UNIVERSITAS GADJAH MADA
Faculty of Mathematics and Natural Sciences
Department of Mathematics
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

Master in Mathematics

Telp : +62 274 552243
Email : maths2@ugm.ac.id; kaprodi-s2-matematika.mipa@ugm.ac.id
sekprodi-s2-matematika.mipa@ugm.ac.id
Website : http://s2math.fmipa.ugm.ac.id/

MODULE HANDBOOK

Module Name	*Euclidean Space*
Module level, if applicable	Master
Code, if applicable	MMM 5105
Subtitle, if applicable	
Courses, if applicable	Euclidean Space
Semester(s) in which the module is taught	2nd (second)
Person responsible for the module	Chair of Analysis Research Group
Lecturer(s)	Dewi Kartika Sari, M.Sc., Ph.D. and Prof. Dr. Ch. Rini Indrati, M.Si.
Language	Bahasa Indonesia
Relation to curriculum	Master Degree, Elective, 2nd semester
Teaching methods	*Lecture, Discussion, Flipped Classroom, and Presentation.*
Workload (incl. contact hours, self-study hours)	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*
Required and recommended prerequisites for joining the module	Students have learned real analysis or metric spaces
Module objectives/intended learning outcomes	After completing this course the students have ability to: CO 1. generalize some concepts in real system in Euclidean space and justify some concepts in Euclidean space which do not hold in metric spaces. CO 2. prove and apply theories of derivative.

Content	1. Topology on $\mathbb{R}^n$: open set, connected set, compactness and their characteristics. 2. Convergence and continuity in $\mathbb{R}^n$: convergence sequence, Cauchy sequence, some characteristics of continuous function in convergence sequence and open sets. Continuous functions on compact sets and on connected sets. 3. Derivative in $\mathbb{R}^n$: Fréchet and Gâteaux derivatives and its relation,mean value theorems, 4. Applications of derivative in $\mathbb{R}^n$:surjective mapping theorem, inverse mapping theorem, and its application in optimization.
Examination forms	*Oral presentation and essay*
Study and examination requirements	*Requirements for successfully passing the module is minimal C.* 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 Class Activities: Presentation and Quiz 25% 4. Homework 15%
Media employed	*White board, LCD, computer, and wifi. Platform: Zoom or google.meet*
Reading list	1. Bartle, R.G., 1976, "The Element of Real Analysis", second edition, John Wiley and Sons, New York 2. Duistermaat, J.J. and Kolk, J.A.C., 2004, "Multidimensional Real Analysis I: Differentiation", Cambridge University Press, United Kingdom.

CO-PLO Mapping

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6
CO 1	v	v	v	v		
CO 2	v	v	v	v	v	v

Modified Date : 9 August 2022