UNIVERSITAS NEGERI PADANG
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
MATHEMATICS DEPARTMENT, MATHEMATICS STUDY PROGRAM
Main Campus Universitas Negeri Padang.
Jalan Prof. Dr. Hamka Air Tawar Padang, Sumatera Barat
Telepon: +62 751 7053902, Fax: +62 751 7055628
Email: humas@unp.ac.id

Module name:	Introduction to Functional Analysis
Module level, if applicable:	Bachelor
Code:	MAT2.62.7002
Sub-heading, if applicable:	-
Classes, if applicable:	Introduction to Functional Analysis
Semester:	7^{th} (seventh)
Module coordinator:	Head of Analysis Expertise Group
Lecturer(s):	Dr. Arnellis, M.Si, Dra. Helma, M.Si., and Defri Ahmad, S.Pd., M.Si.
Language:	Indonesian Language and English
Classification within the curriculum:	Elective course in the fourth year (7^{th} semester) Bachelor Degree
Teaching format / class hours per week during the semester:	a. Lectures : Cooperative learning with methods such as expository, drill, and discussion. (3 x 50 minutes = 150 minutes) b. Structured assignment : Weekly individual written assignment. (3 x 60 minutes = 180 minutes) c. Individual study (3 x 60 minutes = 180 minutes)
Workload:	The total workload is 136 hours per semester, which consists of 150-minute lectures, 180-minute structured activities, and 180 minutes of self-study. In total, there are 16 weeks per semester, including midterm and final exams.
Credit points:	3 sks = 4.53 ECTS
Prerequisites course(s):	Students have taken the course "Introduction to Real Analysis" and have participated in the final exam of the course. Students should take Introduction to Real Analysis II at least once in the same semester.

Course Outcomes:	After completing this course the students have ability to: CO1. analyze the vector spaces of finite and infinite dimension, pre-Hilbert spaces, CO2. analyze the orthogonality of two vectors, orthogonal system, and orthonormal system. CO3. analyze the subspaces, orthogonally complement, direct sum. CO4. analyze transformation, linear operator CO5. analyze the properties of linear operator, the spaces L(V,W) and B(V,W), and dual spaces. CO6. analyze self-adjoint operators and projections
Content:	1. Vector spaces of finite and infinite dimension. 2. Pre-Hilbert spaces and norm spaces. Orthogonal and orthonormal. 3. Subspaces, orthogonally complement, direct sum. 4. Transformation, linear operator. 5. The spaces L(V,W) and B(V,W) and dual spaces. 6. Self adjoint operator and projection.
Study/exam achievements:	The final grade will be weighted as follows: The assessment consists of a final exam (45%), a midterm exam (30%), task (20%), and class activities (5%). The final and midterm exams are essay tests with a closed book (120 minutes). Weekly assignments (solving selected problems) are given in two forms; group or individual assignments.
Forms of media:	White Board, laptop, Projector, e-learning via elearning2.unp.ac.id, and zoom meeting.
Literature:	1. Erwin Kreyzig, 2007, Introductory Functional Analysis with Applications, Willey. 2. Orlicz, 1992, Linear Functional Analysis, world Scientific, Singapore. 3. Frigyes Riesz and Béla Sz-Nagy, 1990, Functional Analysis, Translated from the 2nd Edition by Leo F. Boron, Dover Publications, Inc, New York. 4. Sterling Khazag Berberian, 1976, Introduction to Hilbert Space, Oxford University Press, New

PLO and CO mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
CO1			✓							
CO2									✓	
CO3				✓						

CO4				✓						
CO5			✓							
CO6									✓	