

**PROGRAM PLAN AND
SEMESTER LEARNING
ACTIVITIES
(RPKPS)
SCHOOL YEAR
2021/2022**



Information Technology (Bachelor) Department of Electrical
Engineering and Information Technology
Digital Transformation
TIF215212 (3 credits)

Mentoring Team:

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**GADJAH MADA UNIVERSITY,
FACULTY OF ENGINEERING
2021**



Gadjah Mada University
 Faculty of Mathematics and Natural Sciences
 Department of Physics / S1 Geophysics Study
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SEMESTER LEARNING PROGRAM AND ACTIVITY PLAN (RPKPS)

Course Code	Course Name	Weight (credit)		Semester	Course Status	Prerequisite Courses
TIF215212	<i>Transformasi Digital</i>	T: 3	P: 0	-	<i>Cross-disciplinar</i>	-
Course Brief Description	<p>This subject is held <i>online</i> with lecture material which is a collaboration of various technology topics in the industrial era 4.0 / <i>society 5.0</i> through multidisciplinary collaborative learning. The main purpose of learning this course is to open collaboration between fields related to the digital transformation process through critical thinking and system <i>thinking</i>. Lecture participants were also given the basis of using <i>computational thinking</i> in making simple programs (in Python programming language).</p> <p>The material studied consists of Introduction to Digital Transformation, Digital Culture, Critical and Systemic Ways of Thinking, Computational Logic, Python Programming Basics, Information Security and Privacy Awareness, <i>IoT</i>, <i>Big Data</i>, and Artificial Intelligence.</p> <p>The emphasis carried out in learning is the use of critical and systemic thinking about important concepts and basics, as well as insights into the implementation of the use of these technologies to then have ideas / ideas for multidisciplinary projects that are outlined in the form of wikis, papers, and videos to be presented. The multidisciplinary <i>project-based learning</i> approach aims to motivate students to collaborate with other fields.</p> <p>This course will also measure the improvement of the independent learning ability of each lecture participant.</p>					
Graduate Learning Outcomes (CPL) Charged to MK	CPL-2	Mastery of knowledge : Graduates are able to apply basic science (mathematics, physics, chemistry, biology, geology), and geophysics in general and their relationship with other sciences such as geology, geodesy, geochemistry, geography, computing and information technology.				
	CPL-5	Synthesis and Evaluation Skills : Graduates are able to interpret geophysical data in the form of solving advanced and reverse problems (inverse problems) in an integrated manner that have ambiguous characters, carry out interpretation by making models and / or solving simple forward and reverse problems and are skilled in the use of computers both for the purposes of solving geophysical problems and for communication and internet access				
Course Learning Outcomes (CPMK)	After completing the learning of this course, students are expected to be able to:					
	CPMK1	analyze the concepts, processes, roles, and applications of <i>IoT</i> , <i>Big Data</i> , and Artificial Intelligence in various fields. [CPL1]				
	CPMK2	using <i>computational thinking</i> in creating simple programs (in Python programming language). [CPL1]				
	CPMK3	designing the idea of "digital transformation" through critical thinking and systemic thinking to solve problems in various fields with an approach to the use of <i>IoT</i> , or <i>Big Data</i> , or Artificial Intelligence in a multidisciplinary collaborative manner. [CPL5]				

	CPMK4	Reflecting on digital culture and changes that occur in the industrial era 4.0 / society 5.0 and the impact that will occur and improve <i>self-regulated learning</i> skills as part of efforts to become lifelong learners. [CPL5]																	
CPL mapping with CPMK	<table border="1"> <thead> <tr> <th></th> <th>CPMK1</th> <th>CPMK2</th> <th>CPMK3</th> <th>CPMK4</th> </tr> </thead> <tbody> <tr> <td>CPL-2</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CPL-5</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>					CPMK1	CPMK2	CPMK3	CPMK4	CPL-2					CPL-5				
	CPMK1	CPMK2	CPMK3	CPMK4															
CPL-2																			
CPL-5																			
The Relationship of CPMK with Learning Materials and Forms, as well as Time Allocation		Learning Materials	Forms of Learning	Time Allocation															
	CPMK1	<ol style="list-style-type: none"> Digital Culture, Communication, Collaboration and Introduction to Digital Transformation The Role and Application of <i>IoT, Big Data, and AI in the Industry 4.0/Society 5.0 Era</i> in Various Fields, as well as General Terms (as well as delivering the Final Project Theme of the Course and starting to create a wiki) 	Interactive lectures and case discussions	4 hours															
	CPMK2	<ol style="list-style-type: none"> Introduction to <i>Computational Thinking</i> and Python Programming Language Data Types, Variables, Basic Output Input Operations, and Basic Operators Boolean Values, Logical and Conditional Operators, Loops, List Data Types, and Operations in Lists Use of Modular Programming (Functions), Tuples, Dictionaries, and Data Processing Simple Program Creation Review 	Interactive lectures and practice	10 hours															
	UTS/Project Task Results/Case Analysis																		
CPMK3	<ol style="list-style-type: none"> <i>System & Critical Thinking</i> as a Thinking Tool Phase-1 Group Task Presentation (Phase presentation of the final project topic and the reason why it took the topic) IoT Concepts, Architecture, Protocols, and Technologies, and Their Application in various fields (<i>healthcare, industry, and others</i>) 	Interactive lectures, case discussions, presentations	10 hours																

