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MODULE HANDBOOK

Module designation	*Stochastic Differential Equation*
Semester(s) in which the module is taught	*5*
Person responsible for the module	*Dra. Bevina D. Handari, M.Sc., Ph.D*
Language	*Indonesian*
Relation to curriculum	*Compulsory*
Teaching methods	*Flipped learning*
Workload (incl. contact hours, self-study hours)	*(Estimated) Asynchronous Forum Discussion in EMAS 1 x 60 minutess (with teacher) + 2 x 60 minutes (between students)* *Contact hours: 3 hours (150 minutes lectures).* *Private study including examination preparation, specified in hours[1]:* *2 hours' structured activities and 1 hour's individual study per week.*
Credit points	*3 SKS (4.77 ECTS)*
Required and recommended prerequisites for joining the module	*Ordinary Differential Equation, Mathematical Statistics 1*

[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.

Module objectives/intended learning outcomes	*After completing the course, students have the ability* 1. *To explain the stochastic process and stochastic problems* 2. *To use basic elements of the stochastic process* 3. *To implement integration and differentiation in stochastic differential equations* 4. *To solve stochastic differential equations using the theories learned* 5. *To solve stochastic differential equations in real-world problems*
Content	1. *Examples of stochastic processes in real-world problems* 2. *Elements of the stochastic process* 3. *Some important stochastic processes* 4. *Stochastic integration and differentiation* 5. *Stochastic integration techniques* 6. *Stochastic differential equations* 7. *Real-world stochastic applications*
Examination forms	1. *Class activities: Homework* 2. *Mid-term examination* 3. *Final examination*
Study and examination requirements	*The final mark will be weighted as follows:* 1. *Homework (40%)* 2. *Mid-term examination (30%)* 3. *Final examinations (30%)* *To succesfully pass the module it requires minimum 55% of the total mark.* *Mark — Grade* *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

Reading list (resources)	1. Calin, O. (2015). An Informal Introduction to Stochastic Calculus with Applications, World Scientific Publishing Co. Pte. Ltd., London 2. Cyganowski, S., Kloeden, P., Ombach, J. (2002), From Elementary Probability to Stochastic Differential Equations with MAPLE, Springer-Verlag, Germany. 3. Klebaner, F. (2005). Introduction to Stochastic Calculus with Applications 2nd Ed. Imperial College Press, London.