MODULE HANDBOOK MATHEMATICS 1

Module level Undergradute	Module name	Mathematics 1		
Course (if applicable) Semester First Semester (Gasal) Person responsible for the module Lecturer Language Relation to curriculum Type of teaching, contact hours Workload 1. Lectures: 3 x 50 = 150 minutes per week. 2. Exercises and Assignments: 3 x 50 = 150 minutes per week. 3. Private learning: 3 x 50 = 150 minutes per week. Credit points A student must have attended at least 75% of the lectures to sit in the examination regulations Mandatory prerequisites Learning outcomes and their corresponding PLOs CLO 2: Students are able to apply basic mathematical concepts related to matrices and determinants. CLO 3: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation. PLO-03, PLO-04,	Module level	Undergradute		
Semester First Semester (Gasal) Person responsible for the module Lecturer Language Bahasa Indonesia and English Relation to curriculum Type of teaching, contact hours Workload 1. Lectures: 3 x 50 = 150 minutes per week. 2. Exercises and Assignments: 3 x 50 = 150 minutes per week. 3. Private learning: 3 x 50 = 150 minutes per week. Credit points Requirements according to the examination regulations Mandatory prerequisites Learning outcomes and their corresponding PLOs CLO 1: Students are able to apply basic mathematical concepts related to matrices and determinants. CLO 2: Students are able to apply equations or inequalities and graphs of parabolic, circle or ellipse functions. CLO 3: Students are able to apply complex variable forms in polar form and determine the roots of the equation. PLO-03, PLO-04, P	Code	KM184101		
Person responsible for the module Lecturer Language Bahasa Indonesia and English Relation to curriculum Type of teaching, contact hours Workload 1. Lectures: 3 x 50 = 150 minutes per week. 2. Exercises and Assignments: 3 x 50 = 150 minutes per week. 3. Private learning: 3 x 50 = 150 minutes per week. Credit points Requirements according to the examination regulations Mandatory prerequisites Learning outcomes and their corresponding PLOs CLO 1: Students are able to apply basic mathematical concepts related to matrices and determinants. CLO 2: Students are able to apply equations or inequalities and graphs of parabolic, circle or ellipse functions. CLO 3: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation.	Course (if applicable)	Mathematics 1		
the module Lecturer Language Relation to curriculum Type of teaching, contact hours Workload 1. Lectures: 3 x 50 = 150 minutes per week. 2. Exercises and Assignments: 3 x 50 = 150 minutes per week. 3. Private learning: 3 x 50 = 150 minutes per week. Credit points 3 credit points (sks) Requirements according to the examination regulations Mandatory prerequisites Learning outcomes and their corresponding PLOs CLO 1: Students are able to apply basic mathematical concepts related to matrices and determinants. CLO 2: Students are able to apply equations or inequalities and graphs of parabolic, circle or ellipse functions. CLO 3: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation.	Semester	First Semester (Gasal)		
Lecturer Language Bahasa Indonesia and English Relation to curriculum Type of teaching, contact hours Workload 1. Lectures: 3 x 50 = 150 minutes per week. 2. Exercises and Assignments: 3 x 50 = 150 minutes per week. 3. Private learning: 3 x 50 = 150 minutes per week. Credit points A student must have attended at least 75% of the lectures to sit in the examination regulations Mandatory prerequisites Learning outcomes and their corresponding PLOs Course Learning Outcome (CLO) after completing this module, CLO 1: Students are able to apply basic mathematical concepts related to matrices and determinants. PLO-01, PLO-02, PLO-04 CLO 2: Students are able to apply equations or inequalities and graphs of parabolic, circle or ellipse functions. CLO 3: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to one play complex variable forms in polar form and determine the roots of the equation.	Person responsible for	Drs. I.G.Ngurah Rai Usada, M.Si		
Relation to curriculum Type of teaching, contact hours Workload 1. Lectures: 3 x 50 = 150 minutes per week. 2. Exercises and Assignments: 3 x 50 = 150 minutes per week. 3. Private learning: 3 x 50 = 150 minutes per week. Credit points Requirements according to the examination regulations Mandatory prerequisites Learning outcomes and their corresponding PLOs CLO 2: Students are able to apply equations or inequalities and graphs of parabolic, circle or ellipse functions. CLO 3: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation.	the module			
