PORTFOLIO
LABORATORY ORGANIZATION

ACADEMIC YEAR 2019/2020 ODD SEMESTER

Coordinator:
Dr. Nuniek Herdyastuti, M.Si.

Teaching Team:
Dr. Nuniek Herdyastuti, M.Si.
Dr. Mitarlis, S.Pd., M.Si.
Dr. Utiya Azizah, M.Pd.
Dr. Muchlis, M.Pd.
Dra. Nurul Hidayati, M.Si.

CHEMISTRY DEPARTMENT

FACULTY OF MATHEMATICS AND SCIENCE
UNIVERSITAS NEGERI SURABAYA

TABLE OF CONTENT

A. SEMESTER LEARNING ACTIYITY PLAN

A.1. COURSE IDETITY

Modul Name	**Laboratory Organization**
Module Level	Bachelor
Abbreviation, if applicable	
Sub-heading, if applicable	-
Course included in the module, if applicable	-
Semester/term	3rd/ second year
Modul coordinator(s)	Dr. Nuniek Herdyastuti, M.Si.
Lecturer(s)	Dr. Nuniek Herdyastuti, M.Si. Dr. Utiya Azizah, M.Pd. Dr. Mitarlis, S.Pd., M.Si. Dr. Muchlis, M.Pd. Dra. Nurul Hidayati, M.Si.
Language	Bahasa Indonesia
Classification within the curriculum	Compulsory
Teaching format/class hours per week during the semester	3 hours lectures (50 min / hour)
Workload	1 CU for bachelor degree equals to 3 workhours per week or 170 minutes (50' face to face learning, 60' structured learning, and 60' independent learning). In one semester, courses are conducted in 14 weeks (excluding mid and end-term exam). Thus, 1 CU equals to 39.67 workhours per semester. One CU equals to 1.587 ECTS.
Credit point	3 SCU
Requirement	-
Learning Outcomes	**General Competence (knowledge):** Student be able to apply logical, critical, and systematic thinking as well as innovative on the context of science and technology development or implementation related to laboratory organization that pay attention and apply humanities values. **Spesific Competence** : At the end of the lecture, students can master theoretical concepts (knowledge) about the functions and roles of chemical education laboratories, the basics of chemical laboratory development planning, and management of chemistry laboratory equipment and materials procurement as well as the principles of Occupational Health and Safety (K3) and laboratory management.

Content	Definition of laboratory organization and management, laboratory functions and roles, types of chemical laboratories. Planning and construction as well as Laboratory management, procurement and management of equipment and materials, management of hazardous and toxic materials (B3), Occupational Health and Safety (K3) in the Laboratory. Work safety management, fire extinguishing, solution making, and laboratory activity assessment.
Study/exam achievements	Students are considered to be competent and pass if at least gets core 68 Final score is calculated as follows: 20% participation, 30 assignment + 20% mid test + 30% final test
Targeted learning outcomes:	CLO 1 Students have ability to apply logical, critical, systematic and innovative thinking in the context of developing or implementing science and technology that pays attention to and applies humanities values. CLO 2 Students have ability to produce correct conclusions based on the results of identification that have been made and be able to apply skills in educating, researching, and managing in the administration of chemistry education. CLO 3 Students be able to master the theoretical concepts (knowledge) about the functions and roles of chemical education laboratories, the basics of chemical laboratory development planning, and management of chemical laboratory equipment and materials procurement as well as the principles of K3 (Occupational Health and Safety) and laboratory management. CLO 4 Students have a responsible attitude by applying an understanding of laboratory organization material in carrying out lectures and daily practicum and assignments on the field in the future.
Content:	1. Introduction: Definition of organization and management, the nature of learning science, laboratory functions and roles, types of laboratories. 2. Planning, development and laboratory management. 3. Procurement and management of equipment and materials, 4. Works safety and its management in the laboratory, 5. Handling of hazardous and toxic materials (B3), 6. Fire and how to handle it,

	7. Preparation of solutions, 8. Assessment of activities in the laboratory.
Study / exam achievements:	Students are considered to be competent and pass if at least get 55. Final score is calculated as follows: 20% participation + 30% assignment + 20% middle exam (UTS) & 30% final exam (UAS) Table index of graduation: • A = 4 (85 ≤-≥ 100) • A- = 3,75 (80 ≤-< 85) • B+ = 3,5 (75 ≤- < 80) • B = 3 (70 ≤-< 75) • B- = 2,75 (65 ≤-<75) • C+ = 2,5 (60 ≤-<65) • C = 2 (55 ≤-<60) • D = 1 (40 ≤-<55) • E = 0 (0 ≤-<40)
Media:	Computer, LCD, White board, chemicals and equipment in laboratory for doing practicum
Learning Methods	Individuals assignment, group assignment, discussion, presentation, and practicum
Literature:	1. Mitarlis, Azizah U, Amaria, 2016. *Organisasi dan Manajemen Laboratorium Pendidikan Kimia*. Surabaya: Unesa University Press. 2. Cahyono, A.B. 2004. Keselamatan Kerja Bahan Kimia di Industri. Yogyakarta: Gajahmada University Press. 3. Kumpulan Makalah Seminar. 2003. *Safety and Waste Analysis in the Laboratory*. PT. Merck Tbk. Chemical Division Surabaya
Note	Laboratory Organization subject covers the activity of learning concept in class, practicum in laboratory, assignment and presentation. Total ECTS = (total hours workload x 50 minutes/ 60 minutes.

A.2. COURSE TOPIC

This course discuss the functions and roles of the Chemistry Education Laboratory, planning and construction and laboratory management, procurement and management of equipment and materials, management of hazardous and toxic materials (B3), Occupational Health and Safety (K3) in the Laboratory, fire handling and prevention, making solutions, and assessment activities in the laboratory. The study is carried out through discussions, presentations, demonstrations, laboratory practice and collaboration.

A.3. COURSE PROGRAM

UNESA	**UNIVERSITAS NEGERI SURABAYA** **FACULTY OF MATHEMATICS AND NATURAL SCIENCE** **UNDERGRADUATE PROGRAMME OF CHEMISTRY EDUCATION**	**Kode Dokumen**

SEMESTER LEARNING ACTIYITY PLAN (SLAP)

COURSE	CODE	COURSE GROUP	CREDIT UNIT		SEMESTER	DATE
Laboratory Organization	8420403207	Non Group	**T= 3**	**P = 1**	1	30 September 2019

AUTHORIZATION CHEMISTRY EDUCATION	Compiler	Coordinator	Head of Study Program
	Dr. Mitarlis, S.Pd., M.Si.	Dr. Nuniek Herdyastuti, M.Si.	Dr. Sukarmin, M.Pd.

