



Universitas Negeri Surabaya
Faculty of Mathematics and Natural Sciences
Undergraduate Chemistry Education Study Program

Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight	SEMESTER	Compilation Date
ICT-Based Chemistry Learning	8420402215	Compulsory Study Program Subjects	T=2 P=0 ECTS=3.18	6	July 18, 2023
AUTHORIZATION	SP Developer		Course Cluster Coordinator	Study Program Coordinator	
	Dr. Sukarmin, M.Pd		Dr. Sukarmin, M.Pd	Prof. Dr. Utiya Azizah, M.Pd.	

Learning model	Project Based Learning
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Program Learning Outcomes (PLO)	PLO study program which is charged to the course
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PLO-5	Able to make decisions based on data/information in order to complete tasks that are their responsibility and evaluate performance that has been carried out both individually and in groups, has an entrepreneurial spirit with an environmental perspective (CPL 7)
PLO-7	Applying logical, critical, systematic and innovative thinking in the context of the development or implementation of science, technology and art that pays attention to and applies humanities values appropriate to the field of chemistry education in solving problems (CPL 5)
PLO-10	Able to design, implement, evaluate, learn and develop chemistry learning media by utilizing Information and Communication Technology (CPL 4)
PLO-12	Able to demonstrate chemical pedagogical knowledge about designing, implementing and evaluating chemistry learning (CPL 2)

Program Objectives (PO)

PO - 1	Utilize learning resources and ICT for chemistry learning in accordance with the characteristics of the material.
PO - 2	Have knowledge about selecting and presenting ICT-based learning media in chemistry lessons
PO - 3	Make decisions in selecting and presenting ICT-based learning media in chemistry lessons
PO - 4	Have a responsible attitude in selecting and presenting ICT-based learning media in chemistry lessons

PLO-PO Matrix

	P.O	PLO-5	PLO-7	PLO-10	PLO-12
PO-1					
PO-2					
PO-3					
PO-4					

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																	

Short Course Description	Study of media selection, learning design and presentation of ICT-based media Off Line and On Line in chemistry learning through discussion and practice
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References	<p>Main :</p> <ol style="list-style-type: none"> 1. Fenrich, P. 1997. Practical Guidelines For Creating Instructional Multimedia Application . USA:Harcourt Brace College Publisher 2. Heinich, R., and Molenda.1999. Instructional Media and Technologies forLearning. USA: Prentice Hall. 3. Sadiman. 2009. Media Pendidikan . Jakarta
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	Supporters:						
Supporting lecturer	Dr. Sukarmin, M.Pd. Dr. Kusumawati Dwiningsih, S.Pd., M.Pd.						
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	Understanding the choice of ICT-based media in chemistry learning.	1.Can choose ICT-based media that suits the characteristics of the chemical material presented offline 2.Can search for ICT-based media sources that are presented offline	Criteria: 1.1. Participation during lectures, carried out through observation (weight 2) 2.2. Product assessment Practical report, as an assignment, with weight assessed at week 8) (3) Form of Assessment : Participatory Activities	Carry out material analysis to determine the type of ICT media that suits the characteristics of the material and is presented Off Line Carry out searches to obtain the required ICT media 2 X 50	Carry out material analysis to determine the type of ICT media that suits the characteristics of the material and is presented Off Line Carry out searches to obtain the required ICT media 2 X 50	Material: 1. Bibliography Introduction: <i>Heinich, R., and Molenda.1999. Instructional Media and Technologies for Learning. USA: Prentice Hall.</i> Material: 2. Introduction to CBT (Computer Based Training), CBI (Computer Based Instruction), Distance Learning, Distance Education, CLE (Cybernetic Learning Environment), Desktop Videoconferencing, ILS (Integrated Learning System), LCC (Learner-Centered Classroom), Teleconferencing, WBT (Web-Based Training) Library:	4%
2	Conduct searches or search for ICT-based media sources that match the characteristics of the chemical material presented offline	1.Can choose ICT-based media that suits the characteristics of the chemical material presented OFF LINE 2.Can search for ICT-based media sources presented Off Line	Criteria: 1.The assessment is carried out on the following aspects: 2.1. Participation during lectures, carried out through observation (weight 2) 3.2. Product assessment Practical report, as an assignment, with weight assessed in week 8) (3) Form of Assessment : Portfolio Assessment	Discussion and practice. Conduct a search to obtain the required ICT media 2 X 50	Discussion and practice. Conduct a search to obtain the required ICT media 2 X 50	Material: Selection and search of ICT media References: <i>Heinich, R., and Molenda.1999. Instructional Media and Technologies for Learning. USA: Prentice Hall.</i>	5%
3	Understand the selection of ICT-based media that suits the characteristics of chemical material presented offline and online.	<input type="checkbox"/> Can choose ICT-based media that suits the characteristics of chemical material presented offline and online	Criteria: 1.1. Participation during lectures, carried out through observation (weight 2) 2.2. Product assessment Practical report, as an assignment, carried out in week 8) (weight 3) Form of Assessment : Project Results Assessment / Product Assessment	Team based project: conducting material analysis to determine the type of ICT media that suits the characteristics of the material and is presented offline 2 X 50	Discussion and practice Carrying out site searches for online media presentation 2 X 50	Material: Selection and search of ICT media References: <i>Heinich, R., and Molenda.1999. Instructional Media and Technologies for Learning. USA: Prentice Hall.</i>	6%

