

SEMESTER LEARNING PLAN

**INTRODUCTION TO IMAGE PROCESSING COURSES
(23H01130903)**



TEACHING TEAM

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STUDI PROGRAM OF MATHEMATICS - S1
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
HASANUDDIN UNIVERSITY
MAKASSAR
2025

**STUDY PROGRAM OF MATEMATIKA - S1
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
HASANUDDIN UNIVERSITY**

Vision

The scientific vision is to become a study program with an international reputation in the development of mathematics based on the Indonesian maritime continent by 2030

Vision Strategy

Mission

To fulfill the above vision, the Undergraduate Mathematics Study Program has four missions, namely:

- Organizing innovative and effective mathematics learning to improve the quality and creativity of students in order to compete nationally and internationally.
- Improving a research culture that produces internationally reputable publications.
- Playing an active role in community service activities and collaborating with other academic institutions, government, business, media and society.
- Carry out governance in the Mathematics Study Program that is effective, efficient and transparent based on IT and ISO 9001:2015 standards to achieve the tridharma goals.

Graduate Profiles

Gagal diterjemahkan

PLO charged to courses

CPL-1 (ILO 1) - Students are able to demonstrate an advanced understanding of basic pure and simple applied mathematics.

CPL-6 (KK2) - The students are able to apply the mathematical method for solving a mathematical related-problem with or without the aid of computers and software

CPL-7 (KK3) - The students are able to demonstrate mathematical skills which include interpretation, connecting problems, solving problems, and communicating individually or teamwork

Course Learning Outcomes (CLO)

CPMK-1: understand the definition of images and the benefits of image processing (CPL1)

CPMK-2: understand the definition of convolution and correlation and apply them in image processing (CPL1 dan CPL6)

CPMK-3: Process or transform images using discrete Fourier and Wavelet transforms. (CPL6)

CPMK-4: demonstrates image recovery and provides a simple example. (CPL7)

Sub-CLO

Sub CPMK-1: • Understand well the objectives, uses of course material, and its relationship to other courses. • Students are able to explain the steps in digital image processing. • Students can explain the elements used in digital image processing (CPMK-2)

Sub CPMK-2: • Students are able to explain the visual perception of the human eye. • Students are able to explain the concepts of images and pixels. • Students can perform geometric transformations on images. (CPMK-1, CPMK-2 dan CPMK-4)

Sub CPMK-3: • Students can explain the Fourier Transform and Discrete Fourier Transform. • Students can use the Discrete Fourier Transform to convert images into the frequency domain. • Students know the differences in image processing in the spatial domain and frequency domain • Students can know

several image transformation methods (CPMK-2, CPMK-3 dan CPMK-4)

Sub CPMK-4: • Students are able to explain algebraic concepts used to improve image quality. • Students are able to apply algebraic concepts to improve image quality. (CPMK-3 dan CPMK-4)

Sub CPMK-5: • Students are able to detect the presence of points and lines in images. • Students know the operators in edge detection. • Students can explain the Hough transformation (CPMK-4)

Sub CPMK-6: • Students are able to separate image elements using thresholding techniques. (CPMK-4)

Sub CPMK-7: • Students can explain the method of image representation using Code Chains. • Students can explain several methods of thinning and structuring images. • Students can state 13-14 • Students can explain the method of image representation using Code Chains. • Students can explain several methods of thinning and structuring images. • Students can express image descriptions using Code Chains and Moments. (CPMK-1, CPMK-2 dan CPMK-4)

Sub CPMK-8: • Students are able to use distance and correlation equations to recognize similarities in images • Students are able to name several methods that can be used in pattern recognition. (CPMK-1, CPMK-2 dan CPMK-4)

Learning Analytics

Introduction to Image Processing



- Students are able to use distance and correlation equations to recognize similarities in images• Students are able to name several methods that can be used in pattern recognition. (CPMK-1, CPMK-2 dan CPMK-4)



- Students can explain the method of image representation using Code Chains. • Students can explain several methods of thinning and structuring images. • Students can state 13-14 • Students can explain the method of image representation using Code Chains. • Students can explain several methods of thinning and structuring images. • Students can express image descriptions using Code Chains and Moments. (CPMK-1, CPMK-2 dan CPMK-4)