Learning Outcome	**Program Learning Outcomes (PLO)**	
	PLO 3	Mastering the principles of occupational Health and Safety (K3), managing laboratories and using their equipment and how to operate chemical instruments (**Laboratory management**).
	PLO 7	Mastering the basics of the scientific method, designing and carrying out research, compiling scientific reports and communicating them both orally and in writing by utilizing information and communication technology/ICT **(Scientific Communication)**
	PLO 8	Capable to adapt to various developments in chemistry education, continue to develop and learn throughout lifelong education, both formal and informal (**Lifelong Education**)
	Course Learning Outcomes (CLO)	
	CLO 1	General Learning Outcome Achievement:

		Students have ability to apply logical, critical, systematic and innovative thinking in the context of developing or implementing science and technology that pays attention to and applies humanities values.
	CLO 2	Specific Learning Outcome Achievement: Students have ability to produce correct conclusions based on the results of identification that have been made and be able to apply skills in educating, researching, and managing in the administration of chemistry education.
	CLO 3	Knowledge Domain Learning Outcome Achievement: Students be able to master the theoretical concepts (knowledge) about the functions and roles of chemical education laboratories, the basics of chemical laboratory development planning, and management of chemical laboratory equipment and materials procurement as well as the principles of K3 (Occupational Health and Safety) and laboratory management.
	CLO 4	Attitude Domain Learning Outcome Achievement: Students have a responsible attitude by applying an understanding of laboratory organization concept in carrying out lectures and daily practicum activities and assignments on the field in the future.
	Sub CLO	
	Sub-CLO 1	Explain the understanding of the organization and type of laboratory and the nature of science learning
	Sub-CLO 2	Explain the functions and roles of laboratory
	Sub-CLO 3	Outlines the principles of laboratory planning and construction.
	Sub-CLO 4	Implementing the equipment and material procurement process.
	Sub-CLO 5	Describe and implement equipment and materials management
	Sub-CLO 6	Explain the meaning of work safety in the laboratory and its application.

	Sub-CLO 7	Explain the meaning of Material Safety Data Sheets (MSDS), its components and characteristic, as well as handling of Hazardous and Toxic Materials (B3)
	Sub-CLO 8	Explain the management and work safety functions.
	Sub-CLO 9	Making of Solutions
	Sub-CLO 10	Capable to conduct assessments of laboratory activities in terms of cognitive, affective and psychomotor aspects.
Brief Description of the Course	Study of the functions and roles of the Chemistry Education Laboratory, planning, construction and laboratory management, procurement and management of equipment and materials, management of hazardous and toxic materials (B3), Occupational Health and Safety (K3) in the Laboratory, fire prevention and handling, making solutions, and assessment activities in the laboratory. The study is carried out through discussions, presentations, demonstrations, laboratory practice and collaboration.	
Study Materials: Learning Materials	1. Laboratory functions and roles, types of laboratories, 2. Planning, development and laboratory management, 3. Procurement and management of equipment and materials, 4. Work safety and work safety management in the laboratory, 5. Handling of hazardous and toxic materials (B3), 6.Fires and ways of dealing with them, 7. Preparation of solutions, 8. Assessment of activities in the laboratory.	
References	**Main :**	
	Mitarlis, Azizah U, Amaria, 2016. *Organisasi dan Manajemen Laboratorium Pendidikan Kimia*. Surabaya: Unesa University Press.	
	Additional :	
	Kumpulan Makalah Seminar. 2003. *Safety and Waste Analysis in the Laboratory*. PT. Merck Tbk. Chemical Division Surabaya. Cahyono, A.B. 2004. Keselamatan Kerja Bahan Kimia di Industri. Yogyakarta: Gajahmada University Press.	
Lecturers	Dr. Nuniek Herdyastuti, M.Si. Dr. Utiya Azizah, M.Pd. Dra. Nurul Hidayati, M.Si. Dr. Mitarlis, S. Pd., M.Si. Dr. Muchlis, S.Pd., M.Pd.	

Prerequisite Course	-						
Meeting	**The final ability of each activity**	**AssessmentCriteria**		**Learning Forms, Learning Methods, Student Assignment**		**Reference**	**Rating Weight (%)**
		Indicator	**Criteria & Form**	**Offline**	**Online**		
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(1)**	**(2)**
1	Explain the meaning of organization and the kind of laboratory as well as the nature of science.	1.1. Explain the meaning of laboratory organization 1.2. Explain the nature of science. 1.3. Classify the kind of laboratory based on the type.	Criteria: Qualitative Quantitative Form: Test Non test	Discussion Assignment (reading task and making summary) Presentation		1. Introduction 1.1. Basic meaning of organization. 1.2. The nature of Science. 1.3. Laboratory and classification	
2	Explain the functions and roles of laboratory.	2.1 Explain the functions and roles of laboratory as learning resourses involve cognitive, affective, and psychomotor domain. 2.2. Describes the function and role of the laboratory as an educational method 2.3 Describes the function and role of the laboratory as an educational infrastructure.	Criteria: Qualitative Quantitative Form: Test Non test	Discussion Assignment (reading task and making summary) Presentation Summary results in form of table, concept map, or mind map		2.1 Function and roles of laboratory. 2.2 Laboratory as learning resourses. 2.3 Laboratory as education method 2.4 Laboratory as education infrastructure	

3	Outlines the principles of laboratory planning and construction.	3.1. Explain the principles of laboratory development planning based on the needs (type of activity, number of users, layout, etc.).	Criteria: Qualitative Quantitative Form: Test Non test	Assignment (laboratory observation) (Presentation The results of observation)		3. Planning and construction of laboratory 3.1. Analysis of room requirement	
4	Describes the principles of planning and building a laboratory and its equipment	3.2 Explain the meaning of laboratory equipment.	Criteria: Qualitative Quantitative Form: Test Non test	Assignment (laboratory observation) (Presentation The results of observation)		3.2 Planning and procurement of laboratory equipment.	
5	Implement the equipment and material procurement process	4.1 Describe how to procure equipment and materials based on: a. Curriculum guidelines. b. The number of students. c. Budget. 4.2 Make a list of proposed tools and materials based on priority needs using catalog. 4.3 Explain the selection of equipment.	Criteria: Qualitative Quantitative Form: Test Non test	Discussion assignment (management tools and materials practice of making apparatus/ materials card		4. Equipment and materials procurement: 4.1 Guidelines in the procurement of tools and materials. 4.2 Catalog of equipment and materials. 4.3 Formats for procurement of equipment and materials.	
6	Describe and implement management of equipment and materials	5.1 Describe the stockroom function. 5.2 Describe the methods of tools/materials storage and classification and their application	Criteria: Qualitative Quantitative Form: Test Non test Test	Discussion assignment (management tools and materials practice of making		5. Management of equipment and materials: 5.1 Function of stockroom 5.2 Storage and classification	

				apparatus/ materials card			
7	Describe and implement equipment and materials management	5.3 Applying how to care for glassware. 5.4 Applying the use of various records that must be available in the laboratory.	Criteria: Qualitative Quantitative Form: Test Non test	Discussion assignment (management tools and materials practice of making apparatus/ materials card)		5.3 General maintenance of glassware. 5.4 Various kinds of notebooks in the laboratory.	
8	**Midterm Test**						
9	Explain the meaning of work safety and its management in the laboratory and their application.	6.1 Explain the meaning of work safety in the laboratory. 6.2 Explain the causes of accidents in the laboratory. 6.3 Describe the handling and prevention of accidents.	Criteria: Qualitative Quantitative Form: Test Non test	Discussion Assignment (reading task and making summary) Presentation Summary results in form of table, concept map, or mind map.		6. Works safety and management 6.1 Work Safety in the laboratory. 6.2 Accidents and the elements of their causes.	
10	Describe the functions of management and work safety	7.1 Explain the description of the duties and obligations of the staff, instructors, technicians, and laboratory assistants. 7.2 Applying an attitude towards creating safe conditions in order to be free from safety disturbances for laboratory users	Criteria: Qualitative Quantitative Form: Test Non test	Discussion Assignment (reading task and making summary in form of table, concept map, or mind map).		7.1. The role of job descriptions and obligations of organizational elements (Human resources) 7.2. Work Safety Management.	