Relation to curriculum Type of teaching, contact hours Workload 1. Lectures: 3 x 50 = 150 minutes per week. 2. Exercises and Assignments: 3 x 50 = 150 minutes per week. 3. Private learning: 3 x 50 = 150 minutes per week. Credit points Requirements according to the examination regulations Mandatory prerequisites Learning outcomes and their corresponding PLOs CLO 1: Students are able to apply equations or inequalities and graphs of parabolic, circle or ellipse functions. CLO 3: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation. PLO-03, PLO-04, PLO-04, PLO-04, PLO-04, PLO-04, PLO-03, PLO-04, PL	Lecturer			
Type of teaching, contact hours Workload 1. Lectures: 3 x 50 = 150 minutes per week. 2. Exercises and Assignments: 3 x 50 = 150 minutes per week. 3. Private learning: 3 x 50 = 150 minutes per week. Credit points Requirements according to the examination regulations Mandatory prerequisites Learning outcomes and their corresponding PLOs Course Learning Outcome (CLO) after completing this module, CLO 1: Students are able to apply basic mathematical concepts related to matrices and determinants. CLO 2: Students are able to apply equations or inequalities and graphs of parabolic, circle or ellipse functions. CLO 3: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 5: Students are able to apply complex variable forms in polar form and determine the roots of the equation.	Language	Bahasa Indonesia and English		
Workload 1. Lectures: 3 x 50 = 150 minutes per week. 2. Exercises and Assignments: 3 x 50 = 150 minutes per week. 3. Private learning: 3 x 50 = 150 minutes per week. Credit points 3 credit points (sks) Requirements according to the examination regulations Mandatory prerequisites Learning outcomes and their corresponding PLOs Course Learning Outcome (CLO) after completing this module, CLO 1: Students are able to apply basic mathematical concepts related to matrices and determinants. PLO-01, PLO-02, PLO-04 CLO 2: Students are able to apply equations or inequalities and graphs of parabolic, circle or ellipse functions. CLO 3: Students are able to apply complex variable forms in polar form and determine the roots of the equation. PLO-03, PLO-04, PLO-04, PLO-03, PLO-04, PLO-03, PLO-04, PLO-03, PLO-04, PLO-03, PLO-04, PLO-04, PLO-04, PLO-03, PLO-04, PLO-	Relation to curriculum	Undergradute degree program, mandatory, 1st semester.		
Workload 1. Lectures: 3 x 50 = 150 minutes per week. 2. Exercises and Assignments: 3 x 50 = 150 minutes per week. 3. Private learning: 3 x 50 = 150 minutes per week. Credit points 3 credit points (sks) Requirements according to the examination regulations Mandatory prerequisites Learning outcomes and their corresponding PLOs Course Learning Outcome (CLO) after completing this module, CLO 1: Students are able to apply basic mathematical concepts related to matrices and determinants. PLO-01, PLO-02, PLO-04 CLO 2: Students are able to apply equations or inequalities and graphs of parabolic, circle or ellipse functions. CLO 3: Students are able to apply complex variable forms in polar form and determine the roots of the equation. PLO-03, PLO-04, PLO-	Type of teaching,	Lectures, <60 students		
2. Exercises and Assignments: 3 x 50 = 150 minutes per week. 3. Private learning: 3 x 50 = 150 minutes per week. 3. Private learning: 3 x 50 = 150 minutes per week. 3. Private learning: 3 x 50 = 150 minutes per week. 3. Private learning: 3 x 50 = 150 minutes per week. 3. Private learning: 3 x 50 = 150 minutes per week. 3. Private learning: 3 x 50 = 150 minutes per week. 3. Private learning: 3 x 50 = 150 minutes per week. 4. Student must have attended at least 75% of the lectures to sit in the exams. 4. Student must have attended at least 75% of the lectures to sit in the exams. 5. Course Learning Outcome (CLO) after completing this module, 6. CLO 1: Students are able to apply basic mathematical plu-0-01, plu-0-02, plu-0-04 6. CLO 2: Students are able to apply equations or inequalities and graphs of parabolic, circle or ellipse functions. 6. CLO 3: Students are able to apply complex variable forms in polar form and determine the roots of the equation. 7. PLO-03, plu-0-04, plu-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0	contact hours			
3. Private learning: 3 x 50 = 150 minutes per week. Credit points 3 credit points (sks) Requirements according to the examination regulations Mandatory prerequisites Learning outcomes and their corresponding PLOs CLO 1: Students are able to apply basic mathematical concepts related to matrices and determinants. CLO 2: Students are able to apply equations or inequalities and graphs of parabolic, circle or ellipse functions. CLO 3: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation. PLO-03, PLO-04, PLO-04, PLO-04, PLO-04, PLO-04, PLO-05, PLO-04,	Workload	1. Lectures: 3 x 50 = 150 minutes per week.		