- Students are able to separate image elements using thresholding techniques. (CPMK-4)



- Students are able to detect the presence of points and lines in images. • Students know the operators in edge detection. • Students can explain the Hough transformation (CPMK-4)



- Students are able to explain algebraic concepts used to improve image quality. • Students are able to apply algebraic concepts to improve image quality. (CPMK-3 dan CPMK-4)



- Students can explain the Fourier Transform and Discrete Fourier Transform. • Students can use the Discrete Fourier Transform to convert images into the frequency domain. • Students know the differences in image processing in the spatial domain and frequency domain • Students can know several image transformation methods (CPMK-2, CPMK-3 dan CPMK-4)



- Students are able to explain the visual perception of the human eye. • Students are able to explain the concepts of images and pixels. • Students can perform geometric transformations on images. (CPMK-2, CPMK-4 dan CPMK-1)



- Understand well the objectives, uses of course material, and its relationship to other courses. • Students are able to explain the steps in digital image processing. • Students can explain the elements used in digital image processing (CPMK-2)

Have passed the course Basic Mathematics II



HASANUDDIN UNIVERSITY

FAKULTY OF MATHEMATICS AND NATURAL SCIENCES

STUDY PROGRAM OF MATHEMATICS - S1

SEMESTER LEARNING PLAN

Course		Code	Course Group	Credits	SEMESTER	Compilation Date
Introduction to Image Processing		23H01130903	Applied Mathematics	3	5	10 Agustus 2024
AUTHORITY		SLP Developer Lecturer	Coordinator		Head of Study Program	
		Prof. Dr. Eng. Mawardi, S.Si., M.Si.	Prof. Dr. Eng. Mawardi, S.Si., M.Si.		Dr. Firman, S.Si.,M.Si.	
	SLOs that are imposed on the course					
	SLO-1:	Mahasiwa memiliki pemahaman yang relatif mendalam dalam matematika murni dan matematika terapan sederhana.				
	SLO-6:	Mahasiswa dapat menerapkan metode matematika untuk memecahkan masalah terkait matematika dengan atau tanpa bantuan komputer dan perangkat lunak				
	SLO-7:	Mahasiswa dapat menunjukkan keterampilan matematika termasuk menghubungkan masalah, menyelesaikan masalah, interpretasi, dan berkomunikasi secara individu atau dengan kerja tim				
	SLO ⇒ Course Learning Outcomes					
	After completing this course, it is expected:					
	SLO-1	CLO-1: understand the definition of images and the benefits of image processing				
		CLO-2: understand the definition of convolution and correlation and apply them in image processing				
	SLO-6	CLO-2: understand the definition of convolution and correlation and apply them in image processing				
		CLO-3: Process or transform images using discrete Fourier and Wavelet transforms.				
	SLO-7	CLO-4: demonstrates image recovery and provides a simple example.				
	CLO ⇒ Sub-CLO					
	CLO-2	Sub-CLO-1:• Understand well the objectives, uses of course material, and its relationship to other courses.• Students are able to explain the steps in digital image processing.• Students can explain the elements used in digital image processing				
		Sub-CLO-2:• Students are able to explain the visual perception of the human eye.• Students are able to explain the concepts of images and pixels.• Students can perform geometric transformations on images.				
		Sub-CLO-3:• Students can explain the Fourier Transform and Discrete Fourier Transform.• Students can use the Discrete Fourier Transform to convert images into the frequency domain.• Students know the differences in image processing in the spatial domain and frequency domain• Students can know several image transformation methods				