11	Describe the hazardous and toxic materials (B3), how to deal with them and how to handle them	8.1 Describe hazardous and toxic materials (B3) 8.2 Classifying the types of B3 8.3 Describe Analyzing Components of Material Safety Data Sheet (MSDS) 8.4 Handling of B3	Criteria: Qualitative Quantitative Form: Test Non test	Discussion Assignment (reading task and MSDS review)		8.1. Hazardous and toxic materials (B3) 8.2. Material Safety Data Sheet (MSDS)	
12	Fire and how to handle it	9.1 Definition of fire and fire 9.2 Combining fire and type of fire extinguisher 9.3 Fire fighting	Criteria: Qualitative Quantitative Form: Test Non test	Discussion assignment (observation of video of fire extinguisher Presentation		9. 1. Definition and components of fire formation 9.2. Classification of fire and types of extinguishers 9.3. Fire prevention based on the type	
13	Making of solution	10.1 Calculation of solution preparation. 10.2 Make a solution with in correct procedure. 10.3 Prepare solutions according to practicum needs.	Criteria: Qualitative Quantitative Form: Test Non test	Discussion assignment (practicum, making solution) Presentation		10.1. Preparation of a solution from solids. 10.2. Dilution of the solution. 10.3. Preparation of indicator solutions.	
14	Making of solution	10.4 Prepare solutions according to practicum needs. 10.5 Reporting the results of the solution making practicum	Criteria: Qualitative Quantitative Form: Test Non test	Discussion assignment (practicum, making solution) Presentation		10.4 Systematics of practicum reports	

15	Able to conduct assessments of laboratory activities in terms of cognitive, affective and psychomotor aspects.	11.1 Designing a practicum assessment instruments on cognitive aspects 11.2 Designing a practicum assessment instrument for the affective aspect 11.3 Designing a practical assessment instrument for the psychomotor aspect	Criteria: Qualitative Quantitative Form: Test Non test	Discussion assignment (design of evaluation instrument of practicum activity)		Assessment form: Ways of assessing cognitive, affective and psychomotor aspects.	
16	**Final Exam**						

A.4. MAPPING OF LEARNING OUTCOMES – COURSE OUTCOMES

A.4.1. The Expected Program Learning Outcomes (PLO) of Undergraduate Program of Education Chemistry (UPCE)

NO	ASPECTS	PLO	CODE
1	KNOWLEDGE	1. Capable to demonstrate knowledge related to theoretical concepts about structure, dynamics, and energy, as well as the basic principles of separation, analysis, synthesis and characterization of chemicals	KNO-1
		2. Capable to demonstrate the pedagogical knowledge of chemistry in designing, implementing, and evaluating chemistry learning	KNO-2
2	SKILL	3. Mastering the principles of ocupational health and safety, managing laboratories, using the equipment and operating chemical instruments	SKI-1
		4. Capable to design, implement, evaluate, learn and develop chemistry learning media by utilizing Information and Communication Technology	SKI-2
3	COMPETENCIES	5. Applying logical, critical, systematic and innovative thinking in the context of development or implementation of science, technology, and art that regards and applies humanities in accordance with chemistry education in solving problems	COM-1
		6. Mastering the basics of the scientific method, designing and conducting research, writing scientific reports and communicating them both verbally and in writing by utilizing information and communication technology in the field of education	COM-2
4	ATTITUDE AND SOCIAL	7. Capable to make decisions based on data/information in order to complete their responsibility assignment and evaluate the performance that has been done both individually and in groups, have an entrepreneurial spirit with environmental insight	SOC-1
		8. Capable to adapt to various developments in chemistry, develop and learn continuously throughout life to continue education, both formal and informal	SOC-2

A4.2. The Education Program Objectives (PEOs) of Laboratory Organization.

PEO 1. Comprehending the concept and chemistry learning, laboratory management, scientific method, and ICT as well as its implementation to solve the problem in their profession.
PEO 3. Having the ability to work together, be honest, and be responsible for work in the field of expertise and entrepreneurial spirit in the field of education that is environmentally friendly (green-edupreneurship)
PEO 4. Having the capability to develop and learn in life long education, formal or informal education continuously.
PEO 5. Having capability to develop and apply chemistry concept along with the progress of science and technology as well as humanities values.

A4.3. Mapping of Program Learning Outcomes (PLO) – Education Program Objectives (PEOs)

	PLO 3 (SKI-1)	PLO 7 (SOC-1)	PLO 8 (SOC-2)
PEO 1	√		
PEO 2			
PEO 3		√	
PEO 4			√
PEO 5	√	√	√

B. COURSE ASSESSMENT

B.1. Assessment Rubric

Cognitive Criteria
1. The ability to give answers correctly
2. The ability to provide argumentation according to theory
3. The ability to provide systematic explanations
4. The ability to solve problems comprehensively

B.2. Assessment System

Final Assessment Course with practicum
Practicum : 20%
Group/Individuals Assignment : 20%
Midterm examination : 30%
Final examination : 30%

Distribution of the weight of the ability of the test item

	PLO 3 (KNO-1)	PLO 7 (SOC-1)	PLO 8 (SOC-2)	Total
Practicum	50%	20%	30%	100%
Group/Individuals Assignment	20%	40%	40%	100%
Midterm examination	20%	40%	40%	100%
Final examination	20%	40%	40%	100%

Success Criteria of Program Learning Outcomes (PLO)

Excellence	≥ 80
Good	≥ 70
Satisfy	≥ 55
False	> 0

Final index for undergraduate program defined as follow:

Final Index	Range
A	4 (85 ≤-≥ 100)
A^-	3,75 (80 ≤-< 85)
B+	3,5 (75 ≤- < 80)
B	3 (70 ≤-< 75)
B-	2,75 (65 ≤-<75)
C+	2,5 (60 ≤-<65)
C	2 (55 ≤-<60)
D	1 (40 ≤-<55)
E	0 (0 ≤-<40)

C. COURSE DEVELOPMENT

C.1. Academic Year 2019/2020 odd semester

Parameter	∑ of person	Percentage
Number or students taking this subject	94	100%
Number of students who pass at first attempt (>C^+)	94	100%
Number of students who must take remedial	0	0%
Number of failed students after remedial (D & E)	0	0%

C.2. Problems Analysis

In 2019/2020 academic year the Laboratory Organization course, there were 100 % students had passed the examination at the first attempt. The number of students who must took the remedial examination is 0%. Even though, it was thought that the learning strategy/methods need to be improved to achieve the higher results in the future.

