



UNIVERSITAS INDONESIA
Faculty of Mathematics and Natural Sciences
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MODULE HANDBOOK

Module designation	<i>Algorithm and Programming</i>
Semester(s) in which the module is taught	<i>1</i>
Person responsible for the module	<i>Gatot F. Hertono</i>
Language	<i>Indonesian</i>
Relation to curriculum	<i>Compulsory</i> <i>The module is shared with the Statistics, Actuarial Science undergraduate study programs</i>
Teaching methods	<i>Flipped learning and computer lab works</i>
Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload: 9 hours/week x 14 weeks + 5.5 hours/week x 2 weeks = 137 hours.</i> <i>Contact hours: 150 minutes lectures.</i> <i>Individual study including examination preparation, specified in hours :</i> <i>3 hours structured learning and 3 hours individual study per week.</i>
Credit points	<i>3 SKS (4.77 ECTS), including lab works</i>
Required and recommended prerequisites for joining the module	<i>-</i>
Module objectives/intended learning outcomes	<i>After completing this course, students are expected to have the basis for compiling algorithms properly and correctly. Students are able to develop programs (through lab works) with conditional and iterative logic flows. Using array data structures, as well as subprograms and functions to solve scientific problems and completion of numerical functions.</i>

Content	<ol style="list-style-type: none"> 1. <i>Algorithm and Programming Concepts;</i> 2. <i>Algorithm Representation;</i> 3. <i>Data, Variables, Statements and Operations;</i> 4. <i>Logic Flow;</i> 5. <i>Array Data Structure;</i> 6. <i>Subprogram (procedure, function and recursive);</i> 7. <i>Algorithm Complexity.</i>
Examination forms	<i>Essay</i>
Study and examination requirements	<p><i>Requirements for successfully passing the module:</i></p> <p><i>Individual assignment and lab works (30%), midterm exam (35%), final exam (35%)</i></p>
Reading list	<p><i>Compulsory:</i></p> <p><i>[1] Kenneth H. Rosen, Discrete Mathematics and Its Applications, 6th Ed, 2007, McGraw-Hill Inc.</i></p> <p><i>[2] Peter Van Roy & Seif Haridi, Concepts, Techniques, and Models of Computer Programming, 2004, MIT.</i></p> <p><i>[3] Press.Gilles Brassard, Paul Bratley, Algorithmics: Theory & Practice, 1988, Prentice Hall.</i></p> <p><i>Optional:</i></p> <p><i>[4] Harsh Bhasin, Algorithms: Design and Analysis, 2015, Oxford.</i></p>