Learning Outcomes Course		Sub-CLO-7: • Students can explain the method of image representation using Code Chains.• Students can explain several methods of thinning and structuring images.• Students can state 13-14• Students can explain the method of image representation using Code Chains.• Students can explain several methods of thinning and structuring images.• Students can express image descriptions using Code Chains and Moments.
		Sub-CLO-8: • Students are able to use distance and correlation equations to recognize similarities in images• Students are able to name several methods that can be used in pattern recognition.
	CLO-4	Sub-CLO-2: • Students are able to explain the visual perception of the human eye.• Students are able to explain the concepts of images and pixels.• Students can perform geometric transformations on images.
		Sub-CLO-3: • Students can explain the Fourier Transform and Discrete Fourier Transform.• Students can use the Discrete Fourier Transform to convert images into the frequency domain.• Students know the differences in image processing in the spatial domain and frequency domain• Students can know several image transformation methods
		Sub-CLO-4: • Students are able to explain algebraic concepts used to improve image quality.• Students are able to apply algebraic concepts to improve image quality.
		Sub-CLO-5: • Students are able to detect the presence of points and lines in images.• Students know the operators in edge detection.• Students can explain the Hough transformation
		Sub-CLO-6: • Students are able to separate image elements using thresholding techniques.
		Sub-CLO-7: • Students can explain the method of image representation using Code Chains.• Students can explain several methods of thinning and structuring images.• Students can state 13-14• Students can explain the method of image representation using Code Chains.• Students can explain several methods of thinning and structuring images.• Students can express image descriptions using Code Chains and Moments.
		Sub-CLO-8: • Students are able to use distance and correlation equations to recognize similarities in images• Students are able to name several methods that can be used in pattern recognition.
	CLO-1	Sub-CLO-2: • Students are able to explain the visual perception of the human eye.• Students are able to explain the concepts of images and pixels.• Students can perform geometric transformations on images.
		Sub-CLO-7: • Students can explain the method of image representation using Code Chains.• Students can explain several methods of thinning and structuring images.• Students can state 13-14• Students can explain the method of image representation using Code Chains.• Students can explain several methods of thinning and structuring images.• Students can express image descriptions using Code Chains and Moments.
		Sub-CLO-8: • Students are able to use distance and correlation equations to recognize similarities in images• Students are able to name several methods that can be used in pattern recognition.
	CLO-3	Sub-CLO-3: • Students can explain the Fourier Transform and Discrete Fourier Transform.• Students can use the Discrete Fourier Transform to convert images into the frequency domain.• Students know the differences in image processing in the spatial domain and frequency domain• Students can know several image transformation methods
		Sub-CLO-4: • Students are able to explain algebraic concepts used to improve image quality.• Students are able to apply algebraic concepts to improve image quality.
	Correlation between SLOs/CLOs to Sub-CLOs	

SLOs that are charged on the Course	CPMK	SUB CPMK	Form of Assessment*				Weight	Value	Student Score
			Formative	Sumative					
				Case Studies	Presentation	Independent Assignment			
SLO-6	CLO-2	SUB-CLO-1	Discussion of image types and examples	10	0	0	10		
SLO-1	CLO-1	SUB-CLO-2	Appearance in group discussions	0	10	0	10		
SLO-7	CLO-4	SUB-CLO-3	Accuracy in answering questions	20	0	0	20		
SLO-7	CLO-4	SUB-CLO-4	Discussion of the application of images in medicine and accuracy in answering questions in the discussion	20	10	0	30		
SLO-7	CLO-4	SUB-CLO-5	Accuracy in making programs	10	0	0	10		
SLO-7	CLO-4	SUB-CLO-7	Accuracy in making programs using Matlab	0	0	10	10		
SLO-7	CLO-4	SUB-CLO-8	Appearance in group discussions	0	0	10	10		
				60	20	20	100		
Course Description		This course is an elective course presented to provide additional skills to students in processing digital images which are much needed in the world of applications such as in the world of health, broadcast, and so on							
Learning Materials/Subjects		1. Basics of Introduction to digital processing 2. Image Transformation 3. Spatial filtering 4. Frequency Domain Processing 5. Fourier and Wavelet Transformations in image processing 6. Image Restoration 7. Image coloring process (Color Image Processing) 8. Image Segmentation (Image Segmentation)							
		Main References							

