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Faculty of Mathematics and Natural Sciences
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MODULE HANDBOOK

Module designation	<i>Algebra</i>
Semester(s) in which the module is taught	<i>5th</i>
Person responsible for the module	<i>Nora Hariadi</i>
Language	<i>Indonesian</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Flipped class, question-based learning, lecturing</i>
Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload: 8.5 hours x 14 weeks + 3 hours x 2 weeks Contact hours: 150 minutes lectures, 180 minutes structured activities, and 180 minutes individual study per week Private study including examination preparation, specified in hours¹:</i>
Credit points	<i>4 SKS (6.36 ECTS)</i>
Required and recommended prerequisites for joining the module	<i>Linear Algebra 1</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.

<p>Module objectives/intended learning outcomes</p>	<p><i>After completing the course, students have the ability</i></p> <ol style="list-style-type: none"> 1. <i>to make use of the definitions and theorems in group and ring to prove algebra problems</i> 2. <i>to determine normal subgroup and quotient group</i> 3. <i>to determine isomorphism between groups or rings</i> 4. <i>to determine ideal and quotient ring</i> 5. <i>to apply the polynomial's properties</i> 6. <i>to discover some simple examples of the application of group / ring algebra in other disciplines</i> 7. <i>to elaborate the proof of theorems and properties in algebra</i>
<p>Content</p>	<ol style="list-style-type: none"> 1. <i>Group</i> <ol style="list-style-type: none"> a. <i>Definitions and Examples of Groups</i> b. <i>Subgroups</i> c. <i>Cyclic Groups</i> d. <i>Permutation Groups</i> e. <i>Cosets and Lagrange's Theorem</i> f. <i>Group Homomorphism</i> g. <i>Normal Subgroups and Quotient Groups</i> h. <i>The Homomorphism Theorems</i> 2. <i>Ring</i> <ol style="list-style-type: none"> a. <i>Rings, the Types of Rings, and Subrings</i> b. <i>Ideal and Ring Homomorphism</i> c. <i>Quotient Rings</i> d. <i>The Ring Homomorphism Theorems</i> e. <i>Maximal Ideal</i> f. <i>Polynomial Rings</i> g. <i>Field of Quotients of an Integral Domain</i>
<p>Examination forms</p>	<ol style="list-style-type: none"> 1. <i>Class activities: Quiz (written and computer-based), homework.</i> 2. <i>Mid-term examination.</i> 3. <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>Quiz (written and computer-based): 30%</i> 2. <i>Homeworks: 20%</i> 3. <i>Mid-term examination: 25%</i> 4. <i>Final examinations : 25%</i> <p><i>To pass successfully 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><i>85—100</i></td><td><i>A</i></td></tr> <tr><td><i>80—<85</i></td><td><i>A-</i></td></tr> <tr><td><i>75—<80</i></td><td><i>B+</i></td></tr> <tr><td><i>70—<75</i></td><td><i>B</i></td></tr> <tr><td><i>65—<70</i></td><td><i>B-</i></td></tr> <tr><td><i>60—<65</i></td><td><i>C+</i></td></tr> <tr><td><i>55—<60</i></td><td><i>C</i></td></tr> <tr><td><i>40—<55</i></td><td><i>D</i></td></tr> <tr><td><i><40</i></td><td><i>E</i></td></tr> </tbody> </table>	<i>Mark</i>	<i>Grade</i>	<i>85—100</i>	<i>A</i>	<i>80—<85</i>	<i>A-</i>	<i>75—<80</i>	<i>B+</i>	<i>70—<75</i>	<i>B</i>	<i>65—<70</i>	<i>B-</i>	<i>60—<65</i>	<i>C+</i>	<i>55—<60</i>	<i>C</i>	<i>40—<55</i>	<i>D</i>	<i><40</i>	<i>E</i>
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<p>Reading list</p>	<ol style="list-style-type: none"> 1. <i>Judson, T. dan Steve, F., 2015, Abstract Algebra, Austin State University</i> 2. <i>Herstein, I.N.,1999, Abstract Algebra, 3ed, John Wiley and Son.</i> 3. <i>Gallian, J.A., 2010, Contemporary Abstract Algebra, Brooks/Cole.</i> 																				