

# Universitas Negeri Surabaya Faculty of Engineering, Electrical Engineering Undergraduate Study Program

Document Code

## **SEMESTER LEARNING PLAN**

Courses		CODE	Course Family	,	Cred	it We	ight	SEMESTER	Compilation Date			
Multimedia S Systems	ignals and	2020103180	Compulsory Stu Program Subje	udy cts	T=3	P=0	ECTS=4.77	6	April 10, 2023			
AUTHORIZA <sup>*</sup>	TION	SP Developer		Course	Cluste	er Coo	ordinator	Study Progra	m Coordinato			
		Dr. Nurhayati, S.T.,	M.T.	Prof. Dr. M.T.	I Gust	ti Putu	ı Asto B.,		hmawati, S.T. .T.			
Learning model	Case Studies											
Program	PLO study program that is charged to the course											
Learning Outcomes	Program Ob	Objectives (PO)										
(PLO)	PO - 1	Able to apply knowledge of mathematics and multimedia signals to gain a thorough understanding of engineering principles.										
	PO - 2	Able to design multimedi	a signal processing	applicatio	ns to l	эе арр	olied in the fiel	d of electrical e	ngineering			
	PO - 3	Able to communicate effectively both orally and in writing in presenting the results of multimedia signal processing										
	PO - 4	Able to apply engineering principles, identify, formulate and analyze data/information to solve problems in the fields of Telecommunications and intelligent computing										
	PO - 5	Able to plan, complete and evaluate tasks related to multimedia signal processing.										
	PLO-PO Matrix											
		P.O										
		PO-1										
		PO-2										
		PO-3										
		PO-4										
		PO-5										
	PO Matrix at the end of each learning stage (Sub-PO)											

P.O		Week														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PO-1																
PO-2																
PO-3																
PO-4																
PO-5																

#### Short Course Description

Telecommunication and internet networks carry traffic, most of which is multimedia content, with rapid growth from year to year. In this course students will study the characteristics, generation and processing of various types of multimedia signals, including: image, video, sound and their combination. In addition, compression principles will be studied from aspects of information theory and signal theory, as well as modern coding techniques. Various modern encoding and compression methods used in various applications are also discussed, including: JPEG, JPEG2000, MPEG-1/2/4, mp3.

#### References

Main:

- 1. Ze-Nian Li, Mark S. Drew, & Jiangchuan Liu. 2014. Fundamentals of Multimedia, 2nd ed. Springer.
- 2. Parag Havaldar & Gérard Medioni. 2010. Multimedia Systems: Algorithms, Standards, & Industry Practices.
- Cengage Learning.

  3. Srdjan Stankovic, Irena Orovic, & Ervin Sejdic. 2016. Multimedia Signals and Systems: Basic and Advanced Algorithms for Signal Processing, 2nd ed. Springer.

### Supporters:

- 1. R.L. Freeman, Reference Manual for Telecommunications Engineering, 3rd edn. (Wiley, New York, 2001)
- P.K. Andleigh, K. Thakrar, Multimedia Systems Design. (Prentice-Hall PTR, Upper Saddle River, 1995)
   K.C. Pohlmann, Principles of Digital Audio, 6th edn. (McGraw-Hill, New York, 2010)

# Supporting lecturer

Dr. Nurhayati, S.T., M.T.

Week-	Final abilities of each learning stage	E	valuation	Lear Stude	lp Learning, ning methods, nt Assignments, timated time]	Learning materials [ References	Assessment Weight (%)	
	(Sub-PO)	Indicator	Criteria & Form	Offline ( offline	Online ( online )	]		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
1	Students are able to explain and classify Multimedia	Evaluation Rubric	Criteria: Evaluation Rubric  Form of Assessment: Participatory Activities	Contextual Instruction 2 X 50		Material: Meeting material 1 Bibliography: Ze-Nian Li, Mark S. Drew, & Jiangchuan Liu. 2014. Fundamentals of Multimedia, 2nd ed. Springer.	5%	
2	Students are able to represent graphics and images	Students are able to represent graphics and images	Criteria: Evaluation Rubric	Discussion, question and answer, PPT - Method: Case Method Learning  Step 1: Preparation of Case Examples Basic Questions The lecturer asks: what are the problems that arise, their causes and impacts? Students respond to lecturer's questions, question and answer Step 2: Determine discussion procedures (Individual/Ex) Lecturer determines collection procedures and time Lecturer makes agreement on deadline for collection, Gives students time to form groups Students time to form groups Students time to form groups Students Agree on schedule, Arrange groups, Step 3: Group Discussion Lecturer conducts observing/paying attention to the discussion		Material: Meeting material 2 Readers: Parag Havaldar & Gérard Medioni. 2010. Multimedia Systems: Algorithms, Standards, & Industry Practices. Cengage Learning.	5%	

