UNIVERSITAS GADJAH MADA
Faculty of Mathematics and Natural Sciences
Mathematics Department
Sekip Utara Bulaksumur Yogyakarta 55281 Telp: +62 274 552243 Fax: +62 274 555131 Email: math@ugm.ac.id Website: http://math.fmipa.ugm.ac.id

Undergraduate Programme in Mathematics
Telp : +62 274 552243
Email : maths1@ugm.ac.id; kaprodi-s1-matematika.mipa@ugm.ac.id
sekprodi-s1-matematika.mipa@ugm.ac.id
Website : http://s1math.fmipa.ugm.ac.id/

MODULE HANDBOOK

Module name	Introduction to Semigroup Theory
Module level, if applicable	Bachelor
Code, if applicable	MMM-2205
Subtitle, if applicable	-
Courses, if applicable	Introduction to Semigroup Theory
Semester(s) in which the module is taught	6th (sixth)
Person responsible for the module	Chair of the Lab. of Algebra
Lecturer(s)	Dr. Budi Surodjo, M.Si. and Dr.rer.nat. Yeni Susanti, MSi.
Language	Bahasa Indonesia
Relation to curriculum	Elective course in the third year (sixth semester)
Type of teaching, contact hours	150 minutes lectures per week, 180 minutes structured activities per week, 180 minutes private study per week.
Workload	Total workload is 136 hours per semester, which consist of 150 minutes lectures per week for 14 weeks, 180 minutes structured activities per week, and 180 minutes individual study per week, in total 16 weeks per semester, including preparation for mid exam and final exam.
Credit points	3
Requirements according to the examination regulations	Students have taken Introduction to Semigroup Theory course (MMM-2205) and have an examination card where the course is stated on.
Recommended prerequisites	Students have taken Introduction to Algebraic Structures I course (MMM-1203) and have participated in the final examination of the course.
Module objectives/intended learning outcomes	After completing this course the students should have: CO.1. ability to identify the structure of semigroups in many areas of algebra CO.2. ability to prove the fundamental properties of homomorphisms CO.3. ability to prove the elementary properties of Green's relations (Equivalence). CO.4. ability to identify some kind of special semigroup CO.5. ability to explain the application of semigrup on algebraic systems and other fields
Content	Basic Definition of semigroup, Monoid, Subsemigroup, Ideals, Natural order, Partially ordered Semigroup, Green's equivalence, Homomorphism of semigroups, regular element, idempotent element, inverse element, generalized invers, Semigrup Quotien Semigroup, Regular semigroup, Inverse semigroup, Ortodox semigroup, Semilattice, Band, Applications of Semigroup.
Study and examination requirements and forms of examination	The final mark will be weighted as follows: No — Assessment methods (components, activities) — Weight (percentage) 1 — Final Examination — 35% – 45% 2 — Mid-Term Examination — 30% – 35% 3 — Class Activities: Quiz, Homework, etc — 25% – 30% The initial cut-off points for grades A, B, C, and D should not be less than 80%, 70%, 50%, and 40%, respectively.
Media employed	Projector, board, laptop, e-learning via http://elisa.ugm.ac.id

Reading List	1. Howie, J. M., 1974, *An Introduction to Semigroup Theory*, Academic Press. 2. Clifford, A.H. and Preston, G.B., 1961, *The Algebraic Theory of Semigroups*, American Math. Society, Rhode Island 3. Gilmer, R., 1984, *Commutative Semigroup Rings*, The University of Chicago Press, Chicago 4. Okniski, J, 1991, *Semigroup Algebras*, Marcel-Dekker, Inc 5. Surodjo, B., Susanti, Y., 2017, *Teori Semigrup*, Universitas Gadjah Mada, Yogyakarta

PLO and CO Mapping

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9
CO 1						v			
CO 2			v						
CO 3			v						
CO 4						v			
CO 5									v