Reference	1. Gonzalez, R.C., and Woods, R.E., 1992, Digital Image Processing, Addison-Wesley Company. 2. Gerhard X. Ritter; Joseph N. Wilson, 1996, Handbook of Computer Vision Algorithms in Image Algebra, CRC Press. 3. Wijaya, M. Ch. Dan Prijono, Agus., 1997, Digital Image Processing using Matlab, Informatics, Bandung						
	Additional References						
	Gagal diterjemahkan						
Teaching Team	Prof. Dr. Kasbawati, S.Si., M.Si., Prof. Dr. Eng. Mawardi, S.Si., M.Si.						
Course requirement	Basic Mathematics II						
Week	Sub CPMK (End-of-stage learning ability)	Penilaian (Assesment)		Learning Forms and Methods [time estimate]		Content	Weight of Assessment (%)
		Indicator	Techniques & Criteria	Offline	Online		
1	2	3	4	5	6	7	8
1-2	- Understand well the objectives, uses of course material, and its relationship to other courses. - Students are able to explain the steps in digital image processing. - Students can explain the elements used in digital image processing (CPMK-2)	Formative: Accuracy of understanding Sumative: Mahastudents are able to define image and types of image	Formative Criteria: Discussion of image types and examples dinilai dengan rubrik 02 Sumative Criteria: Case Studies (10) dinilai dengan rubrik 03 Assessment Technique: Test and Non-Test	Studying: Group discussion (Small Group Discussion) 60 minutes		College contract, definition of image and its types	10

3-4	- Students are able to explain algebraic concepts used to improve image quality. - Students are able to apply algebraic concepts to improve image quality. (CPMK-3, CPMK-4)	Formative: Accuracy in answering in discussions Sumative: Students are able to create images with the Matlab program	Formative Criteria: Discussion of the application of images in medicine dinilai dengan rubrik 02 Sumative Criteria: Case Studies (20) dinilai dengan rubrik 04 Assessment Technique: Non Test	Studying: Group discussion (Small Group Discussion) 50 minutes		College Contract - Create a simple program using Matlab to generate images - Introduction Processing Digital image	20
5-6	- Students are able to explain the visual perception of the human eye. - Students are able to explain the concepts of images and pixels. - Students can perform geometric transformations on images. (CPMK-2, CPMK-4, CPMK-1)	Formative: Accuracy of answers in discussions Sumative: Students are able to explain the definition of image digital and pixel. Students are able to do transformation based on the image.	Formative Criteria: Appearance in group discussions dinilai dengan rubrik 03 Sumative Criteria: Presentation (10) dinilai dengan rubrik 02 Assessment Technique: Non Test	Studying: Group discussion (Small Group Discussion) 60 minutes		Convolution and correlation	10

7-8	- Students can explain the Fourier Transform and Discrete Fourier Transform. - Students can use the Discrete Fourier Transform to convert images into the frequency domain. - Students know the differences in image processing in the spatial domain and frequency domain. - Students can know several image transformation methods (CPMK-2, CPMK-3, CPMK-4)	Formative: Accuracy in defining discrete transformations Sumative: Students are able to explain the definition of discrete transformation and its inverse	Formative Criteria: Accuracy in answering questions dinilai dengan rubrik 02 Sumative Criteria: Case Studies (20) dinilai dengan rubrik 02 Assessment Technique: Non Test	Studying: Cooperative learning (Cooperative learning) 60 minutes		Image transformation	20
9-10	- Students are able to explain algebraic concepts used to improve image quality. - Students are able to apply algebraic concepts to improve image quality. (CPMK-3, CPMK-4)	Formative: the accuracy of creating illustrations using matrices Sumative: Students can explain several methods in improving image quality such as image smoothing, sharpening and histogram	Formative Criteria: Accuracy in answering questions in discussions dinilai dengan rubrik 01 Sumative Criteria: Presentation (10) dinilai dengan rubrik 02 Assessment Technique: Non Test	Studying: Group discussion (Small Group Discussion) 60 minutes		Image quality improvement	10
11-12	- Students are able to detect the presence of points and lines in images. - Students know the operators in edge detection. - Students can explain the Hough transformation (CPMK-4)	Formative: Decision in making programs Sumative: Students know the methods for detecting points, lines and edges in images.	Formative Criteria: Accuracy in making programs dinilai dengan rubrik 02 Sumative Criteria: Case Studies (10) dinilai dengan rubrik 02 Assessment Technique: Non Test	Studying: Group discussion (Small Group Discussion) 50 minutes		Segmentation (Discontinuity Detection)	10