				process, providing information if necessary, encouraging all active group members . Students. Discussing examples of cases that will be taken. Collecting and processing supporting data. Analyzing cases and their solutions. Preparing presentations. Step 4: Group Presentation. Lecturer examines the presentation, provides opportunities for questions and answers. Provides time. students to reflect and revise cases presented. Provide suggestions and input on case examples presented. Students collect discussion results according to the agreed time limit. Present and respond to 2 X 50 questions			
3	Students are able to represent graphics and images	Students are able to represent graphics and images	Criteria: Evaluation Rubric  Form of Assessment: Participatory Activities, Tests	Discussion, question and answer, PPT - Method: Case Method Learning  Step 1: Preparation of Case Examples Basic Questions The lecturer asks: what are the problems that arise, their causes and impacts? Students respond to lecturer's questions, question and answer Step 2: Determine discussion procedures (Individual/Ex) Lecturer determines collection procedures and time Lecturer makes agreement on deadline for collection, Gives students time to form groups Students Agree on	Material: Meeting material 2 Readers: Parag Havaldar & Gérard Medioni. 2010. Multimedia Systems: Algorithms, Standards, & Industry Practices. Cengage Learning.	5%	

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					Arrange groups, Step 3:				
					Group Discussion				
					Lecturer				
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					encouraging all active group				
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					and their				
					solutions. Preparing				
					presentations. Step 4: Group				
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					Lecturer examines the				
					presentation, provides				
					opportunities for				
					questions and answers.				
					Provides time.				
					students to reflect and revise				
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					Provide				
					suggestions and input on case				
					examples				
					presented. Students collect				
					discussion results according				
					to the agreed				
					time limit. Present and				
					respond to 2 X 50 questions				
	4	Students are	Students	Criteria:	Discussion,		Material:	5%	1
	-	able to represent	are able to represent	Evaluation Rubric	question and		Meeting	070	
		graphics and images	graphics and	Form of	answer, PPT - Method:		material 2 Readers:		
		illages	images	Assessment : Participatory	Case Method Learning		Parag Havaldar &		
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					Step 1: Preparation of		Medioni. 2010.		
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					asks: what are the problems		Standards, & Industry		
					that arise, their		Practices.		
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					Students respond to		-		
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					Preparing			
					presentations. Step 4: Group			
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					opportunities for questions and			
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					Students collect			
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					Present and respond to			
ļ					2 X 50 questions			
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		mages	images	Assessment :	Case Method		Parag	
				Participatory Activities	Learning		Havaldar & Gérard	
					Step 1:		Medioni.	
					Preparation of Case Examples		2010. Multimedia	
					Basic Questions		Systems:	
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6	Students are able to represent graphics and images	Students are able to represent graphics and images	Criteria: Evaluation Rubric  Form of Assessment: Participatory Activities	Discussion, question and answer, PPT - Method: Case Method Learning Step 1: Preparation of Case Examples Basic Questions	Material: Meeting material 2 Readers: Parag Havaldar & Gérard Medioni. 2010. Multimedia Systems:	8%

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7	Students are	Students	Criteria:	Discussion,		Material:	5%

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		students to	
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8	Students are able to represent graphics and images	Students are able to represent graphics and images	Criteria: Evaluation Rubric	2 X 50 questions Discussion, question and answer, PPT - Method: Case Method Learning  Step 1: Preparation of Case Examples Basic Questions The lecturer asks: what are the problems that arise, their causes and impacts? Students respond to lecturer's questions, question and answer Step 2: Determine discussion procedures (Individual/Ex) Lecturer determines collection procedures and time Lecturer makes agreement on deadline for collection, Gives students time to form groups Students Agree on schedule, Arrange groups, Step 3: Group Discussion Lecturer conducts observing/paying attention to the discussion process, providing information if necessary, encouraging all active group members . Students. Discussing examples of cases that will be taken. Collecting and processing supporting data. Analyzing cases and their solutions. Step 4: Group Presentation. Lecturer examines the presentation, provides time.	Material: Meeting material 2 Readers: Parag Havaldar & Gérard Medioni. 2010. Multimedia Systems: Algorithms, Standards, & Industry Practices. Cengage Learning.	5%

