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: matematika.fmipa.ugm.ac.id

Graduate Program in Mathematics

Telp : +62 274 552243
Email : maths3@ugm.ac.id;
Website : http://s3math.fmipa.ugm.ac.id

MODULE HANDBOOK
Doctoral in Mathematics

Module name:	Health Insurance (Asuransi Kesehatan)
Module level, if applicable:	Doctor Program
Code, if applicable:	MMM-5434
Semester(s) in which the module is taught:	First Year
Person responsible for the module:	Chair of The Study Program
Lecturer(s):	1. Dr. Adhitya Ronnie Effendie, M.Sc 2. Dr. Danardono, M.PH
Language:	Bahasa Indonesia
Relation to curriculum:	Doctor Degree in Mathematics, Compulsary Courses
Credit points:	3
Type of teaching, contact hours:	3x50 minutes lectures, 3x50 minutes structured activities.
Workload:	• 3x50 minutes lectures, • 3x50 minutes structured activities, • 3x50 minutes individual study, • In 16 weeks per semester (including mid-term and final examinations). • Total: 144x50 minutes per semester.
Requirements according to the examination regulations:	NONE
Recommended prerequisites:	Before taking this course, the students must have a good understanding in Actuarial mathematics
Module objectives/intended learning outcomes:	On satisfying the requirements of this course, students will have the knowledge and skills to: CO-1: Explain the types of health insurance products with their actuarial models CO-2: Explain and use the claim frequency model, claim severity and collective risk models in health insurance CO-3: Explain and use mortality, morbidity and multi-status models in health insurance CO-4: Explain actuarial models that can be used in the collective risk insurance system and the national health insurance system CO-5: Develop a health insurance product with its actuarial model based on real and simulated data
Content:	Health Insurance Products; Model claim frequency and claim severity; Mortality, Morbidity and Multi-status Models; Collective Risk Model; Actuarial models related to National Health Insurance
Study and examination requirements and forms of examination:	The final mark will be weighted as follows: No — Assessment methods (components, activities) — Weight (percentage) 1 — Formulation the originality of research problem — 25% 2 — Formulation the theoritical framework — 25% 3 — Formulation the conjecture and metodhology — 20% 4 — Presentation — 30%

	Final grade will be determined as follows: Grade Criteria A : $95 \leq$ final mark ≤ 100 A- : $90 \leq$ final mark < 95 A/B : $85 \leq$ final mark < 90 B+ : $78 \leq$ final mark < 85 B : $70 \leq$ final mark < 78 B- : $65 \leq$ final mark < 70 B/C : $60 \leq$ final mark < 65 C+ : $54 \leq$ final mark < 60 C : $48 \leq$ final mark < 54 C- : $40 \leq$ final mark < 48 C/D : $35 \leq$ final mark < 40 D+ : $30 \leq$ final mark < 35 D : $25 \leq$ final mark < 30 E : final mark < 25
Media employed:	White/Black Board, LCD Projector, Laptop/Computer
Reading List:	The related references to the dissertation will be nominated as per the selected topic and content. General references: 1. Cichon, M, Newbrander, W, Yamabana, H., Weber, A., Normand, C., Dror, D. and Preker, A., 1999, *Modelling in Health Care Finance*, International Labour Organization, Geneva 2. Cunningham, R. J., Herzog, T. N and London, R. L. , 2006, *Models for Quantifying Risk*, 2nd ed., ACTEX Publications, Inc. 3. Pitacco, E., 2014, *Health Insurance. Basic Actuarial Models*, Springer.

Mapping of The COs and PLOs

	PLO – 1 S2 Mat	**PLO – 2 S2 Mat**	**PLO – 3 S2 Mat**	**PLO – 4 S2 Mat**	**PLO – 5 S2 Mat**	**PLO –6 S2 Mat**
CO 1	√	√	√		√	√
CO 2	√	√	√		√	√
CO 3	√	√	√		√	√

Programme Learning Outcomes (PLO) Doctoral Programme in Mathematics

PLO-1	:	**Attitude:** Devote to God Almighty, uphold the humanity values, internalize academic values and ethics, responsible in working in the area of expertise independently.
PLO-2	:	**Knowledge:** Mastering philosophy of mathematics and one of the fields in mathematics (algebra, analysis, applied mathematics, statistics, computational mathematics, computational statistics).
PLO-3	:	**Knowledge:** Able to think logically, analytically, inductively, deductively, and structured; having the ability to manage, lead, and develop research programs independently, and able to communicate the thoughts as well as his work to the scientific community and the general public.
PLO-4	:	**Skill:**

		Creating new concepts and / or new methods (original) in the field of mathematics that are recognized nationally and internationally.
PLO-5	:	**Skill:** Able to apply mathematics according to their field of expertise to solve problems including those that require a multidisciplinary, cross-disciplinary, or trans-disciplinary approach.
PLO-6	:	***Life Long Learning:*** Having lifelong learning skills and adaptive to the development of science and technology, especially in fields related to Mathematics and its applications.