C.3. Solutive Strategy

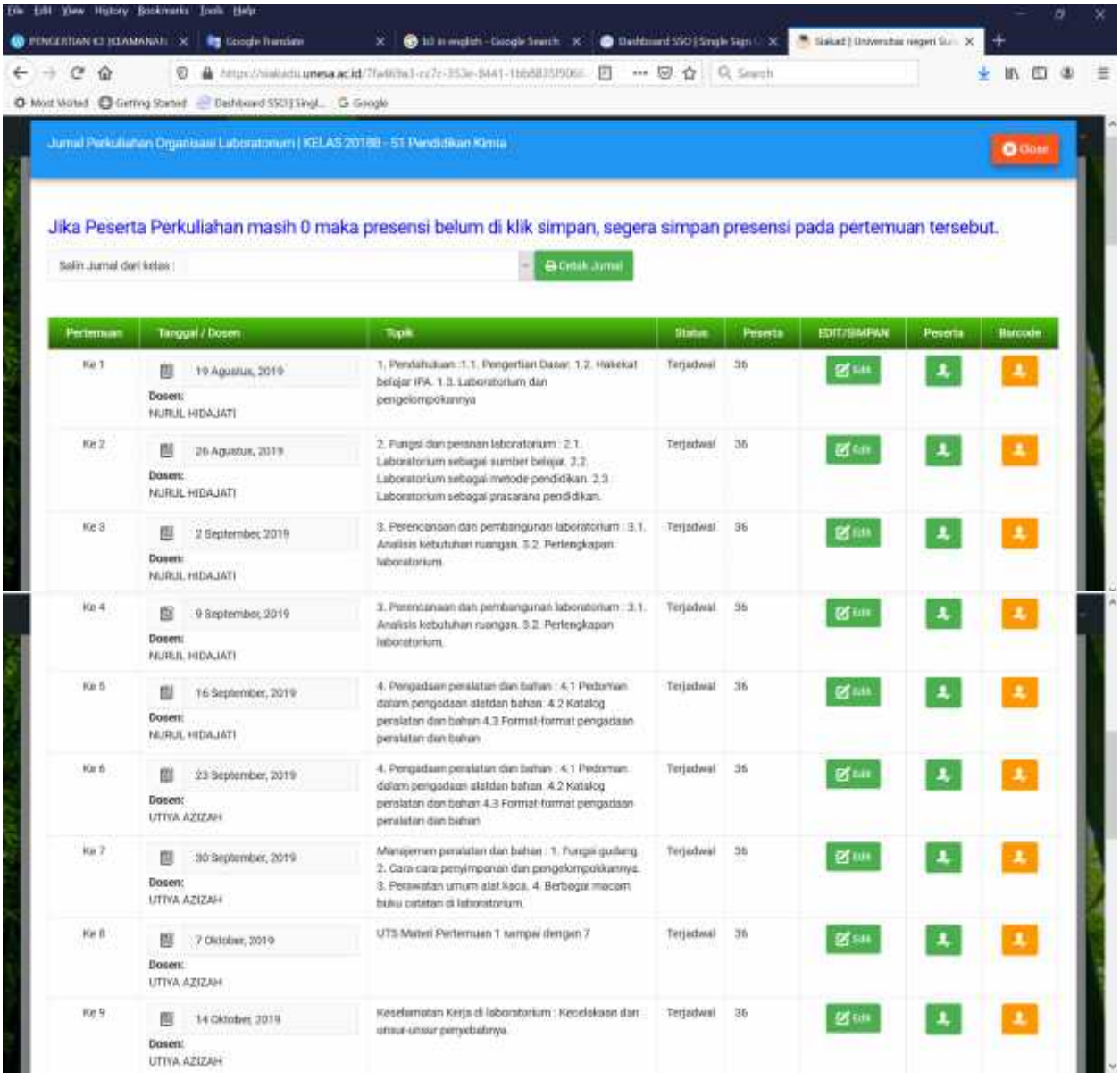
New teaching and learning methods should be developed for the next academic years, consisting of:

1. Redesigning the course material (PPT slides, course contents, etc.) to become more interesting and interactive to stimulate student's interest to this course.
2. Giving "lecture by online" to stimulate our students to learn about the next lecture topics.
3. Enhance the cooperative skills of students with exchange the methods and models of learning

D. APPENDICES

D.1. DOCUMENT OF COURSE ACTIVITY

D.1.1. Lecture's journal and student's attendance form of Laboratory Organization course at siakadu.uneca.ac.id



Ke 10	21 Oktober, 2019 **Dosen:** UTIYA AZIZAH	Keselamatan Kerja di laboratorium : kecelakaan dan unsur-unsur penyebabnya.	Terjadwal	36	Edit		
Ke 11	28 Oktober, 2019 **Dosen:** MITARLIS	1. Keselamatan kerja dan manajemen keselamatan kerja	Terjadwal	36	Edit		
Ke 12	21 November, 2019 **Dosen:** MITARLIS	Bahan berbahaya dan beracunPraktikum pembuatan larutan	Terjadwal	36	Edit		
Ke 13	28 November, 2019 **Dosen:** MITARLIS	1. Pembuatan Larutan dari padatan 2. Pengenceran larutan 3. Pembuatan larutan indikator	Terjadwal	34	Edit		
Ke 14	25 November, 2019 **Dosen:** MITARLIS	Bentuk penilaian : Cara penilaian aspek kognitif, afektif dan psikomotor.	Terjadwal	36	Edit		
Ke 15	2 Desember, 2019 **Dosen:** MITARLIS	Bentuk penilaian : Cara penilaian aspek kognitif, afektif dan psikomotor.	Terjadwal	36	Edit		

KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN
UNIVERSITAS NEGERI SURABAYA

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PRESENSI KULIAH

Periode 2019/2020 Gasal

Mata Kuliah : Organisasi Laboratorium
Kelas : 2018A
Prodi : S1 Pendidikan Kimia

Dosen : Dra. Nurul Hidajati, M.Si.
Dr. Mitarlis, S.Pd., M.Si.
Dr. Utiya Azizah, M.Pd.

