Undergraduate Programme in Mathematics

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MODULE HANDBOOK

Module name	**Mathematical Biology**
Module level, if applicable	Bachelor
Code, if applicable	MMM-2303
Subtitle, if applicable	-
Courses, if applicable	**Mathematical Biology**
Semester(s) in which the module is taught	4th (fourth)
Person responsible for the module	Chair of the Lab. of Applied Mathematics
Lecturer(s)	Dr. Fajar Adi Kusumo and Dr. Lina Aryati
Language	Bahasa Indonesia
Relation to curriculum	Elective course in the second year (4th semester) Bachelor Degree
Type of teaching, contact hours	150 minutes lectures and 180 minutes structured activities per week.
Workload	Total workload is 136 hours per semester, which consists of 150 minutes lectures per week for 14 weeks, 180 minutes structured activities per week, 180 minutes individual study per week, in total is 16 weeks per semester, including mid exam and final exam.
Credit points	3
Requirements according to the examination regulations	Students have taken Biological Mathematics course (MMM-2303) and have an examination card where the course is stated on.
Recommended prerequisites	Students have taken Elementary Differential Equations course (MMM-2301), Introduction to Probability Model course (MMM-2410), and have participated in the final examination of the course. Before taking this course, students must have a good understanding about some concepts on Probability, Differential Equations, and Stability.
Module objectives/intended learning outcomes	Upon successful completion, students CO 1: are able to solve simple problems on Genetic. CO 2: are able to solve simple problems Pharmacology. CO 3: are able to solve simple problems on Population Growth. CO 4: are able to solve a simple problem on Epidemiology in order to handle more complicated problems.
Contents	1. Genetics. 2. Pharmacology. 3. Discrete Population Growth. 4. Continuous Population Growth: Single and Two species. 5. Epidemiology: SIR and SIS
Study and examination requirements and forms of examination	The final mark will be computed from a proportional weight of assignments, mid examination and final examination. The final mark will be weighted as follows: No Assessment methods (components, activities) Weight (percentage) 1 Final Examination 30 2 Mid-Term Examination 30 3 Project and Presentation 25 4 Other Activities: Quiz, Homework, etc. 15

	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	Boards, projectors, Laptop/Computer
Reading List	1. Fred Brauer, and Carlos Castillo-Chavez, 2012, *Mathematical Models in Population Biology and Epidemiology, 2nd Ed,* Springer Verlag, New York. 2. B. Barnes, and G.R. Fulford, 2008, *Mathematical Modelling with Case Studies, 2nd Ed,* Taylor & Francis, London. 3. Jagat Narain Kapur, 1985, *Mathematical Models in Biology and Medicine,* Affiliated East-West Press Private Limited, New Delhi. 4. Stanley I. Grossman, and James E. Turner, 1974, *Mathematical for Biological Sciences,* MacMillan Publishing Co., Inc., New York.

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			v	v			v
CO 3		v			v	v			v
CO 4		v			v	v	v		v