



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

Document Code

## SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date																																																																		
Multimedia Signal Processing	2020102334	Study Program Elective Courses	T=0	P=0	ECTS=0	5	April 10, 2023																																																																		
<b>AUTHORIZATION</b>	<b>SP Developer</b>		<b>Course Cluster Coordinator</b>			<b>Study Program Coordinator</b>																																																																			
	Dr. Lusia Rakhmawati, S.T., M.T. ; Miftahur Rohman, S.T., M.T.		Prof. Dr. I Gusti Putu Asto B., M.T.			Dr. Lusia Rakhmawati, S.T., M.T.																																																																			
<b>Learning model</b>	Case Studies																																																																								
<b>Program Learning Outcomes (PLO)</b>	<b>PLO study program which is charged to the course</b>																																																																								
	<b>Program Objectives (PO)</b>																																																																								
	<b>PO - 1</b>	Able to plan, complete and evaluate tasks related to Multimedia Signal Processing																																																																							
	<b>PO - 2</b>	Able to understand the need for lifelong learning in the field of Multimedia Signal Processing related to relevant current issues																																																																							
	<b>PLO-PO Matrix</b>																																																																								
		<table border="1" style="margin: auto;"> <tr><td>P.O</td></tr> <tr><td>PO-1</td></tr> <tr><td>PO-2</td></tr> </table>						P.O	PO-1	PO-2																																																															
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<b>PO Matrix at the end of each learning stage (Sub-PO)</b>																																																																									
	<table border="1" style="margin: auto;"> <thead> <tr> <th rowspan="2">P.O</th> <th colspan="16">Week</th> </tr> <tr> <th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8</th><th>9</th><th>10</th><th>11</th><th>12</th><th>13</th><th>14</th><th>15</th><th>16</th> </tr> </thead> <tbody> <tr> <td>PO-1</td> <td style="text-align: center;">✓</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>PO-2</td> <td></td><td style="text-align: center;">✓</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </tbody> </table>						P.O	Week																1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	PO-1	✓																PO-2		✓														
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<b>Short Course Description</b>	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.																																																																								
<b>References</b>	<b>Main :</b>																																																																								
	<ol style="list-style-type: none"> <li>1. Ze-Nian Li, Mark S. Drew, &amp; Jiangchuan Liu. 2014. Fundamentals of Multimedia, 2nd ed. Springer.</li> <li>2. Parag Havaladar &amp; Gérard Medioni. 2010. Multimedia Systems: Algorithms, Standards, &amp; Industry Practices. Cengage Learning.</li> <li>3. Srdjan Stankovic, Irena Orovic, &amp; Ervin Sejdic. 2016. Multimedia Signals and Systems: Basic and Advanced Algorithms for Signal Processing, 2nd ed. Springer.</li> </ol>																																																																								
	<b>Supporters:</b>																																																																								
	<ol style="list-style-type: none"> <li>1. R.L. Freeman, Reference Manual for Telecommunications Engineering, 3rd edn. (Wiley, New York, 2001)</li> <li>2. P.K. Andleigh, K. Thakrar, Multimedia Systems Design. (Prentice-Hall PTR, Upper Saddle River, 1995)</li> <li>3. K.C. Pohlmann, Principles of Digital Audio, 6th edn. (McGraw-Hill, New York, 2010)</li> </ol>																																																																								