No	NIM	Nama Mahasiswa	Pertemuan Ke															%
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
			22 Aug 19	29 Aug 19	02 Sep 19	12 Sep 19	19 Sep 19	26 Sep 19	03 Oct 19	10 Oct 19	17 Oct 19	24 Oct 19	31 Oct 19	14 Nov 19	21 Nov 19	28 Nov 19	05 Dec 19	
1.	18030194001	DIYAH AYU MURTI NINGSIH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
2.	18030194003	NURUL HIKMATUN ULIYA	H	H	H	H	H	H	H	H	H	I	H	H	H	H	H	100 %
3.	18030194004	FATHIN SALSABILA ALFARISI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
4.	18030194005	IMA PURNAMASARI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
5.	18030194006	ESTY AYU FADHILATUL MUNAWAROH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
6.	18030194007	NIRMALA DELAWANTI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
7.	18030194009	FIRDA FARADILA SHOLIKHAH IMAM	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
8.	18030194019	KHOLIFATUR ROSYIDAH	H	H	H	H	H	H	H	H	H	I	H	H	H	H	H	100 %
9.	18030194021	SALSADELLA ANDINI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
10.	18030194022	DWI ARIFIANTI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
11.	18030194024	EVA RIZKA AMALIA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
12.	18030194028	NOVITA PUTRI FEBRYANTI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
13.	18030194029	NOFI ERIANA SULISTIANI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
14.	18030194031	ANITA ANGGRAHINI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
15.	18030194037	UMI NADZIROH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
16.	18030194038	ALMIRA NINDYA DIVAMITA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
17.	18030194039	NADIFA NUR PERMATA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
18.	18030194061	ANGGRAENI PUSPITA SARI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
19.	18030194062	SASTIKA MELDA APRILIA	H	H	H	H	H	H	H	H	H	I	H	H	H	H	H	100 %
20.	18030194063	SITI NUR MANZILATUL HASANAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
21.	18030194064	LATHIFATUL HIKMAH	H	H	H	H	H	H	H	H	H	A	H	H	H	H	H	93.3 %
22.	18030194065	SHINTA NUR CHOLIFAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
23.	18030194067	INTAN WULANDARI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
24.	18030194068	NUR HUDA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
25.	18030194069	MUTIATUS SHOLEHATU NURDIYAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
26.	18030194074	DEWI LAILI SAFITHRI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
27.	18030194075	GUNUR MUTIA MAULIDY	H	H	H	H	H	H	H	H	H	H	H	H	5	H	H	100 %
28.	18030194076	MUHAMMAD ARIZAL	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
29.	18030194077	SITTI KHOLIFAH AMARTYAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
30.	18030194078	ARTIKA GIOVANI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
31.	18030194079	HARIDHA NURFIDAYANTI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
32.	18030194081	DINI MADIAR	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
33.	18030194083	ERYNA DWI TRISVIATI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
34.	18030194086	ALIFIA FELITASARI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
35.	18030194097	TRISNA MAULLIDYAWATI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
Tanda Tangan Dosen / Asisten																		

KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN
UNIVERSITAS NEGERI SURABAYA

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PRESENSI KULIAH

Periode 2019/2020 Gasal

Mata Kuliah : Organisasi Laboratorium
Kelas : 2018B
Prodi : S1 Pendidikan Kimia

Dosen : Dra. Nurul Hidajati, M.Si.
Dr. Mitarlis, S.Pd., M.Si.
Dr. Utiya Azizah, M.Pd.

No	NIM	Nama Mahasiswa	Pertemuan Ke															%
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
			19 Aug 19	26 Aug 19	02 Sep 19	09 Sep 19	16 Sep 19	23 Sep 19	30 Sep 19	07 Oct 19	14 Oct 19	21 Oct 19	28 Oct 19	21 Nov 19	28 Nov 19	25 Nov 19	02 Dec 19	
1.	18030194010	ROMITA ERIKA NARESTIFURI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
2.	18030194011	MUHAMAD BAGUS TRI LAKSONO	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
3.	18030194012	SISILIA FIL JANNATI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
4.	18030194013	SYAFIRA HUMAIROH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
5.	18030194014	SHABRINA NABILAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
6.	18030194015	AN-NABILA AULIA SHOFA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
7.	18030194016	LELITYA NURMAWATI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
8.	18030194017	NORA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
9.	18030194018	R. AYU SOFIAH WILATIKA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
10.	18030194030	INDAH AYU SURYANI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
11.	18030194041	NADHIFA ISAD	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
12.	18030194042	LAILI MUFLIHATIN	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
13.	18030194043	WULAN PRYANTI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
14.	18030194044	WAHYU NUR HIDAYATULLAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
15.	18030194045	MARIYA SOLIKAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
16.	18030194046	SINGGIH OKA WARDHANA	H	H	H	H	H	H	H	H	H	H	H	H	I	H	H	100 %
17.	18030194047	RIZQYA LAILATUL RAMADHANA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
18.	18030194048	RESTI DIAH SUGITA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
19.	18030194049	SAFRIANA AMALIA RAKHMA WAHDANIYAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
20.	18030194050	SAKINATUS ZAHRAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
21.	18030194052	CINDY KUMALASARI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
22.	18030194053	PUJA CAHYA DINI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
23.	18030194054	TARIQA SADIAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
24.	18030194055	NURIL RODHOTUL JANAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
25.	18030194056	VINA RACHMAWATI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
26.	18030194058	UMI LUTHFIYAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
27.	18030194059	ARINA SUKMA TANJUNG ASRI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
28.	18030194070	MILA MEITA SARI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
29.	18030194071	FITRI WULANDARI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
30.	18030194072	RATIH MIFTAKHUR ROSIDAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
31.	18030194073	LAILA NUR CHOLIFATUL ISNAINI SABILA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
32.	18030194088	CINDY KUMALA SARI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
33.	18030194090	SITI MUTMAINAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
34.	18030194091	IKTIFAUL ULYA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
35.	18030194092	SYAM QEISHA KAUKABA	H	H	H	H	H	H	H	H	H	H	H	H	S	H	H	100 %
36.	18030194093	EKA HIDAYATUL MUSTAFIDAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
Tanda Tangan Dosen / Asisten																		

KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN
UNIVERSITAS NEGERI SURABAYA

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PRESENSI KULIAH

Periode 2019/2020 Gasal

Mata Kuliah : Organisasi Laboratorium
Kelas : 2018U
Prodi : S1 Pendidikan Kimia

Dosen : Dra. Nurul Hidajati, M.Si.
Dr. Mitarlis, S.Pd., M.Si.
Dr. Utiya Azizah, M.Pd.

No	NIM	Nama Mahasiswa	Pertemuan Ke															%
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
			21 Aug 19	28 Aug 19	04 Sep 19	11 Sep 19	18 Sep 19	25 Sep 19	02 Oct 19	09 Oct 19	16 Oct 19	23 Oct 19	30 Oct 19	13 Nov 19	20 Nov 19	27 Nov 19	04 Dec 19	
1.	18030194002	ADILAH MAHMUDAH EKA PRATIWI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
2.	18030194020	MOHAMMAD AFIFUDIN ARMADANI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
3.	18030194023	LAILATUL BADRIYAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
4.	18030194025	POPY LUTFIANTI DEVA MANAN	H	H	H	H	A	H	A	A	I	I	A	A	A	A	A	46.7 %
5.	18030194026	GALIH PUTRI ROMADHONA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
6.	18030194027	WULLIDA HAYUNING BIDARI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
7.	18030194032	AIRIZA DIAN LUTHFIANA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
8.	18030194033	LA DIVINA TAMARA HANUN	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
9.	18030194036	M. RIZKI FADHLI PUTRA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
10.	18030194051	MARIATUL QIBTIYAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
11.	18030194057	AISYAH VEROLITA FIRDAUZ	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
12.	18030194060	SITI SUARNINGTYAS	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
13.	18030194066	RISTA AJENG MITASARI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
14.	18030194080	RADITYA WISNU SAPUTRA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
15.	18030194082	FAIRUZIYAH AIZZATUN NISA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
16.	18030194084	FITRI ANNISAA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
17.	18030194085	ERA MELANIA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
18.	18030194089	DHEVIRA APTIA FIRMANDA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
19.	18030194094	YOSITA RAHMAWATI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
20.	18030194095	DEI GRATIA KANTHI NABELLA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
21.	18030194096	IKFISANI YUNIAR RIFKI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
22.	18030194098	BINTARI CATUR ANJARWATI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
23.	18030194099	WAHYU ISMI ZAKIYAH	S	H	H	H	S	H	H	H	H	H	H	H	H	H	H	100 %
24.	18030194101	AULIA PRATAMADITA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100 %
Tanda Tangan Dosen / Asisten																		