13-14	- Students can explain the method of image representation using Code Chains. - Students can explain several methods of thinning and structuring images. - Students can state 13-14 - Students can explain the method of image representation using Code Chains. - Students can explain several methods of thinning and structuring images. - Students can express image descriptions using Code Chains and Moments. (CPMK-1, CPMK-2, CPMK-4)	Formative: Accuracy in making programs with Matlab Sumative: Students are able to represent images in the form of a code chain. Students can explain several algorithms in the framework. Students can describe images into 7 types of moments.	Formative Criteria: Accuracy in making programs using Matlab dinilai dengan rubrik 02 Sumative Criteria: Independent Assignment (10) dinilai dengan rubrik 02 Assessment Technique: Non Test	Studying: Group discussion (Small Group Discussion) 60 minutes		Representation and description	10
15	- Students are able to use distance and correlation equations to recognize similarities in images - Students are able to name several methods that can be used in pattern recognition. (CPMK-1, CPMK-2, CPMK-4)	Formative: Accuracy in answering questions in the discussion Sumative: Students are able to explain the relationship between images and distance equations and correlations.	Formative Criteria: Appearance in group discussions dinilai dengan rubrik 02 Sumative Criteria: Independent Assignment (10) dinilai dengan rubrik 02 Assessment Technique: Non Test	Studying: Group discussion (Small Group Discussion) 60 minutes		Pattern Recognition	10
							100

Matrix of SLO, CLO, and Assessment Method

SLO / CLO	CLO-1	CLO-2	CLO-3	CLO-4
CPL-1 (ILO 1)	Presentation (Weight 10%) Independent Assignment (Weight 10%) Independent Assignment (Weight 10%)	Case Studies (Weight 10%) Presentation (Weight 10%) Case Studies (Weight 20%) Independent Assignment (Weight 10%) Independent Assignment (Weight 10%)		
CPL-6 (KK2)		Case Studies (Weight 10%) Presentation (Weight 10%) Case Studies (Weight 20%) Independent Assignment (Weight 10%) Independent Assignment (Weight 10%)	Case Studies (Weight 20%) Case Studies (Weight 20%) Presentation (Weight 10%)	
CPL-7 (KK3)				Presentation (Weight 10%) Case Studies (Weight 20%) Case Studies (Weight 20%) Presentation (Weight 10%) Case Studies (Weight 10%) Independent Assignment (Weight 10%) Independent Assignment (Weight 10%)

Evaluation Type and Assessment Weight

Type	Assessment Weight
Case Studies	60
Presentation	20
Independent Assignment	20
Total	100

Assessment and Evaluation of Student Achievement of CLOs

SLOs that are charged on the Course	CLO	SUB CLO	Form of Assessment*				Weight	Value	Student Score
			Formative	Sumative					
				Case Studies	Presentation	Independent Assignment			
SLO-6	CLO-2	SUB-CLO-1	Discussion of image types and examples	10	0	0	10		
SLO-1	CLO-1	SUB-CLO-2	Appearance in group discussions	0	10	0	10		
SLO-7	CLO-4	SUB-CLO-3	Accuracy in answering questions	20	0	0	20		
SLO-7	CLO-4	SUB-CLO-4	Discussion of the application of images in medicine and accuracy in answering questions in the discussion	20	10	0	30		
SLO-7	CLO-4	SUB-CLO-5	Accuracy in making programs	10	0	0	10		
SLO-7	CLO-4	SUB-CLO-7	Accuracy in making programs using Matlab	0	0	10	10		
SLO-7	CLO-4	SUB-CLO-8	Appearance in group discussions	0	0	10	10		
				60	20	20	100		