4	Understand the selection of ICT-based media that suits the characteristics of chemical material presented offline	Can choose ICT-based media that suits the characteristics of the chemical material presented offline	<p>Criteria:</p> <ol style="list-style-type: none"> 1.1. Participation during lectures, carried out through observation (weight 2) 2.2. Product assessment Practical report, as an assignment, with weight (3) <p>Forms of Assessment : Participatory Activities, Project Results Assessment / Product Assessment</p>	Discussion and Team based project: conducting material analysis to determine the type of ICT media that suits the characteristics of the material and is presented offline 2 X 50	Discussion and practice Carry out material analysis to determine the type of ICT media that suits the characteristics of the material and is presented online 2 X 50	<p>Material: Analysis of selected ICT media References: <i>Fenrich, P. 1997. Practical Guidelines for Developing Instructional Multimedia Applications. USA:Harcourt Brace College Publishers</i></p>	5%
5	Understand the development of learning tools for learning with ICT-based media presented offline and online	Can choose ICT-based media that suits the characteristics of the chemical material presented offline	<p>Criteria:</p> <ol style="list-style-type: none"> 1.1. Participation during lectures, carried out through observation (weight 2) 2.2. Product assessment Practical report, as an assignment, with weight (3) <p>Form of Assessment : Project Results Assessment / Product Assessment</p>	Interactive discussion Team based Project: Developing learning tools for learning using ICT media which includes: Syllabus, RPP, LKS, evaluation and ICT media according to selected materials and media 2 X 50	Interactive discussion Team based Project: Developing learning tools for learning using ICT media which includes: Syllabus, RPP, LKS, evaluation and ICT media according to selected materials and media 2 X 50	<p>Material: Analysis of selected ICT media References: <i>Fenrich, P. 1997. Practical Guidelines for Developing Instructional Multimedia Applications. USA:Harcourt Brace College Publishers</i></p>	5%
6	Understand the development of learning tools for learning with ICT-based media presented offline and online	Can choose ICT-based media that suits the characteristics of the chemical material presented offline	<p>Criteria:</p> <ol style="list-style-type: none"> 1.1. Participation during lectures, carried out through observation (weight 2) 2.2. Product assessment Practical report, as an assignment, with weight (3) <p>Forms of Assessment : Participatory Activities, Project Results Assessment / Product Assessment, Portfolio Assessment</p>	Interactive discussion Team based Project: Developing learning tools for learning using ICT media which includes: Syllabus, RPP, LKS, evaluation and ICT media according to selected materials and media 2 X 50	Interactive discussion Team based Project: Developing learning tools for learning using ICT media which includes: Syllabus, RPP, LKS, evaluation and ICT media according to selected materials and media 2 X 50	<p>Material: Analysis of selected ICT media References: <i>Fenrich, P. 1997. Practical Guidelines for Developing Instructional Multimedia Applications. USA:Harcourt Brace College Publishers</i></p>	5%
7	Understand the development of learning tools for learning with ICT-based media presented offline and online	Can choose ICT-based media that suits the characteristics of the chemical material presented offline	<p>Criteria:</p> <ol style="list-style-type: none"> 1.1. Participation during lectures, carried out through observation (weight 2) 2.2. Product assessment Practical report, as an assignment, with weight (3) <p>Forms of Assessment : Participatory Activities, Project Results Assessment / Product Assessment</p>	Interactive discussion Team based Project: Developing learning tools for learning using ICT media which includes: Syllabus, RPP, LKS, evaluation and ICT media according to selected materials and media 2 X 50	Interactive discussion Team based Project: Developing learning tools for learning using ICT media which includes: Syllabus, RPP, LKS, evaluation and ICT media according to selected materials and media 2 X 50	<p>Material: Analysis of selected ICT media References: <i>Fenrich, P. 1997. Practical Guidelines for Developing Instructional Multimedia Applications. USA:Harcourt Brace College Publishers</i></p>	6%