D.1.2. Sample of statement of examination official report

KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN
UNIVERSITAS NEGERI SURABAYA
FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM
JURUSAN KIMIA

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Telepon: +6231- 8298761
Faksimile : +6231- 8298761
e-mail kimia@unesa.ac.id

Official Report of The Final Examination

Today, ***Monday, 16 December 2019***. The Mid-Term Examination in the Odd Semester 2020/2021 via ***offline at room C60201*** has been done. The examination start at ***03:00 PM*** and was ended at ***04:40 PM*** for 100 minutes.

Undergraduate Program: ***Bachelor of Chemistry Education***
Course : ***Laboratory Organization***
Class : ***PKA 2018***
Lectures : ***Team***

Number of participants : ***25*** student(s)
Number of Attendees : ***25*** student(s)
Number of Absence : .... student(s), there are

1.	4.	7. ....
2.	5.	8. ....
3.	6.	9. ....

The infromation during the exam:
..................................*final test can be run well.*...
....
....

Supervisor: Name		Sign :
	1. Utiya Azizah	1. [signature]
	2. Rusly Hidayah	2. [signature]
	3.	3. ....
	4.	4. ....

Thus official report of The Final Examination.

Set in : Surabaya
Date : 16 December 2019
The exam committee,

[signature]

Dr. Muchlis, S.Pd., M.Pd.
NIP 197209152003121001

KEMENTERIAN RISET, TEKNOLOGI, DAN PENDIDIKAN TINGGI
UNIVERSITAS NEGERI SURABAYA

Jl. Lidah Wetan, Surabaya - 60213
Telepon :+6231-99424932
Faksimile :+6231-99424932
e-mail :bakpk@unesa.ac.id

PRESENSI UJIAN AKHIR

Periode 2019/2020 Gasal

Mata Kuliah : Organisasi Laboratorium
Kelas : 2018A
Prodi : S1 Pendidikan Kimia

Dosen : Dr. Utiya Azizah, M.Pd.
Mitarlis, S.Pd., M.Si.
Dra. Nurul Hidajati, M.Si.

No	NIM	Nama Mahasiswa	Tanda Tangan		%
1.	18030194001	DIYAH AYU MURTI NINGSIH			100%
2.	18030194003	NURUL HIKMATUN ULIYA			100%
3.	18030194004	FATHIN SALSABILA ALFARISI			100%
4.	18030194005	IMA PURNAMASARI			100%
5.	18030194006	ESTY AYU FADHILATUL MUNAWAROH			100%
6.	18030194007	NIRMALA DELAWANTI			100%
7.	18030194009	FIRDA FARADILA SHOLIKHAH IMAM			100%
8.	18030194019	KHOLIFATUR ROSYIDAH			100%
9.	18030194021	SALSADELLA ANDINI			100%
10.	18030194022	DWI ARIFIANTI			100%
11.	18030194024	EVA RIZKA AMALIA			100%
12.	18030194028	NOVITA PUTRI FEBRYANTI			100%
13.	18030194029	NOFI ERIANA SULISTIANI			100%
14.	18030194031	ANITA ANGGRAHINI			100%
15.	18030194037	UMI NADZIROH			100%
16.	18030194038	ALMIRA NINDYA DIVAMITA			100%
17.	18030194039	NADIFA NUR PERMATA			100%
18.	18030194061	ANGGRAENI PUSPITA SARI			100%
19.	18030194062	SASTIKA MELDA APRILIA			100%
20.	18030194063	SITI NUR MANZILATUL HASANAH			100%
21.	18030194064	LATHIFATUL HIKMAH			93.3%
22.	18030194065	SHINTA NUR CHOLIFAH			100%
23.	18030194067	INTAN WULANDARI			100%
24.	18030194068	NUR HUDA			100%
25.	18030194069	MUTIATUS SHOLEHATU NURDIYAH			100%

Tanda Tangan Pengawas	

D.2. SAMPLE OF STUDENT WORK

D.2.1. Sample of Test Sheet of Laboratory Organization

KEMENTERIAN RISET, TEKNOLOGI DAN PENDIDIKAN TINGGI
UNIVERSITAS NEGERI SURABAYA
FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM
JURUSAN KIMIA

Kampus Ketintang
Jalan Ketintang Gedung C5 dan C6
Surabaya 60231
T: +6231-8298761
F: +6231-8298761

FINAL TEST OF ODD SEMESTER 2019/2020

Examination Subject	: Laboratory Organization
Department/Faculty	: Chemistry/Faculty of Mathematics and Natural Sciences
Program/Year	: Chemistry Education
Day / date	: Monday/16 December 2019
Period	: 100 minutes
Time	: V
Lecturers	: Team
Characteristic	: closed book

Answer these Following Questions

1. Phenomenon
   Work safety in the laboratory is the desire of every individual who is aware of the interests of health, safety and work comfort. Working safely and securely means reducing the impact of accidents. Experiments carried out using various chemicals, such as glassware and special instrumentation can result in accidents if done in an inappropriate manner. Observe the phenomena contained in the following image:

Figure 1. Illustration of working atmosphere in the laboratory
(source: http://safetynet.asia/langkah-langkah-keselamatan-kerja-di-laboratorium-biologi/

