<table>
<tr><td>Module designation</td><td>Real Analysis
Indonesian title: Analisis Real
Course code: 8420203004</td></tr>
<tr><td>Semester(s) in which the module is taught</td><td>Semester 4 (Second year)</td></tr>
<tr><td>Person responsible for the module</td><td>Coordinator: Prof. Dr. Manuharawati, M.Si
Teaching staff: Prof. Dr. Manuharawati, M.Si; Dr. Abdul Haris Rosyidi, S.Pd., M.Pd.; Dwi Nur Yunianti, S.Si., M.Sc.; Dr. Nia Wahyu Damayanti, S.Pd., M.Pd.; Muhammad Jakfar, S.Si., M.Si.; Novita Vindri Harini, M.Pd</td></tr>
<tr><td>Language</td><td>Indonesian</td></tr>
<tr><td>Relation to curriculum</td><td>Compulsory</td></tr>
<tr><td>Teaching methods</td><td>Lectures, tutorial assignments, and individual study
Media and tools: Slides and LCD projectors, whiteboard</td></tr>
<tr><td>Workload (incl. contact hours, self-study hours)</td><td>(Estimated) total workload: 3 CU × 170 minutes × 16 weeks = 8,160 minutes = 136.00 hours (≈ 4.77 ECTS)
Contact hours: lectures, 3 × 50 minutes per week × 16 weeks = 40.00 hours (class hours per week: 510 minutes = 8.50 hours, including structured activities)
Private study including examination preparation: structured assignments, 3 × 60 minutes per week × 16 weeks = 48.00 hours; independent study, 3 × 60 minutes per week × 16 weeks = 48.00 hours (total 96.00 hours)</td></tr>
<tr><td>Credit points</td><td>3 CU (4.77 ECTS)
1 CU = 170 minutes per week × 16 weeks = 45.3 hours; 1 ECTS = 28.48 hours (144 CU = 229 ECTS), so 1 CU = 1.59 ECTS (UNESA Rector's Decree No. 736/HK/KM/2023).</td></tr>
<tr><td>Required and recommended prerequisites for joining the module</td><td>Foundations of Mathematics</td></tr>
<tr><td>Module objectives/intended learning outcomes</td><td>Programme learning outcomes (PLO) addressed:
PLO-5: Apply the basic principles of mathematics to solve simple mathematical problems.
PLO-6: Demonstrate mathematical knowledge and insight.</td></tr>
<tr><td>Content</td><td>Study the real number system (algebra of real numbers and their properties, rational and irrational numbers, sequence of real numbers and their properties, absolute value, surrounding points, supremum and infimum of a set and their properties, intervals and their properties, topology on the real line (special points of a set and their properties, open sets and closed sets and their properties), sequences of real numbers (limits of sequences, properties of sequence limits, tails of sequences, monotone sequence, partial sequence, divergent sequence, Cauchy's criterion, contractive sequence).</td></tr>
<tr><td>Examination forms</td><td>Final score is calculated from the weekly assessment scheme below (CLO/PLO addressed and weight of each assessment):
<table>
<tr><th>Week</th><th>CLO</th><th>PLO</th><th>Weight (%)</th></tr>
<tr><td>1</td><td>CLO-1</td><td>PLO-6</td><td>5</td></tr>
<tr><td>2</td><td>CLO-3</td><td>PLO-5</td><td>10</td></tr>
<tr><td>3</td><td>CLO-2</td><td>PLO-5</td><td>5</td></tr>
</table></td></tr>
</table>

	4	CLO-1	PLO-5	5
	5	CLO-2	PLO-5	5
	6	CLO-2	PLO-5	5
	7	CLO-3	PLO-6	10
	8	CLO-3	PLO-6	10
	9	CLO-1	PLO-6	5
	10	CLO-1	PLO-6	5
	11	CLO-2	PLO-6	5
	12	CLO-2	PLO-6	5
	13	CLO-1	PLO-6	5
	14	CLO-2	PLO-5	5
	15	CLO-2	PLO-5	5
	16	CLO-3	PLO-5	10

Study and examination requirements

Students are considered competent and pass if the final score is at least 55 or C.

Final index (grade conversion):

Index	Converted score	Score range (A = final score)
A	4.00	85 ≤ A ≤ 100
A-	3.75	80 ≤ A < 85
B+	3.50	75 ≤ A < 80
B	3.00	70 ≤ A < 75
B-	2.75	65 ≤ A < 70
C+	2.50	60 ≤ A < 65
C	2.00	55 ≤ A < 60
D	1.00	40 ≤ A < 55
E	0.00	0 ≤ A < 40

Reading list

1. Bartle, R.G. Sherbert Donald R. 2011. Introduction to Real Analysis (Fourth Edition), New York, John Wiley and Sons.
2. DePree, J. D. and Swartz, C. W. 1988. Introduction to Real Analysis. New York. John Wiley & Sons.
3. Manuharawati. 2014. Analisis Real. Zifatama: Surabaya.
4. Fuad, Y dan Soedjadi, R. 1997. Handbook Matakuliah Analisis Riil. Pascasarjana IKIP Surabaya.
5. Parzynski, R. and Zipse, P. W. 1987. Introduction to Mathematical Analysis. Auckland. McGraw-Hill Book Company.