8	USS: Understand the development of learning tools for learning with ICT-based media presented offline and online	USS: Can develop learning tools for learning using ICT media which include: Syllabus, RPP, LKS, evaluation and ICT media	<p>Criteria: USS: Product assessment Practical report, as an assignment, with weight (3)</p> <p>Form of Assessment : Project Results Assessment / Product Assessment</p>	Team based Project: 2 X 50 learning device product	Team based Project: 2 X 50 learning device product	<p>Material: Development of ICT-based learning tools</p> <p>References: <i>Fenrich, P. 1997. Practical Guidelines for Developing Instructional Multimedia Applications. USA:Harcourt Brace College Publishers</i></p>	10%
9	Carrying out learning using ICT media offline	Can apply ICT media in offline learning	<p>Criteria: 1.1. Participation during lectures, carried out through observation (weight 2) 2.2. Product assessment Practical report, as an assignment, with weight (3)</p> <p>Form of Assessment : Project Results Assessment / Product Assessment, Portfolio Assessment</p>	Team based Project: Simulation Implementing ICT-based learning offline 2 X 50	Team based Project: Simulation Implementing ICT-based learning offline 2 X 50	<p>Material: Development of ICT-based learning tools</p> <p>References: <i>Fenrich, P. 1997. Practical Guidelines for Developing Instructional Multimedia Applications. USA:Harcourt Brace College Publishers</i></p>	6%
10	Carrying out learning using ICT media offline	Can apply ICT media in offline learning	<p>Criteria: 1.1. Participation during lectures, carried out through observation (weight 2) 2.2. Product assessment Practical report, as an assignment, with weight (3)</p> <p>Form of Assessment : Participatory Activities</p>	Team based Project: Simulation Implementing ICT-based learning offline 2 X 50	Team based Project: Simulation Implementing ICT-based learning offline 2 X 50	<p>Material: Development of ICT-based learning tools</p> <p>References: <i>Fenrich, P. 1997. Practical Guidelines for Developing Instructional Multimedia Applications. USA:Harcourt Brace College Publishers</i></p>	6%
11	Carrying out learning using ICT media offline	Can apply ICT media in offline learning	<p>Criteria: 1.1. Participation during lectures, carried out through observation (weight 2) 2.2. Product assessment Practical report, as an assignment, with weight (3)</p> <p>Form of Assessment : Project Results Assessment / Product Assessment, Portfolio Assessment</p>	Team based Project: Simulation Implementing ICT-based learning offline 2 X 50	Team based Project: Simulation Implementing ICT-based learning offline 2 X 50	<p>Material: Development of ICT-based learning tools</p> <p>References: <i>Fenrich, P. 1997. Practical Guidelines for Developing Instructional Multimedia Applications. USA:Harcourt Brace College Publishers</i></p>	8%

