UIN SUNAN KALIJAGA YOGYAKARTA
FACULTY OF SCIENCE AND TECHNOLOGY
*Jl. Marsda Adisucipto Yogyakarta 55281, Telp:+62274519739, Fax:+62274540971,*
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**Undergraduate Programme in Physics**

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**MODULE HANDBOOK**

| | |
|---|---|
| Module Name | Algorithms and Programming |
| Module level, if applicable | Bachelor |
| Code, if applicable | FIS415004 |
| Subtitle, if applicable | - |
| Courses, if applicable | Algorithms and Programming (Algoritma dan Pemrograman) |
| Semester(s) in which the module is taught | 1st (first) |
| Person responsible for the module | Dr. Thaqibul Fikri Niyartama, S.Si., M.Si |
| Lecturer(s) | Dr. Thaqibul Fikri Niyartama, S.Si., M.Si |
| Language | Indonesia |
| Relation to curriculum | Compulsory course in the first year (1st semester) Bachelor Degree |
| Type of teaching, contact hours | 100 minutes lectures and 120 minutes structured activities per week. |
| Workload | Total workload is 90.7 hours per semester, which consists of 100 minutes lectures per week for 14 weeks, 120 minutes structured activities per week, 120 minutes individual study per week, in total is 16 weeks per semester, including mid exam and final exam |
| Credit points | 2 |
| Requirements according to the examination regulations | |
| Recommended prerequisites | No prerequisites stated on |
| Module objectives/intended learning outcomes | After completing this course, the students:<br>CO 1. Able to create algorithm structures and implement them in flowcharts correctly;<br>CO 2. Able to create simple equation programs using operators and expressions correctly<br>CO 3. Able to explain the rules for using branching and looping systematically and clearly.<br>CO 4. Able to show the working mechanisms of Subprograms (Procedures) and Functions (Functions) clearly and measurably |
| Content | a. Understanding algorithms, their characteristics and properties, History of Algorithms, History of Computer Programming languages.<br>b. Algorithm Structure, Flowcharting<br>c. Data types (basic data types and constructed data types), Variables, assigning variable values, How to enter variable values (assignment and input-output)<br>d. Operators and expressions (arithmetic, relational, logic and string.<br>e. Sequential Instructions (sequential). |

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<table>
<tr><td></td><td>f. Single selection instructions (1 case form, double form selection instructions (branching) with if ... then ... else instructions, case ... instructions.<br>g. Looping instructions While ... Do .., Instructions Repeat ... Until .., Instructions For .... Do ..<br>h. Subprogram (Procedure), Function (Function)</td></tr>
<tr><td>Study and examination requirements and forms of examination</td><td>The final mark will be weighted as follows:
<table>
<tr><th>NO</th><th>Assessment methods (components, activities)</th><th>Weight (percentage)</th></tr>
<tr><td>1</td><td>Final Examination</td><td>40%</td></tr>
<tr><td>2</td><td>Mid-Term Examination</td><td>30%</td></tr>
<tr><td>3</td><td>Class Activities: Quiz, Homework, etc.</td><td>30%</td></tr>
</table>
The final assessment is expressed in the form of a letter value converted from a number value with the following categories:
<table>
<tr><th>NO</th><th>Number Value</th><th>Letter Value</th><th>NO</th><th>Number Value</th><th>Letter Value</th></tr>
<tr><td>1</td><td>≥ 95</td><td>A</td><td>7</td><td>65-69.99</td><td>B/C</td></tr>
<tr><td>2</td><td>90-94.99</td><td>A-</td><td>8</td><td>60-64.99</td><td>C+</td></tr>
<tr><td>3</td><td>85-89.99</td><td>A/B</td><td>9</td><td>55-59.99</td><td>C</td></tr>
<tr><td>4</td><td>80-84.99</td><td>B+</td><td>10</td><td>50-54.99</td><td>C-</td></tr>
<tr><td>5</td><td>75-79.99</td><td>B</td><td>11</td><td>55-34.99</td><td>D</td></tr>
<tr><td>6</td><td>70-74.99</td><td>B-</td><td>12</td><td><35</td><td>E</td></tr>
</table></td></tr>
<tr><td>Media employed</td><td>White-board, Lcd Projector, e-learning (https://daring.uin-suka.ac.id/)</td></tr>
<tr><td>Reading list</td><td>1. Kadir, A., 2019, Logika Pemrograman Python, Elex Media Komputindo, Jakarta.<br>2. Sanjaya, W.S.M., 2015, Metode Numerik Berbasis Python,: Guava Media, Yogyakarta.<br>3. de Vries, 1994, A First Course in Computational Physics, John Wiley & Son, New York..</td></tr>
</table>

**PLO and CO Mapping**

| | PLO 1 | PLO 2 | PLO 3 | PLO 4 | PLO 5 | PLO 6 | PLO 7 | PLO 8 | PLO 9 |
|---|---|---|---|---|---|---|---|---|---|
| **CO 1** | | | √ | √ | | | | | |
| **CO 2** | | | √ | √ | | | | | |
| **CO 3** | | | √ | √ | | | | | |
| **CO 4** | | | √ | √ | | | | | |