Supporting lecturer		Dr. Lusia Rakhmawati, S.T., M.T. Miftahur Rohman, S.T., M.T.					
Week-	Final abilities of each learning stage (Sub-PO)	Evaluation		Help Learning, Learning methods, Student Assignments, [ Estimated time]		Learning materials [References]	Assessment Weight (%)
		Indicator	Criteria & Form	Offline ( offline )	Online ( online )		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Students are able to explain and classify Multimedia	Accuracy in explaining multimedia concepts	<b>Criteria:</b> Assessment rubric  <b>Form of Assessment :</b> Participatory Activities	Contextual Learning 2 X 50		<b>Material:</b> Meeting material 1 <b>Bibliography:</b> <i>Ze-Nian Li, Mark S. Drew, &amp; Jiangchuan Liu. 2014. Fundamentals of Multimedia, 2nd ed. Springer.</i>	2%
2	Students are able to represent graphics and images	Students are able to represent graphics and images	<b>Criteria:</b> Evaluation Rubric  <b>Form of Assessment :</b> Participatory Activities	Small Group Discussion 2 X 50		<b>Material:</b> Meeting material 2 <b>Readers:</b> <i>Parag Havaldar &amp; Gérard Medioni. 2010. Multimedia Systems: Algorithms, Standards, &amp; Industry Practices. Cengage Learning.</i>	5%
3	Able to plan, complete, and evaluate colors in images	Accuracy of the results of planning, implementation and evaluation of colors in images	<b>Criteria:</b> Evaluation Rubric  <b>Form of Assessment :</b> Participatory Activities	Contextual Learning 2 X 50		<b>Material:</b> Meeting material 2 <b>Readers:</b> <i>Parag Havaldar &amp; Gérard Medioni. 2010. Multimedia Systems: Algorithms, Standards, &amp; Industry Practices. Cengage Learning.</i>	3%
4	Able to plan, finalize, and evaluate colors in video	Accuracy of planning, implementation and color evaluation results in videos	<b>Criteria:</b> Evaluation Rubric  <b>Form of Assessment :</b> Participatory Activities	Contextual Learning 2 X 50		<b>Material:</b> Meeting material 2 <b>Readers:</b> <i>Parag Havaldar &amp; Gérard Medioni. 2010. Multimedia Systems: Algorithms, Standards, &amp; Industry Practices. Cengage Learning.</i>	3%

5	Able to explain basic video concepts	Accuracy of explanation of basic video concepts	<b>Criteria:</b> Evaluation Rubric  <b>Form of Assessment :</b> Participatory Activities	Contextual Learning 2 X 50		<b>Material:</b> Meeting material 2 <b>Readers:</b> Parag Havaladar & Gérard Medioni. 2010. <i>Multimedia Systems: Algorithms, Standards, &amp; Industry Practices.</i> Cengage Learning.	3%
6	Able to explain the basics of information theory	The accuracy of the basic explanation of information theory	<b>Criteria:</b> Evaluation Rubric  <b>Form of Assessment :</b> Participatory Activities	Contextual Learning 2 X 50		<b>Material:</b> Meeting material 2 <b>Readers:</b> Parag Havaladar & Gérard Medioni. 2010. <i>Multimedia Systems: Algorithms, Standards, &amp; Industry Practices.</i> Cengage Learning.	3%
7	Able to explain the basics of information theory	The accuracy of the basic explanation of information theory	<b>Criteria:</b> Evaluation Rubric  <b>Form of Assessment :</b> Participatory Activities	Contextual Learning 2 X 50		<b>Material:</b> Meeting material 2 <b>Readers:</b> Parag Havaladar & Gérard Medioni. 2010. <i>Multimedia Systems: Algorithms, Standards, &amp; Industry Practices.</i> Cengage Learning.	3%
8	Carrying out Mid-Semester Exams	Accuracy in answering questions	<b>Criteria:</b> Evaluation Rubric  <b>Form of Assessment :</b> Test	Written test 2 X 50		<b>Material:</b> Meeting material 2 <b>Readers:</b> Parag Havaladar & Gérard Medioni. 2010. <i>Multimedia Systems: Algorithms, Standards, &amp; Industry Practices.</i> Cengage Learning.	20%