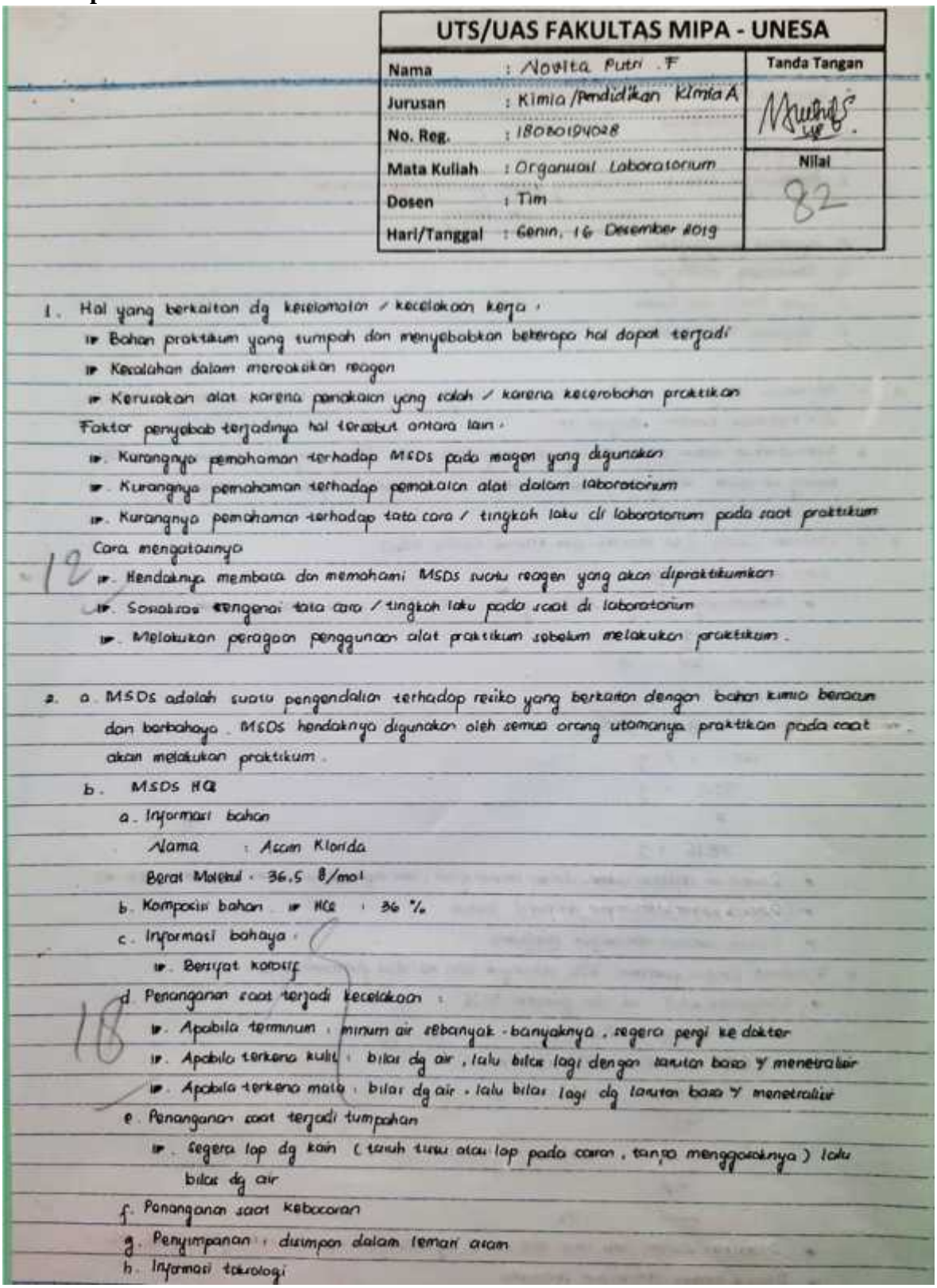
   Observe the phenomena in Figure 1. Find three things related to work safety or work accidents, relate them to the factors that cause accidents and how to overcome them. (Score = 20)

2. Based on your work experience at the time of the solution making in laboratory, first you learn the MSDS of the material to be used.
   a. What is MSDS and who should use it?
   b. Describe briefly the MSDS of the chemicals you used in the solution preparation practicum based on the components of the MSDS!
   (Score = 20)
3. Explain how to handle if any of the following happens:
   a. If the acid / base comes into contact with the eyes. (score = 10)
   b. Mercury spills from a broken mercury thermometer! (score = 5)
   (total score no. 4 = 15)
4. Based on your practicum experience, explain what if you made the following solutions starting from calculations and application procedures to storage with due regard to safety and security:
   a. CuSO4 solution with a concentration of 1M and a volume of 500 mL with the starting material in the form of CuSO4 crystals. 5H2O. (Ar O = 16, Cu = 63.5 S = 32)
   b. Make a 5% formalin solution of 500 ml from 40% formalin.
   (total score No.4 = 20)

5. Fire and extinguisher
   a. Classify the type of fire! (Score=10)
   b. How to choose the kind of extinguisher based on the type of fire. (score=15)
   c. What are the things that must be considered in fire management? (score = 10)
   (total score No.5 = 25)

000OOOO00

D.2.2. Sample of Student's Work



UTS/UAS FAKULTAS MIPA - UNESA

Nama	: Novita Putri .F	Tanda Tangan
Jurusan	: Kimia/Pendidikan Kimia A	
No. Reg.	: 1808019402B	
Mata Kuliah	: Organuasi Laboratorium	Nilai
Dosen	: Tim	82
Hari/Tanggal	: Senin, 16 Desember 2019	

1. Hal yang berkaitan dg keselamatan / kecelakaan kerja :
   - Bahan praktikum yang tumpah dan menyebabkan beberapa hal dapat terjadi
   - Kecelahan dalam mereaksikan reagen
   - Kerusakan alat karena pemakaian yang salah / karena kecerobohan praktikan

   Faktor penyebab terjadinya hal tersebut antara lain :
   - Kurangnya pemahaman terhadap MSDS pada reagen yang digunakan
   - Kurangnya pemahaman terhadap pemakaian alat dalam laboratorium
   - Kurangnya pemahaman terhadap tata cara / tingkah laku di laboratorium pada saat praktikum

   Cara mengatasinya
   - Hendaknya membaca dan memahami MSDS suatu reagen yang akan dipraktikumkan
   - Sosialisasi tentang tata cara / tingkah laku pada saat di laboratorium
   - Melakukan peragaan penggunaan alat praktikum sebelum melakukan praktikum.

2. a. MSDS adalah suatu pengendalian terhadap resiko yang berkaitan dengan bahan kimia beracun dan berbahaya. MSDS hendaknya digunakan oleh semua orang utamanya praktikan pada saat akan melakukan praktikum.

   b. MSDS HCl
      a. Informasi bahan
         Nama : Asam Klorida
         Berat Molekul : 36,5 g/mol
      b. Komposisi bahan : HCl : 36 %
      c. Informasi bahaya :
         - Bersifat korosif
      d. Penanganan saat terjadi kecelakaan :
         - Apabila terminum : minum air sebanyak-banyaknya, segera pergi ke dokter
         - Apabila terkena kulit : bilas dg air, lalu bilas lagi dengan larutan basa Y menetralisir
         - Apabila terkena mata : bilas dg air, lalu bilas lagi dg larutan basa Y menetralisir
      e. Penanganan saat terjadi tumpahan
         - Segera lap dg kain (tanah tisu atau lap pada coran, tanpa menggosoknya) lalu bilas dg air
      f. Penanganan saat kebocoran
      g. Penyimpanan : disimpan dalam lemari asam
      h. Informasi toksikologi

j. Informasi ekologi
j. Stabilitas / reaktivitas
k. Pemaparan
l. Pembuangan limbah , ditampung dalam penampungan tersendiri dinetralisasi sblm dibuang
m. Informasi pengangkutan
n. Perundang - undangan
o. Sifat Kimia dan Fisika
p. Informasi lain - lain

8. a. Membilas dengan air , lalu dinetralisir dengan asam asetat 1 % (bila terkena basa) , dan membilas kembali dengan air
b. Menaburkan serbuk sulfur SO_2 pada tumpahan raksa . Akan terjadi perubahan warna dr kuning ke coklat . Mengulangi menabur sulfur dan membilas sampai warna coklat hilang .

