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Faculty of Mathematics and Natural Sciences
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MODULE HANDBOOK

Module designation	<i>Analysis 1</i>
Semester(s) in which the module is taught	3
Person responsible for the module	<i>Rahmi Rusin</i>
Language	<i>Indonesian</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Lectures, group discussions</i>
Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload: 11.3 hours x 14 weeks + 3 hours x 2 weeks</i> <i>Contact hours: 3 hours and 20 minutes lectures per week</i> <i>Private study including examination preparation, specified in hours¹:</i> <i>4 hours structured activities, and 4 hours individual study per week</i>
Credit points	4 SKS (6.36 ECTS)
Required and recommended prerequisites for joining the module	<i>Calculus 2</i>
Module objectives/intended learning outcomes	<i>After completing the course, students have the ability to analyse and apply some basic concepts in real analysis to prove theorems and their applications related to real numbers, sequences, limit and continuity of one variable real valued functions.</i>

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Content	<ol style="list-style-type: none"> 1. <i>Algebraic and order properties of real numbers</i> 2. <i>Absolute value and the real line</i> 3. <i>The completeness property of real numbers</i> 4. <i>Applications of the supremum property</i> 5. <i>Intervals</i> 6. <i>Sequences and their limits</i> 7. <i>Limit of sequences theorems</i> 8. <i>Monotone sequences</i> 9. <i>Subsequences and the Bolzano-Weierstrass Theorem</i> 10. <i>Cauchy criterion</i> 11. <i>Properly divergent sequences</i> 12. <i>Limits of functions</i> 13. <i>Limit of functions theorems</i> 14. <i>Some extensions of the limit concept</i> 15. <i>Continuous functions</i> 16. <i>Combinations of continuous functions</i>
Examination forms	<ol style="list-style-type: none"> 1. <i>Class activities : Quiz, homework.</i> 2. <i>Group discussion sessions</i> 3. <i>Mid-term examination</i> 4. <i>Final examination</i>

<p>Study and examination requirements</p>	<p><i>The final mark will be weighted as follows:</i></p> <ol style="list-style-type: none"> 1. <i>Homework (20%).</i> 2. <i>Written Quiz (20%)</i> 3. <i>Mid-term examination (30%)</i> 4. <i>Final examinations (30%)</i> <p><i>To successfully pass the module it requires minimum 55% of the total mark.</i></p> <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: left;"><i>Mark</i></th> <th style="text-align: left;"><i>Grade</i></th> </tr> </thead> <tbody> <tr> <td>85—100</td> <td>A</td> </tr> <tr> <td>80—<85</td> <td>A-</td> </tr> <tr> <td>75—<80</td> <td>B+</td> </tr> <tr> <td>70—<75</td> <td>B</td> </tr> <tr> <td>65—<70</td> <td>B-</td> </tr> <tr> <td>60—<65</td> <td>C+</td> </tr> <tr> <td>55—<60</td> <td>C</td> </tr> <tr> <td>40—<55</td> <td>D</td> </tr> <tr> <td><40</td> <td>E</td> </tr> </tbody> </table>	<i>Mark</i>	<i>Grade</i>	85—100	A	80—<85	A-	75—<80	B+	70—<75	B	65—<70	B-	60—<65	C+	55—<60	C	40—<55	D	<40	E
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<p>Reading list</p>	<ol style="list-style-type: none"> 1. <i>Robert G. Bartle & Donald R. Sherbert. Introduction to Real Analysis, Fourth Ed. 2010. John Wiley & Sons, Inc.</i> 2. <i>Lecturer's Handout.</i> 3. <i>Videos.</i> 																				