

**Logic and Scientific Reasoning**

according to the ECTS User’s Guide 2015

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| Course unit title |  Logic and Scientific Reasoning |
| Course unit code |   |
| Type of course unit (compulsory, optional) |  Compulsory |
| Level of course unit (according to EQF: first cycle Bachelor, second cycle Master) |  Bachelor Degree |
| Year of study when the course unit is delivered(if applicable) |  2nd years |
| Semester/trimester when the course unit is delivered |  3rd semester |
| Number of ECTS credits allocated |  3 ECTS |
| Name of lecturer(s) |  Lecturer Team |
| Learning outcomes of the course unit |  After taking this course, students are able to:1. Apply analytical skills to formulate ideas, thoughts, or plans and scientific solution
2. Assessing problems based on skills, critical thinking, creative thinking, and communicating solutions derived from cases based on expertise
3. Make designs by utilizing science and technology with collaborate on mini-projects with Research Based Instructional
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| Mode of delivery (face-to-face, distance learning) |  Face to Face, Distance Learning |
| Prerequisites and co-requisites (if applicable) | - |
| Course content | 1. Concept of Logic and scientific reasoning
2. Similarities and differences in information within one text and between texts
3. Subject deconstruction and reconstruction
4. Classification and categorization using Inductive reasoning.
5. Formation of Logical Arguments
6. Evaluating the assumptions of an argument and its sources of evidence
7. Be able to identify logical errors in information from a text
8. Mid Term Examination
9. Research Problems
10. State the art and Novelty
11. Relevance of the object of study with previous research
12. Chain of Reasoning
13. Chain of Reasoning
14. Replicability and generalizability of research results
15. Replicability and generalizability of research results
16. Final Examination
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| Recommended or requiredreading and other learning resources/tools | * Ballenger, B. (2007). The curious researcher: A guide to writing research papers (5th ed.). New York: Pearson Longman.
* Harris, M. (2006). The Prentice Hall reference guide (6th ed.). New York: Pearson Longman.
* Hidayat, A.R. (2018) . Philosophy of Thinking: Techniques - Techniques of Logical Thinking). Pamekasan: Media Publishing Ambassador
* Lester, J. D. & Lester Jr., J. D. (2002). Writing research papers: A complete guide (10th ed.). New York: Longman
* Mosley, A. (2019). An Introduction to Logic: From Everyday Life to Formal Systems. Massachusetts: Smith College.
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| Planned learning activities and teaching methods |  Project Based Learning, Group Discussion |
| Language of instruction |  Indonesian, English |
| Assessment methods and criteria |  Performance, Product, Practice1. Components and assessment weight in percentage:
2. Attitude 10 %
3. General skills 30 %
4. Special skills 30%
5. Knowledge 30%
6. Assessment strategy:
7. Midterm exam & Final exams.
8. Non-test (Group presentation & Attendance).

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| **Assessment Strategy** | **Attitude** | **General Skills** | **Special skill** | **Knowledge** |
| ***Achievement test*** | **○** | **◑** | **●** | **●** |
| **Performance assessment** | **◑** | **●** | **●** | **●** |
| **Portofolio** | **◑** | **●** | **◑** | **◑** |
| **Observation**  | **●** | **◑** | **◑** | **◑** |
| **Survey** | **●** | **◑** | **○** | **○** |

○ Not used in assessment◑ Sometimes used in certain assessment cases● Often used to assess the skill in question- Attitude (including 21st Century Skills according to the categorization of the Minister of Education and Culture: Communication, Collaboration, Critical thinking, Creative thinking, Computational logic, Compassion and civic responsibility)- General Skills (Covering 21st Century Skills and Digital Literacy)- The assessment strategy is adjusted to the activities carried out by students in the course.2. Instruments: multiple choice questions on the quiziz application3. Assessment criteriaStudents are categorized as passing this course if they have a minimum final grade of C based on the following range of assessments:

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| --- | --- | --- | --- |
| **Mastery Level (%)** | **Letter** | **Number** | **Information** |
| 86 – 100 | A | 4,0 | Pass |
| 81 – 85 | A- | 3,7 | Pass |
| 76 – 80 | B+ | 3,3 | Pass |
| 71 – 75 | B | 3,0 | Pass |
| 66 – 70 | B- | 2,7 | Pass |
| 61 – 65 | C+ | 2,3 | Pass |
| 56 – 60 | C | 2,0 | Pass |
| 51 – 55 | C- | 1,7 | Not Graduated |
| 46 – 50 | D | 1,0 | Not Graduated |
| 0 – 45 | E | 0,0 | Not Graduated |

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