Credit points Requirements according to the examination regulations Mandatory prerequisites Learning outcomes and their corresponding PLOs CLO 1: Students are able to apply basic mathematical concepts related to matrices and determinants. CLO 2: Students are able to apply equations or inequalities and graphs of parabolic, circle or ellipse functions. CLO 3: Students are able to apply complex variable forms in polar form and determine the roots of the equation. PLO-03, PLO-04, PLO-03, PLO-04, PLO-04, PLO-03, PLO-04, PLO-05, PLO-04, PLO-06, PLO-07, PLO-07		2. Exercises and Assignments: 3 x 50 = 150 minutes per we	ek.	
Requirements according to the examination regulations Mandatory prerequisites Learning outcomes and their corresponding PLOs CLO 1: Students are able to apply basic mathematical concepts related to matrices and determinants. CLO 2: Students are able to apply equations or inequalities and graphs of parabolic, circle or ellipse functions. CLO 3: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation.		3. Private learning: 3 x 50 = 150 minutes per week.		
according to the exams. the exams the exams the example to apply complex variable forms the example to apply complex variable forms the example to apply complex	Credit points	3 credit points (sks)		
examination regulations Mandatory prerequisites Learning outcomes and their corresponding PLOs CLO 1: Students are able to apply basic mathematical concepts related to matrices and determinants. PLO-01, PLO-02, PLO-04 CLO 2: Students are able to apply equations or inequalities and graphs of parabolic, circle or ellipse functions. PLO-03, PLO-04 PLO-03, PLO-04 CLO 3: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4. Students are able to apply complex variable forms in polar form and determine the roots of the equation.	Requirements	A student must have attended at least 75% of the lectures to sit in		
Mandatory prerequisites Learning outcomes and their corresponding PLOs CLO 1: Students are able to apply basic mathematical concepts related to matrices and determinants. CLO 2: Students are able to apply equations or inequalities and graphs of parabolic, circle or ellipse functions. CLO 3: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation.	according to the	the exams.		
