling, and Application, Intechopen.com, 2012

The Mapping of COs to PLOs

COs	PLOs							
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
CO1				■				
CO2						■		
CO3					■			
CO4							■	

The PLO of DP-CS

PLO	Knowledge Area	PLO Description
PLO1	[Values and principles]	A graduate should be devoted to God Almighty, uphold the humanity values, internalize academic values and ethics, responsible in working around expertise independently.

Managerial Capability		
PLO2	[Professional attitudes]	A graduate should have good interpersonal skills; able to work together within the organization, both as a leader and a member; able to be the initiator; able to manage and delegate tasks; and have a sense of responsibility for their own work as well as take responsibility for the achievement of the organization's work.
PLO3	[Communication skills]	A graduate should be able to communicate effectively and efficiently with stakeholders from various backgrounds; use English well; and able to write and present scientific papers correctly and well.
PLO4	[Life-long learning]	A graduate should be up to date with the state-of-the-art especially in computer science field, able to take parts in the development of computer science field that is engaged in and relate it to other fields throughout life.
Working Capability		
PLO5	[Problem-solving and Scientific skills]	A graduate should be able to analyse science and technology problems in the computer science field, develop alternative solutions through intra disciplinary, interdisciplinary, and trans disciplinary approaches to produce innovative, original, and tested works.
PLO6	[Ability to formulate and do research]	A graduate should be able to formulate research problems through critical, exploratory, and innovative studies both independently and in groups of computer science field that is engaged in and present research results in a scientific paper at regional or international level.
Mastering Knowledge		
PLO7	[Fundamental knowledge]	A graduate should be able to develop knowledge in the field of computer science that is engaged, which includes abstraction, complexity, evolution and philosophy of changes or developments in the field of science.
PLO8	[Applied knowledge]	A graduate should be able to develop theoretical, philosophical, and applied concepts in the field of computer science that is engaged in, and to represent them in a structured and systematic manner.