9	Students are able to represent graphics and images	Precision describes a lossless compression algorithm	<b>Criteria:</b> Evaluation Rubric  <b>Form of Assessment :</b> Participatory Activities	Discussion, questions and answers, PPT 2 X 50		<b>Material:</b> Meeting material 2 <b>Readers:</b> Parag Havaladar & Gérard Medioni. 2010. Multimedia Systems: Algorithms, Standards, & Industry Practices. Cengage Learning.	4%
10	Able to analyze the Run Length Encoding algorithm	Accuracy of analyzing the Run Length Encoding algorithm	<b>Criteria:</b> Evaluation Rubric  <b>Form of Assessment :</b> Participatory Activities	Discussion, questions and answers, PPT 2 X 50		<b>Material:</b> Meeting material 2 <b>Readers:</b> Parag Havaladar & Gérard Medioni. 2010. Multimedia Systems: Algorithms, Standards, & Industry Practices. Cengage Learning.	4%
11	Able to analyze the Run Length Encoding algorithm	Accuracy of analyzing the Run Length Encoding algorithm	<b>Criteria:</b> Evaluation Rubric  <b>Form of Assessment :</b> Participatory Activities	Discussion, questions and answers, PPT 2 X 50		<b>Material:</b> Meeting material 2 <b>Readers:</b> Parag Havaladar & Gérard Medioni. 2010. Multimedia Systems: Algorithms, Standards, & Industry Practices. Cengage Learning.	4%
12	Students are able to represent graphics and images	Accuracy of arithmetic coding analysis results	<b>Criteria:</b> Evaluation Rubric  <b>Form of Assessment :</b> Participatory Activities	Discussion, questions and answers, PPT 2 X 50		<b>Material:</b> Meeting material 2 <b>Readers:</b> Parag Havaladar & Gérard Medioni. 2010. Multimedia Systems: Algorithms, Standards, & Industry Practices. Cengage Learning.	4%

13	Able to apply differential PCM	Accuracy of the results of applying differential PCM	<b>Criteria:</b> Evaluation Rubric  <b>Form of Assessment :</b> Participatory Activities	Discussion, questions and answers, PPT 2 X 50		<b>Material:</b> Meeting material 2 <b>Readers:</b> <i>Parag Havaladar &amp; Gérard Medioni. 2010. Multimedia Systems: Algorithms, Standards, &amp; Industry Practices. Cengage Learning.</i>	4%
14	Able to explain lossy compression algorithms	Able to explain lossy compression algorithms	<b>Criteria:</b> Evaluation Rubric  <b>Form of Assessment :</b> Participatory Activities	Discussion, questions and answers, PPT 2 X 50		<b>Material:</b> Meeting material 2 <b>Readers:</b> <i>Parag Havaladar &amp; Gérard Medioni. 2010. Multimedia Systems: Algorithms, Standards, &amp; Industry Practices. Cengage Learning.</i>	4%
15	Able to apply JPEG compression	Accuracy of applying JPEG compression	<b>Criteria:</b> Evaluation Rubric  <b>Form of Assessment :</b> Participatory Activities	Discussion, questions and answers, PPT 2 X 50		<b>Material:</b> Meeting material 2 <b>Readers:</b> <i>Parag Havaladar &amp; Gérard Medioni. 2010. Multimedia Systems: Algorithms, Standards, &amp; Industry Practices. Cengage Learning.</i>	4%
16	Carrying out Final Semester Examinations	accuracy of answering UAS questions	<b>Criteria:</b> Evaluation Rubric  <b>Form of Assessment :</b> Participatory Activities, Tests	Discussion, questions and answers, PPT 2 X 50		<b>Material:</b> Meeting material 2 <b>Readers:</b> <i>Parag Havaladar &amp; Gérard Medioni. 2010. Multimedia Systems: Algorithms, Standards, &amp; Industry Practices. Cengage Learning.</i>	30%

#### Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
1.	Participatory Activities	65%
2.	Test	35%
		100%

1. **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.
2. **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.
5. **Indicators for assessing** abilities in the process and student learning outcomes are specific and measurable statements that identify the abilities or performance of student learning outcomes accompanied by evidence.
6. **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.
9. **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.