UNIVERSITAS NEGERI YOGYAKARTA

FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DEPARTMENT OF MATHEMATICS EDUCATION

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Bachelor of Education in Mathematics　　　　　**MODULE HANDBOOK**

Module name:	Algorithm and Programming
Module level, if applicable:	Undergraduate
Code:	MAT6310
Sub-heading, if applicable:	-
Classes, if applicable:	-
Semester:	2nd
Module coordinator:	Nur Hadi W, MEng
Lecturer(s):	Nur Hadi W, M.Eng.; Sahid, M.Sc.; Emut, M.Si
Language:	Bahasa Indonesia
Classification within the curriculum:	Compulsory course
Teaching format / class hours per week during the semester:	150 minutes lectures and 180 minutes structured activities per week.
Workload:	Total workload is 136 hours per semester which consists of 150 minutes lectures, 180 minutes structured activities, and 180 minutes self-study per week for 16 weeks.
Credit points:	3
Prerequisites course(s):	Information and communication technology (MAT6204)
Course outcomes:	After taking this course the students have ability to:

	CO1. Demonstrate collaborative attitude and independence in carrying out individual tasks and group assignments CO2. Mastering the concepts and basics of Computer Programming Algorithms CO3. Analyze a computer program from the input, output and process aspects CO4. Create algorithms and computer programs with the concept of computer programming languages to solve problems. CO5. Make a simple program project.
Content:	This course discusses about problem solving (mathematics), preparation and presentation of the steps to solve it, and programming using the Pascal Programming Language. The topics studied include: (1) problem solving and solution, (2) algorithms and how they are presented, (3) the structure of Pascal language and data types, (4) input-output, variable, and arithmetic operations commands, (5) logical operators and IF-THEN-ELSE, and CASE-OF decision making structures, (6) looping iterations and recursions, (7) looping structures FOR-TO-DO, WHILE-DO, and REPEAT-UNTIL, (8) use of functions - mathematical functions, (8) dimensioned / indexed (array) data types, (9) modular programming: procedures and functions, (10) recording data types (records),(complex data structures), and (11) text data types (text)
Study/exam achievements:	Attitude assessment is carried out at each meeting by observation and / or self-assessment techniques using the assumption that basically every student has a good attitude. The student is given a value of very good or not good attitudeif they show it significantlycompared to other students in general. The result of attitude assessment is not a component of the final grades, but as one of therequirements to pass the course. Students will pass from this course if at least have a good attitude. The final mark will be weight as follow: <table><tr><th>No</th><th>CO</th><th>Assesment Object</th><th>Assessment Techniques</th><th>Weight</th></tr><tr><td>1</td><td>CO 2</td><td>Presentation</td><td>Observation</td><td>10%</td></tr><tr><td>2</td><td>CO 3 and CO 4</td><td>a. Individual assignments b. group assignments c. MID d. Final Exam</td><td>Written test</td><td>10% 10% 25% 30%</td></tr><tr><td>3</td><td>CO 5</td><td>Presentation and Project</td><td>Observation</td><td>15%</td></tr><tr><td colspan="4">Total</td><td>100%</td></tr></table>
Forms of media:	

		Board, LCD Projector, Laptop/Computer
Literature:		1. Nur Hadi W (2017), Handout Algoritma dan Pemrograman 2. Niklaus Wirth (1997), *Algoritma + Struktur Data = Program (Terjemah)*, Yogyakarta: Andi. 3. Grover, P.S. (2001), *Pascal Programming Fundamentals 8th edition (ebook)*, New Delhi: Allied Publisher 4. Parsons, Thomas W. (1995), *Introduction to Algorithms in Pascal*, Johns Wiley and Sons, Inc.

PLO and CO mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12
CO1		✓										
CO2				✓								
CO3					✓							
CO4								✓				
CO5										✓		