		11. Concepts, Architectures, and Processes in Big Data, and Their Application in various fields (<i>healthcare</i> , industry, and others) 12. Concepts, Architecture, and Processes in AI, and their application in various fields (<i>healthcare</i> , industry, and others)					
	CPMK4	13. Digital Security and Privacy 14. Presentation of Phase-2 Group Assignments (Intermediate Phase); Group 3 Task Reflection (<i>Peer Assessment</i> Project Idea Task)	Interactive lectures, Presentations, discussions, <i>Peer Assessment</i> Project Assignments (Idea)			4 hours	
UAS/ Project Task Results/ Case Analysis							
Learning Methods	SCL: Team-based Project						
Student Learning Experience	<p>When in Sync: actively discuss materials and cases.</p> <p>When asynchronous/standalone/structured assignment:</p> <ul style="list-style-type: none"> ● Group learning ● Take a quiz ● reflection of material (using Wiki) ● reviewing literature and problems in society ● Work on idea projects in a multidisciplinary manner 						
Access Learning Media / LMS and Offline & Online Percentage	https://elok.ugm.ac.id Offline: 0% Online: 100%						
Assessment Methods and Alignment with CPMK	Assessment Techniques	Assessment Percentage	Criteria/ Indicators	CPMK 1	CPM K 2	CPM K 3	CPMK 4
	Participatory Activities ^{*)}	20%	1. Contribution; Presentation; [Presentation Rubric] 2. Contribution; [Wiki Activity Section]			10%	10%
	Result <i>Project/Results</i>	30%	Problem Analysis;			30%	

	Case Study/ PBL Results^{*)}		Project-based Learning <i>Assessment Rubric</i>				
Cognitive							
	<i>Skill-based Assessment (SBA)</i>	10%	Task Grades		10%		
	Quiz	5%	Quiz Grades	5%			
	UTS	15%	UTS scores	5%	10%		
	UAS	20%	UAS value	10%			10%
	Total	100%					
*) can also be obtained from UTS or UAS which is the result of participatory activities or <i>project / case study results</i> . In accordance with IKU 7, the percentage of participatory activities and project results/case studies/PBL results is at least 50% .							
Reference List	Main references: <ol style="list-style-type: none"> Digital Modules in Netacad PCAP-Python Essentials Digital Transformation Module in eLOK/SPADA/ICE Big Data for Dummies, Hurtwitz, J.; Nugent, A.; Halper, F.; Kaufman, M. Additional References: <ol style="list-style-type: none"> Luckin, R., Holmes, W., Griffiths, M. & Forcier, L. B. (2016). Intelligence Unleashed. An argument for AI in Education. London: Pearson. Various relevant external sources 						
Name of Lecturer (Team Teaching)	<ol style="list-style-type: none"> Dr. Sri Suning Kusumawardani, ST, MT Ir. Lukito Edi Nugroho, M.Sc., Ph.D Dr. Bimo Sunarfri Hantono, ST, M.Eng. Shukron Abu Ishaq Alfarozi, S.T., Ph.D. 						
Authorization	Drafting Date	Course Coordinator		Coordinator of Expertise (if applicable)		Chairman of DTETI	
	Jul 29, 2021	Dr. Sri Suning Kusumawardani, ST, MT		<i>Light Name Signature</i>		Ir. Hanung Adi Nugroho, S.T., M.E., Ph.D., IPM.	