API Programming

Module name	API Programming
Module level	Undergraduate
Code	IF221204
Courses (if applicable)	API Programming
Semester	5/6
Lecturer	Yisti Vita Via, S.ST, M.Kom (PIC)
Language	Bahasa Indonesia and English
Relation to curriculum	Elective; 5th or 6th semester
Type of teaching, contact hours	Lectures, < 60 students
Teaching Methods	Simulation, case study, project-based learning, problem-based learning
Workload	1. Lectures: 3 sks 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 regulations	A student must have attended at least 80% of the lectures to sit in the exams.
Mandatory prerequisites	Software Engineering
Courses description	API Programming involves working with data through APIs. This course explores the concepts and practices associated with manipulating data using APIs to address challenges related to web API handling and integrating APIs into third-party applications. Topics discussed in this course include: the fundamental concepts of data manipulation using APIs, the stages within the data manipulation process through APIs, statistical and syntactic approaches related to Rest APIs and API Extraction, an introduction to various methods for manipulating web APIs and desktop APIs, assessment methods within data manipulation through APIs, and several case studies demonstrating the application of data manipulation methods through APIs in addressing web API and desktop API manipulation issues.

Learning outcomes and their corresponding PLOs	After completing this module, a student is expected to:	
	CO1 Students are able to explain the concepts and terminologies related to data manipulation through APIs and are capable of discussing the application of methods for data manipulation through APIs, both from published journals and applications that have been properly integrated. (C2, A2)	PLO9,PLO10
	CO2 Students are able to apply and build each stage of data manipulation methods through APIs, within both theoretical understanding and practical execution. (C3, P4)	PLO9,PLO10

	CO3 Students are able to evaluate and perform the methods for manipulating Web APIs and Desktop APIs in data manipulation through APIs, using performance measurement evaluation methods correctly. (C5, P3)	PLO9,PLO10
Content	The subjects studied in this course include: understanding and Stages of Data Manipulation through APIs; Applications of Data Manipulation Methods through APIs; Workflow of Data Manipulation through APIs; Statistical and Syntactical Methods for Rest API and API Data Extraction in data manipulation through APIs; Web API Manipulation Methods in data manipulation through APIs; Desktop API Manipulation Methods in data manipulation through APIs; Algorithm Performance Measurement Evaluation Methods in data manipulation through APIs; and Implementation of Methods in data manipulation through APIs using Programming Languages.	
Media employed	LCD, whiteboard, websites, books (as references), online meeting, etc.	
Assessments and Evaluation	One written Midterm assessment (60 minutes) and one final oral exam (30 minutes), two short computer-based quizzes, take home written assignments	
Study and examination requirements and forms of examination	The final grade in the module is composed of: • Two short computer-based quizzes: 15% x 2 = 30% • Take-home written assignments : 15% • Written Midterm assessment: 25% • Final oral exam: 30% Students must have a final grade of 55.6% or higher to pass.	
Reading List	B. Kommadi, Go lang in depth: guide to program microservices, networking, database and APIs using Go Lang. BPB Publications, 2024, 438 pp. [Online]. Available: https://portal.igpublish.com/iglibrary/search/BPB0000715.html B. Pedro, *Building an API product: design, implement, and release API products that meet user needs*. Packt Publishing, 2024, 278 pp. [Online]. Available: https://portal.igpublish.com/iglibrary/search/PACKT0006989.html R. Parlika and P. W. Atmaja, "Realtime monitoring of Bitcoin prices on several Cryptocurrency markets using Web API, Telegram Bot, MySQL Database, and PHP-Cronjob," in *2020 6th Int. Conf. Inf. Technol. Sci. E-Business*, 2020. doi: 10.1109/ICITSE50062.2020.9321109. R. Parlika and P. Atmaja, "Use of the Web API as a basis for obtaining the latest data on bitcoin prices at 30 exchange places," *IOP Conf. Ser. Mater. Sci. Eng.*, 2021. doi: 10.1088/1757-899X/1098/6/062002. M. Amundsen, *Design and Build Great Web APIs: Robust, Reliable, and Resilient*. Raleigh, NC: The Pragmatic Bookshelf, 2020.	