Lampiran Rubrik 02 | ASSESMENT PRESENTASI

Kriteria Penilaian	Bobot/Skor Penilaian				
	5	4	3	2	1
Penguasaan Materi	Mahasiswa sangat menguasai materi	Mahasiswa menguasai materi	Mahasiswa cukup menguasai materi	Mahasiswa kurang menguasai materi	Mahasiswa tidak menguasai materi
Sistematika Penyajian	Mahasiswa menyajikan materi presentasi dengan sangat sistematis	Mahasiswa menyajikan materi presentasi dengan sistematis	Mahasiswa menyajikan materi presentasi dengan cukup sistematis	Mahasiswa menyajikan materi presentasi dengan kurang sistematis	Mahasiswa menyajikan materi presentasi dengan tidak sistematis
Suara dan Ekspresi	Mahasiswa menjelaskan dengan suara yang sangat jelas, volume yang sangat sesuai, pengucapan istilah sangat tepat	Mahasiswa menjelaskan dengan suara yang jelas, volume yang sesuai, pengucapan istilah tepat	Mahasiswa menjelaskan dengan suara yang cukup jelas, volume yang cukup sesuai, pengucapan istilah cukup tepat	Mahasiswa menjelaskan dengan suara yang kurang jelas, volume yang kurang sesuai, pengucapan istilah kurang tepat	Mahasiswa menjelaskan dengan suara yang tidak jelas, volume yang tidak sesuai, pengucapan istilah tidak tepat
Kepercayaan Diri	Mahasiswa berbicara dengan sangat semangat, menularkan semangat dan antusiasme pada pendengar, <i>eye contact</i> ke semua peserta (<i>audience</i>)	Mahasiswa berbicara dengan semangat, menularkan semangat dan antusiasme pada pendengar, <i>eye contact</i> ke semua peserta (<i>audience</i>)	Mahasiswa berbicara dengan cukup semangat, cukup menularkan semangat dan antusiasme pada pendengar, <i>eye contact</i> ke semua peserta (<i>audience</i>)	Mahasiswa berbicara dengan kurang semangat, kurang menularkan semangat dan antusiasme pada pendengar, <i>eye contact</i> yang kurang ke semua peserta (<i>audience</i>)	Mahasiswa berbicara dengan tidak semangat, tidak dapat menularkan semangat dan antusiasme pada pendengar, tidak ada <i>eye contact</i> ke semua peserta (<i>audience</i>)
Kemampuan menjawab	Mahasiswa mampu menjawab semua pertanyaan dengan sangat tepat, mendalam (lebih dari yang dibutuhkan), dan sangat tajam	Mahasiswa mampu menjawab semua pertanyaan dengan tepat, mendalam (lebih dari yang dibutuhkan), dan tajam	Mahasiswa mampu menjawab semua pertanyaan dengan cukup tepat, cukup mendalam, dan cukup tajam	Mahasiswa mampu menjawab semua pertanyaan dengan kurang tepat, kurang mendalam, dan kurang tajam	Mahasiswa menjawab semua pertanyaan dengan tidak tepat, tidak mendalam, dan tidak tajam
Kepemimpinan presentasi kelompok	Mahasiswa sangat mampu menginisiasi, menggerakkan, mengarahkan, mengorganisir jalannya presentasi	Mahasiswa mampu menginisiasi, menggerakkan, mengarahkan, mengorganisir jalannya presentasi	Mahasiswa cukup mampu menginisiasi, menggerakkan, mengarahkan, mengorganisir jalannya presentasi	Mahasiswa kurang mampu menginisiasi, menggerakkan, mengarahkan, mengorganisir jalannya presentasi	Mahasiswa tidak mampu menginisiasi, menggerakkan, mengarahkan, mengorganisir jalannya presentasi

