MODULE HANDBOOK

Module Name:	Real Analysis I
Module Level:	Sarjana (S-1) / Bachelor
Abbreviation, if applicable:	8420203013
Sub-heading, if applicable:	-
Course included in the module, if applicable:	-
Semester/term:	4/ Second year
Module Coordinator(s):	Prof. Dr. Manuharawati, M.Si
Lecturer(s):	Prof. Dr. Manuharawati, M.Si Dwi Nur Yunianti, S.Si., M.Sc. Muhammad Jakfar, S.Si., M.Si.
Language:	Indonesia
Classification within the curriculum:	Compulsory course/ ~~elective studies~~
Teaching format/class hours per week during the semester	Teaching format: lectures, tutorial assignment, and individual study. 3 x 170 minutes = 510 minutes = 8.5 hours lectures
Workload:	15 weeks per semester consisting of: ➢ 2.5 hours lectures (3 x 50 minutes) per week, ➢ 3 hours tutorial assignments (3 x 60 minutes) per week, ➢ 3 hours individual study (3 x 60 minutes) per week, Total workload : 14x3x170 minutes = 7,140 minutes = 4.76 ECTS*
Credit Point:	3
Requirements:	Foundations of Mathematics
Learning Goals:	**Knowledge (KNO-1)** CLO-1: Demonstrate the ability to think structured, reasoned, proof based on deductive-axiomatic analysis, and proof of mathematical induction; understand real number systems, rational and irrational numbers, absolute values, Neighborhood of points, the completeness of $\mathbb{R}$, open and closed sets; as well as knowledge of sequences, convergence of sequences, the principle of the K – ε game, sequences tails and monotonous sequences, sub-sequences, Bolzano-Weierstrass theorem, Cauchy's criterion, contractive sequences, proper divergent sequences, and number series. **Skill (SKI-2)**

	CLO-2: use basic mathematical principles (regarding the structure of real numbers, real number topology, and real number sequences) in solving problems.
Content:	Real number systems (algebra of real numbers and their properties, rational and irrational numbers, sequences of real numbers and their properties, absolute values, Neighborhood of points, supremum and infimum of a set and their properties, intervals and their properties), topology on real lines (specific points of a set and their properties, open and closed sets and their properties), real number sequences (sequence limits, sequence limit properties, sequence tails, monotonous sequences, subset sequences, divergent sequences, Cauchy criterion, contractive sequence)
Study/exam achievements	➢ Students are considered competent and pass if the final score calculated from the score of midterm exam, assignments, participation, and final exam is at least 55 or C. ➢ Final score is calculated as follows: ➢ 20% midterm exam + 30% assignments + 20% participation + 30% final exam ➢ Final index is defined as follow:

Index	Converted Score	Score Range
A	4.00	$85 \leq A \leq 100$
A-	3.75	$80 \leq A- <85$
B+	3.50	$75 \leq B+ <80$
B	3.00	$70 \leq B <75$
B-	2.75	$65 \leq B- <70$
C+	2.50	$60 \leq C+ <65$
C	2.00	$55 \leq C <60$
D	1.00	$40 \leq D <55$
E	0.00	$0 \leq E <40$

Forms of Media	Slides and LCD projectors, whiteboard
Literature	[1] Bartle, R.G. Sherbert Donald R. 2011. Introduction to Real Analysis (Fourth Edition), New York, John Wiley and Sons. [2] Manuharawati. 2014. Analisis Real. Zifatama: Surabaya.
Note	*Total hours per 1 credit in 1 semester={(1 credit x 170 minutes x 14 weeks)/60 minutes}=39,67 hours.

| | Each ECTS equals with 25 hours therefore 1 credit in 1 semester equals 1,59 ECTS. |