12	Carrying out learning using ICT media online	Can apply ICT media in online learning	<p>Criteria:</p> <ol style="list-style-type: none"> 1.1. Participation during lectures, carried out through observation (weight 2) 2.2. Product assessment Practical report, as an assignment, with weight (3) <p>Forms of Assessment : Project Results Assessment / Product Assessment, Portfolio Assessment, Practice / Performance</p>	Team based Project: Simulation Implementing ICT-based learning online 2 X 50	Team based Project: Simulation Implementing ICT-based learning online 2 X 50	<p>Material: Learning simulation Reference: <i>Heinich, R., and Molenda.1999. Instructional Media and Technologies for Learning. USA: Prentice Hall.</i></p>	6%
13	Carrying out learning using ICT media online	Can apply ICT media in online learning	<p>Criteria:</p> <ol style="list-style-type: none"> 1.1. Participation during lectures, carried out through observation (weight 2) 2.2. Product assessment Practical report, as an assignment, with weight (3) <p>Form of Assessment : Project Results Assessment / Product Assessment, Portfolio Assessment</p>	Team based Project: Simulation Implementing ICT-based learning online 2 X 50	Team based Project: Simulation Implementing ICT-based learning online 2 X 50	<p>Material: Learning simulation Reference: <i>Heinich, R., and Molenda.1999. Instructional Media and Technologies for Learning. USA: Prentice Hall.</i></p>	6%
14	Carrying out learning using ICT media online	Can apply ICT media in online learning	<p>Criteria:</p> <ol style="list-style-type: none"> 1.1. Participation during lectures, carried out through observation (weight 2) 2.2. Product assessment Practical report, as an assignment, with weight (3) <p>Form of Assessment : Project Results Assessment / Product Assessment, Portfolio Assessment</p>	Team based Project: Simulation Implementing ICT-based learning online 2 X 50	Team based Project: Simulation Implementing ICT-based learning online 2 X 50	<p>Material: Learning simulation Reference: <i>Heinich, R., and Molenda.1999. Instructional Media and Technologies for Learning. USA: Prentice Hall.</i></p>	6%
15	Responsible for the stages of searching, developing tools, and implementing learning using ICT-based media offline and online	Can be responsible for developing and implementing learning tools	<p>Criteria:</p> <ol style="list-style-type: none"> 1.1. Participation during lectures, carried out through observation (weight 2) 2.2. Product assessment Practical report, as an assignment, with weight (3) <p>Form of Assessment : Project Results Assessment / Product Assessment</p>	Discussion Reflection on the project completion process which includes: selecting media, developing tools, conducting online and offline learning simulations 2 X 50	Discussion Reflection on the project completion process which includes: selecting media, developing tools, conducting online and offline learning simulations 2 X 50	<p>Material: Final reflection Reader: <i>Sadiman. 2009. Educational Media. Jakarta</i></p>	6%

16	UAS: Responsible for the stages of searching, developing tools, and implementing learning using offline and online ICT-based media	UAS: Can be responsible for developing and implementing learning tools	Criteria: UAS: Product assessment Practical report, as an assignment, with weight (3) Forms of Assessment : Project Results Assessment / Product Assessment, Portfolio Assessment, Practice / Performance	Discussion Reflection on the project completion process which includes: selecting media, developing tools, conducting online and offline learning simulations 2 X 50	Discussion Reflection on the project completion process which includes: selecting media, developing tools, conducting online and offline learning simulations 2 X 50	Material: Final reflection Reader: <i>Sadiman. 2009. Educational Media. Jakarta</i>	10%
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Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	17.17%
2.	Project Results Assessment / Product Assessment	52.5%
3.	Portfolio Assessment	25%
4.	Practice / Performance	5.33%
		100%

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.
- 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.
- 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** 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.
- 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.
- Forms of assessment:** test and non-test.
- 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.
- Learning materials** are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
- 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%.
- TM=Face to face, PT=Structured assignments, BM=Independent study.