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13	able to represent graphics and	are able to represent graphics and	Evaluation Rubric Form of Assessment: Participatory	Students collect discussion results according to the agreed time limit. Present and respond to 2 X 50 questions Discussion, question and answer, PPT - Method: Case Method Learning  Step 1: Preparation of Case Examples Basic Questions The lecturer asks: what are the problems that arise, their causes and impacts? Students respond to lecturer's questions, question and answer Step 2: Determine discussion procedures (Individual/Ex) Lecturer determines		Meeting material 2 Readers: Parag Havaldar & Gérard Medioni. 2010. Multimedia Systems: Algorithms, Standards, & Industry Practices. Cengage	8%
13	able to represent graphics and	are able to represent graphics and	Evaluation Rubric Form of Assessment: Participatory	Students collect discussion results according to the agreed time limit. Present and respond to 2 X 50 questions Discussion, question and answer, PPT - Method: Case Method Learning  Step 1: Preparation of Case Examples Basic Questions The lecturer asks: what are the problems that arise, their causes and impacts? Students respond to lecturer's questions, question and answer Step 2: Determine discussion procedures (Individual/Ex) Lecturer		Meeting material 2 Readers: Parag Havaldar & Gérard Medioni. 2010. Multimedia Systems: Algorithms, Standards, & Industry Practices. Cengage	8%

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					time Lecturer makes agreement on deadline for collection, Gives students time to form groups Students Agree on schedule, Arrange groups, Step 3: Group Discussion Lecturer conducts observing/paying attention to the discussion process, providing information if necessary, encouraging all active group members . Students. Discussing examples of cases that will be taken. Collecting and processing supporting data. Analyzing cases and their solutions. Preparing presentations. Step 4: Group Presentation. Lecturer examines the presentation, provides opportunities for questions and answers. Provides time. students to reflect and revise cases presented. Provide suggestions and input on case examples presented. Students collect discussion results according to the agreed time limit. Present and respond to			
	14	Students are able to represent graphics and images	Students are able to represent graphics and images	Criteria: Evaluation Rubric Form of Assessment: Participatory	2 X 50 questions  Discussion, question and answer, PPT - Method: Case Method Learning		Material: Meeting material 2 Readers: Parag Havaldar &	8%
				Activities	Step 1: Preparation of Case Examples Basic Questions The lecturer asks: what are the problems that arise, their causes and impacts? Students respond to lecturer's questions, question and		Gérard Medioni. 2010. Multimedia Systems: Algorithms, Standards, & Industry Practices. Cengage Learning.	

1	I	I	1	answer	I	1	 
				Step 2:			
				Determine			
				discussion procedures			
				(Individual/Ex)			
				Lecturer			
				determines collection			
				procedures and			
				time			
				Lecturer makes agreement on			
				deadline for			
				collection, Gives students			
				time to form			
				groups Students			
				Agree on schedule,			
				Arrange groups,			
				Step 3:			
				Group Discussion			
				Lecturer			
				conducts observing/paying			
				attention to the			
				discussion			
				process, providing			
				information if			
				necessary,			
				encouraging all active group			
				members			
				. Students.			
				Discussing examples of			
				cases that will			
				be taken. Collecting and			
				processing			
				supporting data.			
				Analyzing cases and their			
				solutions.			
				Preparing			
				presentations. Step 4: Group			
				Presentation.			
				Lecturer examines the			
				presentation,			
				provides			
				opportunities for questions and			
				answers.			
				Provides time. students to			
				reflect and revise			
				cases			
				presented. Provide			
				suggestions and			
				input on case			
				examples presented.			
				Students collect			
				discussion			
				results according to the agreed			
				time limit.			
				Present and respond to			
	<u> </u>			2 X 50 questions			
15	Students are	Students	Criteria:	Discussion,		Material:	8%
	able to represent	are able to	Evaluation Rubric	question and		Meeting	
	graphics and	graphics	Form of	answer, PPT - Method:		material 2 Readers:	
	images	and images	Assessment :	Case Method		Parag	
			Participatory Activities	Learning		Havaldar &	
			I / JOH VILLOS	Ĩ		Gérard	1
				Step 1:		Medioni.	
				Step 1: Preparation of		2010.	
				Preparation of Case Examples		2010. Multimedia	
				Preparation of		2010.	