Mandatory prerequisites Learning outcomes and their corresponding PLOs CLO 1: Students are able to apply basic mathematical concepts related to matrices and determinants. PLO-01, PLO-02, PLO-04 CLO 2: Students are able to apply equations or inequalities and graphs of parabolic, circle or ellipse functions. PLO-02, PLO-03, PLO-04 CLO 3: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4. Students are able to apply complex variable forms in polar form and determine the roots of the equation.	examination			
Learning outcomes and their corresponding PLOs CLO 1: Students are able to apply basic mathematical concepts related to matrices and determinants. CLO 2: Students are able to apply equations or inequalities and graphs of parabolic, circle or ellipse functions. CLO 3: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation.	regulations			
Learning outcomes and their corresponding PLOs CLO 1: Students are able to apply basic mathematical concepts related to matrices and determinants. PLO-01, PLO-02, PLO-04 CLO 2: Students are able to apply equations or inequalities and graphs of parabolic, circle or ellipse functions. PLO-03, PLO-04 CLO 3: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation.	•	-		
and their corresponding PLOs CLO 1: Students are able to apply basic mathematical concepts related to matrices and determinants. PLO-01, PLO-02, PLO-04 CLO 2: Students are able to apply equations or inequalities and graphs of parabolic, circle or ellipse functions. PLO-02, PLO-03, PLO-04 CLO 3: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation.	-			
CLO 1: Students are able to apply basic mathematical concepts related to matrices and determinants. CLO 2: Students are able to apply equations or inequalities and graphs of parabolic, circle or ellipse functions. CLO 3: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation.	_			
concepts related to matrices and determinants. PLO-02, PLO-04 CLO 2: Students are able to apply equations or inequalities and graphs of parabolic, circle or ellipse functions. PLO-02, PLO-03, PLO-03, PLO-04 CLO 3: Students are able to apply complex variable forms in polar form and determine the roots of the equation. PLO-02, PLO-03, PLO-04, PLO-05, PLO-04, PLO-04, PLO-05, PLO-04, PLO-04, PLO-04, PLO-04, PLO-04, PLO-04, PLO-04, PLO-05, PLO-04, PL		, and the second	PLO-01,	
CLO 2: Students are able to apply equations or inequalities and graphs of parabolic, circle or ellipse functions. CLO 3: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms in polar form and determine the roots of the equation.				
and graphs of parabolic, circle or ellipse functions. CLO 3: Students are able to apply equations or inequalities and graphs of parabolic, circle or ellipse functions. PLO-03, PLO-04 PLO-03, PLO-04, PLO-		concepts related to matrices and determinants.		
and graphs of parabolic, circle or ellipse functions. CLO 3: Students are able to apply equations or inequalities and graphs of parabolic, circle or ellipse functions. PLO-03, PLO-04 PLO-03, PLO-04, PLO-				
and graphs of parabolic, circle or ellipse functions. CLO 3: Students are able to apply complex variable forms in polar form and determine the roots of the equation. PLO-03, PLO-04		CLO 2: Students are able to apply equations or inequalities	PLO-02,	
CLO 3: Students are able to apply complex variable forms in polar form and determine the roots of the equation. CLO 4: Students are able to apply complex variable forms PLO-03, PLO-04,			PLO-03,	
in polar form and determine the roots of the equation. PLO-03, PLO-04,		and graphs of parabolic, circle of ellipse functions.	PLO-04	
in polar form and determine the roots of the equation. PLO-03, PLO-04,		CLO 3: Students are able to apply complex variable forms	DI O 03	
CLO 4 Charles are able to determine the continuity of			•	
, I FLU-U3 I				
functions and its derivatives.			1 60.03	

	CLO 5: Students are able to apply integrals through the fundamental theorem of calculus.	PLO-02, PLO-03, PLO-04 PLO-04, PLO-05, PLO-04	
Content	This course studies matrices and their determinants, equations, inequalities, graphs of parabolic functions, circles or ellipses, complex numbers and their polar forms, continuity of functions and its derivatives, integrals and fundamental theorems of calculus.		
Study and examination requirements and forms of examination	 In-class exercises Assignment 1, 2, 3 Mid-term examination Final examination 		
Media employed	LCD, whiteboard, websites (myITS Classroom), zoom.		
Reading list	 Main: Tim Dosen Jurusan Matematika ITS, Buku Ajar Kalkulike-4 Jurusan Matematika ITS, 2018. Anton, H. dkk, Calculus, 10-th edition, John Wiley & Syork, 2012. 	·	
	Supporting:		
	 Kreyzig, E, Advanced EngineeringMathematics, 10-t John Wiley & Sons, Singapore, 2011. 		
	2. Purcell, J, E, Rigdon, S., E., Calculus, 9-th edition, Pre New Jersey, 2006.	ntice-Hall,	
	 James Stewart , Calculus, ed.7, Brooks/cole-Cengage Canada,2012. 	Learning,	