Advanced Real Analysis

Module designation	Advanced Real Analysis
Semester(s) in which the module is taught	2 (even semester)
Person responsible for the module	Dr. Lukita Ambarwati, S.Pd., M.Si. Dr. Yudi Mahatma, M.Si.
Language	Bahasa Indonesia
Relation to curriculum	*Compulsory*
Teaching methods	Teaching methods used in this course are: • Lecture (i.e., small group discussions and project-based learning) • Structured assignments (i.e., project development and presentations)
Workload (incl. contact hours, self-study hours)	For this course, students required to meet a minimum of 154,66 hours in one semester, which consist of 26,66 hours for lecture 64 hours for structured assignments 64 hours for private study
Credit points	2 CP = 5,2 ECTS
Required and recommended prerequisites for joining the module	Completing Real Analysis course
Module objectives/intended learning outcomes	Students are able to: 1. understand the concepts of function continuity, uniform continuity, and the definition of Gauge. 2. explain monotone functions and inverse functions. 3. understand the concept of derivatives, the Mean Value Theorem, and its applications. 4. understand L'Hospital's Rule and Taylor's Theorem. 5. understand the Riemann Integral concept. 6. understand the Fundamental Theorem of Calculus and apply it. 7. understand the generalized Riemann Integral concept.
Content	**Students will learn about:** 1. Continuous function, uniform continuity, gauge 2. Monotone function, inverse function 3. Derivative of a function, Mean Value Theorem, L'Hospital's Rules 4. Taylor's Theorem 5. Riemann Integral 6. The Fundamental Theorem of Calculus 7. The Generalized Riemann Integral
Examination forms	Assessment of the learning process according to the following components: Midterm Exam 30%, Final Exam 30%, and assignment 40%
Study and examination requirements	**Study and examination requirements:** Students should have attended all lectures and submitted all scheduled individual and group assignments prior to the final examination.
Reading list	**Main Reference** Bartle, R. G. and Donald R. Sherbert (2011). Introduction to Real Analysis 4th ed. John Wiley & Sons.