				asks: what are the problems	Standards, & Industry	
				that arise, their causes and	Practices. Cengage	
				impacts? Students	Learning.	
				respond to lecturer's		
				questions,		
				question and answer		
				Step 2:		
				Determine discussion		
				procedures (Individual/Ex)		
				Lecturer		
				determines collection		
				procedures and time		
				Lecturer makes		
				agreement on deadline for		
				collection, Gives students		
				time to form		
				groups Students Agree on		
				schedule,		
				Arrange groups, Step 3:		
				Group Discussion		
				Lecturer		
				conducts observing/paying		
				attention to the		
				discussion process,		
				providing information if		
				necessary,		
				encouraging all active group		
				members . Students.		
				Discussing		
				examples of cases that will		
				be taken.		
				Collecting and processing		
				supporting data. Analyzing cases		
				and their		
				solutions. Preparing		
				presentations.		
				Step 4: Group Presentation.		
				Lecturer examines the		
				presentation,		
				provides opportunities for		
				questions and answers.		
				Provides time.		
				students to reflect and revise		
				cases		
				presented. Provide		
				suggestions and input on case		
				examples		
				presented. Students collect		
				discussion		
				results according to the agreed		
				time limit. Present and		
				respond to		
16	Students are	Students	Criteria:	2 X 50 questions Discussion,	Material:	8%
-	able to represent	are able to represent	Evaluation Rubric	question and	Meeting	5.0

graphics and images	graphics and images	Form of Assessment :	answer, PPT - Method: Case Method	material 2  Readers:  Parag
		Participatory Activities	Learning	Havaldar & Gérard
			Step 1:	Medioni.
			Preparation of	2010.
			Case Examples Basic Questions	Multimedia Systems:
			The lecturer	Algorithms,
			asks: what are	Standards, &
			the problems that arise, their	Industry Practices.
			causes and	Cengage
			impacts?	Learning.
			Students respond to	
			lecturer's	
			questions,	
			question and answer	
			Step 2:	
			Determine	
			discussion procedures	
			(Individual/Ex)	
			Lecturer	
			determines collection	
			procedures and	
			time	
			Lecturer makes agreement on	
			deadline for	
			collection,	
			Gives students time to form	
			groups Students	
			Agree on	
			schedule, Arrange groups,	
			Step 3:	
			Group	
			Discussion Lecturer	
			conducts	
			observing/paying	
			attention to the discussion	
			process,	
			providing information if	
			necessary,	
			encouraging all	
			active group members	
			. Students.	
			Discussing	
			examples of cases that will	
			be taken.	
			Collecting and	
			processing supporting data.	
			Analyzing cases	
			and their	
			solutions. Preparing	
			presentations.	
			Step 4: Group	
			Presentation. Lecturer	
			examines the	
			presentation,	
			provides opportunities for	
			questions and	
			answers.	
			Provides time. students to	
			reflect and revise	
			cases	
			presented. Provide	
			suggestions and	
			input on case	
			examples presented.	
	1	4		

	Students collect	
	discussion	
	results according	
	to the agreed	
	time limit.	
	Present and	
	recoond to	

2 X 50 questions

**Evaluation Percentage Recap: Case Study** 

No	Evaluation	Percentage
1.	Participatory Activities	65.5%
2.	Test	2.5%
		68%

#### Notes

- Learning Outcomes of Study Program Graduates (PLO Study Program) are the abilities possessed by each Study Program graduate which are the internalization of attitudes, mastery of knowledge and skills according to the level of their study program obtained through the learning process.
- The PLO imposed on courses are several learning outcomes of study program graduates (CPL-Study Program)
  which are used for the formation/development of a course consisting of aspects of attitude, general skills, special
  skills and knowledge.
- 3. **Program Objectives (PO)** are abilities that are specifically described from the PLO assigned to a course, and are specific to the study material or learning materials for that course.
- 4. Subject Sub-PO (Sub-PO) is a capability that is specifically described from the PO that can be measured or observed and is the final ability that is planned at each learning stage, and is specific to the learning material of the course.
- Indicators for assessing ability in the process and student learning outcomes are specific and measurable statements that identify the ability or performance of student learning outcomes accompanied by evidence.
- Assessment Criteria are benchmarks used as a measure or measure of learning achievement in assessments based on predetermined indicators. Assessment criteria are guidelines for assessors so that assessments are consistent and unbiased. Criteria can be quantitative or qualitative.
- 7. Forms of assessment: test and non-test.
- 8. **Forms of learning:** Lecture, Response, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning.
- Learning Methods: Small Group Discussion, Role-Play & Simulation, Discovery Learning, Self-Directed Learning, Cooperative Learning, Collaborative Learning, Contextual Learning, Project Based Learning, and other equivalent methods.
- 10. Learning materials are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
- 11. The assessment weight is the percentage of assessment of each sub-PO achievement whose size is proportional to the level of difficulty of achieving that sub-PO, and the total is 100%.
- 12. TM=Face to face, PT=Structured assignments, BM=Independent study.