Lampiran Rubrik 03 | ASSESMENT MAKALAH

Kriteria Penilaian	Bobot/Skor Penilaian				
	5	4	3	2	1
Sistematika dan kelengkapan penulisan	Mahasiswa menyusun laporan dengan sistematika yang sangat sesuai dengan format yang diberikan dan sangat lengkap	Mahasiswa menyusun laporan dengan sistematika yang sesuai dengan format yang diberikan dan lengkap	Mahasiswa menyusun laporan dengan sistematika yang cukup sesuai dengan format yang diberikan dan cukup lengkap	Mahasiswa menyusun laporan dengan sistematika yang kurang sesuai dengan format yang diberikan dan kurang lengkap	Mahasiswa menyusun laporan dengan sistematika yang tidak sesuai dengan format yang diberikan dan tidak lengkap
Kebenaran konsep ide yang dipaparkan	Mahasiswa menyusun makalah dengan konsep/ide yang dipaparkan dengan sangat tepat (sesuai dengan teori)	Mahasiswa menyusun makalah dengan konsep/ide yang dipaparkan dengan tepat	Mahasiswa menyusun makalah dengan konsep/ide yang dipaparkan dengan cukup tepat	Mahasiswa menyusun makalah dengan konsep/ide yang dipaparkan dengan kurang tepat	Mahasiswa menyusun makalah dengan konsep/ide yang dipaparkan dengan tidak tepat
Interpretasi metode dengan permasalahan yang dikaji	Mahasiswa sangat mampu mengidentifikasi relevansi metode dengan permasalahan yang dikaji	Mahasiswa mampu mengidentifikasi relevansi metode dengan permasalahan yang dikaji	Mahasiswa cukup mampu mengidentifikasi relevansi metode dengan permasalahan yang dikaji	Mahasiswa kurang mampu mengidentifikasi relevansi metode dengan permasalahan yang dikaji	Mahasiswa tidak mampu mengidentifikasi relevansi metode dengan permasalahan yang dikaji
Validitas Referensi – VR	Mahasiswa menggunakan referensi yang sangat <i>up to date</i> dan sangat relevan	Mahasiswa menggunakan referensi yang <i>up to date</i> dan relevan	Mahasiswa menggunakan referensi yang cukup <i>up to date</i> dan cukup relevan	Mahasiswa menggunakan referensi yang kurang <i>up to date</i> dan kurang relevan	Mahasiswa menggunakan referensi yang tidak <i>up to date</i> dan tidak relevan
Ketepatan waktu	Mahasiswa mengumpulkan makalah tepat waktu atau sebelum batas waktu yang ditentukan.	Mahasiswa mengumpulkan makalah lewat 1 hari dari batas waktu yang ditentukan.	Mahasiswa mengumpulkan makalah lewat 2 hari dari batas waktu yang ditentukan.	Mahasiswa mengumpulkan makalah lewat 3 hari dari batas waktu yang ditentukan.	Mahasiswa mengumpulkan makalah lewat 4 hari atau lebih dari batas waktu yang ditentukan.

Lampiran Rubrik 04 | ASSESMENT DISKUSI

Kriteria Penilaian	Bobot/Skor Penilaian				
	5	4	3	2	1
Kelugasan argumen	Mahasiswa menyampaikan pendapat menggunakan bahasa yang sangat baik, sangat mudah dimengerti, intonasi suara yang sangat jelas	Mahasiswa menyampaikan pendapat menggunakan bahasa yang baik, mudah dimengerti, intonasi suara yang jelas	Mahasiswa menyampaikan pendapat menggunakan bahasa yang cukup baik, cukup mudah dimengerti, intonasi suara yang cukup jelas	Mahasiswa menyampaikan pendapat menggunakan bahasa yang kurang baik, kurang mudah dimengerti, intonasi suara yang kurang jelas	Mahasiswa menyampaikan pendapat menggunakan bahasa yang tidak baik, tidak mudah dimengerti, intonasi suara yang tidak jelas
Parsipasi aktif	Mahasiswa sangat aktif menyampaikan pendapat/masukannya, sangat aktif memberi jawaban, dan sangat berinisiatif mencari solusi	Mahasiswa aktif menyampaikan pendapat/masukannya, aktif memberi jawaban, dan berinisiatif mencari solusi	Mahasiswa cukup aktif menyampaikan pendapat/masukannya, cukup aktif memberi jawaban, dan cukup berinisiatif mencari solusi	Mahasiswa kurang aktif menyampaikan pendapat/masukannya, kurang aktif memberi jawaban, dan kurang berinisiatif mencari solusi	Mahasiswa tidak aktif menyampaikan pendapat/masukannya, tidak aktif memberi jawaban, dan tidak berinisiatif mencari solusi
Etika dan sikap tata nilai	Mahasiswa sangat menghormati etika diskusi akademik secara umum	Mahasiswa menghormati etika diskusi akademik secara umum	Mahasiswa cukup menghormati etika diskusi akademik secara umum	Mahasiswa kurang menghormati etika diskusi akademik secara umum	Mahasiswa tidak menghormati etika diskusi akademik secara umum
Kepemimpinan (diskusi kelompok)	Mahasiswa sangat mampu menginisiasi, menggerakkan, mengarahkan, mengorganisir jalannya diskusi	Mahasiswa mampu menginisiasi, menggerakkan, mengarahkan, mengorganisir jalannya diskusi	Mahasiswa cukup mampu menginisiasi, menggerakkan, mengarahkan, mengorganisir jalannya diskusi	Mahasiswa kurang mampu menginisiasi, menggerakkan, mengarahkan, mengorganisir jalannya diskusi	Mahasiswa tidak mampu menginisiasi, menggerakkan, mengarahkan, mengorganisir jalannya diskusi