

Module Descriptions

A **module** is a self-contained **learning unit** within a higher education program that includes thematically related courses and is assigned a **fixed number of credits**. It follows specific **learning objectives**, includes an **assessment component**, and contributes to achieving the qualifications of a degree program. In some countries, “modules” are also named “courses”.

Please provide a module description for each module. In addition to the compulsory and elective modules, this also includes credited internships and the final thesis.

Please summarize all module descriptions in one document (Module Handbook) and create a table of contents so that the modules can be found easily.

Module designation	<i>Mathematical Power</i>
Semester(s) in which the module is taught	<i>1</i>
Person responsible for the module	<i>Prof. Dr. Ariyadi Wijaya S.Pd.Si., M.Sc. Endah Retnowati S.Pd., M.Ed., Ph.D.</i>
Language	<i>Indonesian.</i>
Relation to curriculum	<i>Compulsory.</i>
Teaching methods	<i>Lecture, discussion, and assignment.</i>
Workload (incl. contact hours, self-study hours)	<i>Total workload is 90.67 hours per semester which consists of 100 minutes lectures, 120 minutes structured activities, and 120 minutes self-study per week for 16 weeks.</i>
Credit points	<i>2</i>
Required and recommended prerequisites for joining the module	<i>-</i>
Module objectives/intended learning outcomes	<i>After taking this course the students have ability to:</i> <i>CO1. Examining the process standards, mathematical abilities, and an overview of mathematics content strands.</i> <i>CO2. Describing conceptual understanding and procedural knowledge in mathematics instruction.</i> <i>CO3. Analyzing mathematical abilities, including problem solving, reasoning, communication, connections, and representation.</i> <i>CO4. Connecting the two aspects of mathematical power—process standards and mathematical abilities—with the discussion of mathematics content strands.</i>

Content	<i>This course discusses innovations in mathematics instruction that can be implemented in schools in accordance with curriculum developments, technological advancements, and the current demands for essential skills in the modern world. This course explores three main aspects of mathematical power: process standards, mathematical abilities, and an overview of mathematics content strands. The process standards include conceptual understanding and procedural knowledge. Mathematical abilities encompass problem solving, reasoning, communication, connections, and representation. These two aspects of mathematical power are examined in relation to various mathematics content strands.</i>
Examination forms	<i>Assignments , presentations and written tests.</i>
Study and examination requirements	<i>The course assessment is divided into two main components:</i> 1. Cognitive Assessment (50%) <i>This includes the following elements:</i> ○ Attendance: 2% ○ Quiz: 3% ○ Assignment: 5% ○ Midterm Exam (UTS): 15% ○ Final Exam (UAS): 25% 2. Participatory Assessment (50%) <i>This includes:</i> ○ Case Study: 15% ○ Team-Based Project: 35% Total: 100%
Reading list	1. Stein, M. K., Smith, M. S., Henningsen, M. A., & Silver, E. A. (2009). <i>Implementing Standards-based Mathematics Instruction : A Casebook for Professional Development</i>. New York: Teachers College Press. 2. Goos, M., Stilman, G., & Vale, C. 2007. <i>Teaching Secondary School Mathematics: Research and Practice for the 21st Century</i>. Crows Nest: Allen & Unwin 3. Johnston-Wilder, S., Johnston-Wilder, P., Pimm, D., & Lee, C. 2011. <i>Learning to Teach Mathematics in the Secondary School: A companion to school experience (3rd Edition)</i>. New York: Routledge 4. OECD. (2003). <i>The PISA 2003 assessment framework - Mathematics, reading, science, and problem solving knowledge and skills</i>. Paris: Author 5. Mullis, I. V. S., Martin, M. O., Ruddock, G. J., O'Sullivan, C. Y., & Preuschoff, C. (2009). <i>TIMSS 2011 Assessment Frameworks</i>. TIMSS & PIRLS International Study Center. Lynch School of Education, Boston College 6. Schoenfeld, A. H. (Ed.). (2007). <i>Assessing Mathematical Proficiency</i>. New York: Mathematical Science Research Institute