UNIVERSITAS GADJAH MADA
Faculty of Mathematics and Natural Sciences
Department of Computer Science and Electronics
Sekip Utara Bulaksumur Yogyakarta 55281 Telp: +62 274 546194 Email: dep-ike.mipa@ugm.ac.id Website: http://dcse.fmipa.ugm.ac.id

Bachelor in Electronics and Instrumentation
Telp : +62 274 546194
Email : kaprodi-s1-elins.mipa@ugm.ac.id
Website : http://dcse.ugm.ac.id/

MODULE HANDBOOK

Module name	**Experiment on Programming**
Module level	Undergraduate
Code	MII21-1202
Courses (if applicable)	Experiment on Programming
Semester	Fall (Odd)
Contact person	Drs. Janoe Hendarto, M.Kom.
Lecturer	Drs. Janoe Hendarto, M.Kom. I Gede Mujiyatna, S.Si., MKom. Isna Alfi Bustoni, S.T, M.Eng.
Language	Bahasa Indonesia and English
Relation to curriculum	1. Undergraduate degree program, compulsory, 1st semester. 2. International undergraduate program, compulsory, 1st semester.
Type of teaching, contact hours	1. Undergraduate degree program: lectures, < 30 students, 2. International undergraduate program: lectures, < 30 students.
Workload	1. Lectures: 2 x 50 = 100 minutes (1 hours 40 menit) per week. 2. Exercises and Assignments: 2 x 60 = 120 minutes (2 hours) per week. 3. Private study: 2 x 60 = 120 minutes (2 hours) per week.
Credit points	1 credit points (sks).
Requirements according to the Examination regulations	A student must have attended at least 75% of the lectures to sit in the exams.
Recommended prerequisites	-

<table>
<tr><td>Learning outcomes (course outcomes) and their corresponding PLOs</td><td>After completing this module, a student is expected to:
CO1 Have knowledge of basic programming concepts, algorithms, and can think computationally.
CO2 Have knowledge about data structures and C++ programming language.
CO3 Have knowledge about data types for array and records / struct and can implement them in a computer program.
CO4 Have knowledge about modular programming and can implement it in a computer program.
CO5 Be able to explain and competent in how to implement sorting and searching algorithms.
CO6 Be able and competent in solving more complex programming problems.

<table><tr><th colspan="2">PLO</th><th>CO1</th><th>CO2</th><th>CO3</th><th>CO4</th><th>CO5</th><th>CO6</th></tr><tr><td rowspan="5">Program Learning Outcome (PLO)</td><td>PLO1</td><td></td><td></td><td></td><td></td><td></td><td>√</td></tr><tr><td>PLO2</td><td>√</td><td>√</td><td></td><td></td><td></td><td></td></tr><tr><td>PLO3</td><td></td><td></td><td>√</td><td>√</td><td></td><td></td></tr><tr><td>PLO4</td><td></td><td></td><td></td><td></td><td>√</td><td></td></tr><tr><td>PLO5</td><td></td><td></td><td></td><td></td><td></td><td>√</td></tr></table></td></tr>
<tr><td>Contents</td><td>1. Programming concepts.
2. Introduction to Computational Thinking and Algorithms
3. Kinds of data types and variable declarations
4. Arithmetic, relational and logical operations
5. Control Structures (Conditional and loop)
6. Basic Data Structures: arrays, structs, strings, pointers and files
7. Introduction to Functions: definitions, local and global variables, function parameters
8. Recursive Functions
9. Simple Sorting Algorithm: Buble Sort, Insertion Sort, Selection Sort
10. Advanced Sorting Algorithms: Quick Sort, Merge Sort
11. Searching Algorithms: Binary, Sequential and Hashing
12. Problem Solving</td></tr>
<tr><td>Study and examination requirements and forms of examination</td><td>The evaluation is done in 3 forms, namely:
1. Response exam/Semester test,
2. Eight tasks, individual assignments to be completed within a certain timeframe, and
3. Final Project, doing programming project, presentations and discussions
Assessment is done using benchmark assessment, with the aim of measuring the level of student understanding related to the target and class rank.</td></tr>
<tr><td>Media employed</td><td>Laptop, LCD, blackboard, and websites.</td></tr>
</table>

<table>
<tr><td>Assessments and Evaluation</td><td>
<table>
<tr><th>Type</th><th>Percentage</th><th>CO1</th><th>CO2</th><th>CO3</th><th>CO4</th><th>CO5</th><th>CO6</th></tr>
<tr><td>Individual Task</td><td>40%</td><td>√</td><td>√</td><td>√</td><td>√</td><td>√</td><td></td></tr>
<tr><td>Group Task</td><td>20%</td><td></td><td></td><td></td><td></td><td></td><td>√</td></tr>
<tr><td>Semester test</td><td>40%</td><td>√</td><td>√</td><td>√</td><td>√</td><td>√</td><td></td></tr>
<tr><td>Total</td><td>100%</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>Reading List</td><td>W1 : Thomas H. Cormen, Charles E. Leiserson, et.al., Introduction to Algorithms, third edition, 2014.
W2 : Brian W. Kernighan, Dennis M., The C Programming Language 2nd Edition. Ritchie, ISBN-13: -0131103627.
A1 : Adam Drozdek, Data Structures and Algorithms in C ++, 2012, ISBN 0-534-37597-9.
A2 : Munir, R., 2004, Algoritma dan Pemrograman, Informatika, Bandung.</td></tr>
</table>

Created date : May 28, 2021

Revision date : June 28, 2022