4. a. Larutan $CuSO_4$ 1 M 500 mL dan kristal $CuSO_4 . 5H_2O$
Cara membuat larutan :
- Menimbang sebanyak 79.75 gram $CuSO_4 . 5H_2O$ pada neraca analitik

$$M = \frac{g}{Mr} \times \frac{1000}{V}$$

$$1 = \frac{g}{159,5} \times \frac{1000}{500}$$

$$159,5 = 2\ g$$

$$\frac{159,5}{2} = g$$

$$79,75 = g$$

- Dilarutkan terlebih dahulu dalam beaker glass , lalu dipindahkan dalam labu ukur 500 mL
- Ditambah aquades sampai tanda batas
- Dikocok sampai tercampur sempurna

b. Membuat larutan formalin 5% sebanyak 500 ml dari formalin 40 %
- Mengambil 62,5 ml dari formalin 40%

$$P_1 \times V_1 = P_2 \times V_2$$

$$5\% \times 500 = 40\% \times V_2$$

$$\frac{5 \times 500}{40} = V_2$$

$$\frac{2500}{40} = V_2$$

$$62,5 = V_2$$

- Diencerkan dalam labu ukur 500 mL / dg ditambah aquades sebanyak 437,5 mL
- Dikocok hingga tercampur sempurna

UTS/UAS FAKULTAS MIPA - UNESA

Nama	: Novita Putri .F	Tanda Tangan
Jurusan	: Kimia / Pendidikan Kimia	
No. Reg.	: 18080194028	
Mata Kuliah	: Organicas Laboratorium	Nilai
Dosen	: Tim	
Hari/Tanggal	: Senin, 16 December 2019	

5. a. ➢ Api adalah hasil dari reaksi eksoterm yang melibatkan oksigen, api dan bahan tertentu yang dilakukan dengan sengaja (diinginkan)

➢ Kebakaran adalah hasil dari reaksi eksoterm yang melibatkan oksigen, api, dan bahan tertentu yang tidak disengaja (tdk diinginkan) sehingga api yang dihasilkan menyebar dan menjadi lebih besar

Hal tersebut dapat terjadi karena beberapa faktor antara lain :

a. Konsleting listrik

b. Gesekan benda padat seperti ranting pohon sehingga memunculkan percikan api pemicu kebakaran

c. Tumpahan benda cair (bahan kimia) atau yang lainnya

d. Kelalaian manusia pada saat menyalakan api sehingga bisa menyebar dan menimbulkan kebakaran.

b. Jenis pemadam yang digunakan adalah APAR Dry Chemical yang sesuai untuk memadamkan api dengan tipe A (api yang timbul dari benda padat). Selain itu dapat pula digunakan guni basah dan pasir.

c. Hal yang perlu diperhatikan dalam penanggulangan kebakaran adalah jenis api termasuk dalam tipe manakah (A, B, C, D). Jika sudah mengetahui jenis api maka dapat dipilih dg tepat alat pemadam yang sesuai. Berikut adalah beberapa jenis api dan alat pemadam yang dapat digunakan

Tipe Api	Penanggulangan kebakaran dg penggunaan APAR				
	Dry	Foam	ABC Chemical	CO_2	Wet
A	✓	✓	✓	-	✓
B	-	✓	✓	✓	-
C	-	-	✓	-	-
D	-	-	✓	✓	-
K	-	-	-	-	✓

Tipe A : kebakaran dari bahan padat

B : kebakaran dari bahan cair / gas

C : kebakaran dari konsleting listrik

D : kebakaran dari lelehan logam

K : kebakaran dari bahan dapur.

D.3. RECAPITULATION OF ASSESSMENT

D.3.1. Validate Test Item

The end-of-semester evaluation questions consist of eight items in the form of essay questions analyzed content through experts in the appropriate field of Chemistry Education analyzed. Essay questions are validated with expert judgment in the course team members. The analysis was conducted by taking into account several aspects, namely the suitability of the questions with the course outcome, language, content and construct.

D.3.2 Sample of Evaluation Results of Laboratory Organization

KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN
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Daftar Nilai
Periode 2019/2020 Gasal

Mata Kuliah : Organisasi Laboratorium
Kelas : 20188
Prodi : S1 Pendidikan Kimia

Dosen : Dra. Nurul Hidajati, M.Si.
Dr. Mitarlis, S.Pd., M.Si.
Dr. Utiya Azizah, M.Pd.

No.	NIM	Nama Mahasiswa	Partisipasi	Tugas	UTS	UAS	NA	NH	Kehadiran
1.	18030194010	ROMITA ERIKA NARESTIFURI	84.00	83.00	82.00	80.00	82.1	A-	100 %
2.	18030194011	MUHAMAD BAGUS TRI LAKSONO	81.00	83.00	82.00	86.00	83.3	A-	100 %
3.	18030194012	SISILIA FIL JANNATI	75.00	83.00	85.00	87.00	83.0	A-	100 %
4.	18030194013	SYAFIRA HUMAIROH	75.00	83.00	85.00	70.00	77.9	B+	100 %
5.	18030194014	SHABRINA NABILAH	75.00	85.00	83.00	87.00	83.2	A-	100 %
6.	18030194015	AN-NABILA AULIA SHOFA	75.00	85.00	84.00	82.00	81.9	A-	100 %
7.	18030194016	LELITYA NURMAWATI	78.00	84.00	82.00	72.00	78.8	B+	100 %
8.	18030194017	NORA	78.00	85.00	84.00	80.00	81.9	A-	100 %
9.	18030194018	R. AYU SOFI'AH WILATIKA	81.00	83.00	85.00	74.00	80.3	A-	100 %
10.	18030194030	INDAH AYU SURYANI	75.00	83.00	82.00	64.00	75.5	B+	100 %
11.	18030194041	NADHIFA ISAD	78.00	83.00	84.00	64.00	76.5	B+	100 %
12.	18030194042	LAILI MUFLIHATIN	75.00	83.00	81.00	80.00	80.1	A-	100 %
13.	18030194043	WULAN PRYANTI	75.00	85.00	83.00	78.00	80.5	A-	100 %
14.	18030194044	WAHYU NUR HIDAYATULLAH	75.00	85.00	84.00	68.00	77.7	B+	100 %
15.	18030194045	MARIYA SOLIKAH	78.00	85.00	83.00	0.00	57.7	C	100 %
16.	18030194046	SINGGIH OKA WARDHANA	79.00	85.00	82.00	76.00	80.5	A-	100 %
17.	18030194047	RIZQYA LAILATUL RAMADHANA	79.00	83.00	86.00	74.00	80.1	A-	100 %
18.	18030194048	RESTI DIAH SUGITA	75.00	83.00	84.00	82.00	81.3	A-	100 %
19.	18030194049	SAFRIANA AMALIA RAKHMA WAHDANIYAH	75.00	84.00	83.00	72.00	78.4	B+	100 %
20.	18030194050	SAKINATUS ZAHRAH	75.00	84.00	84.00	78.00	80.4	A-	100 %
21.	18030194052	CINDY KUMALASARI	81.00	84.00	84.00	82.00	82.8	A-	100 %
22.	18030194053	PUJA CAHYA DINI	78.00	84.00	83.00	83.00	82.3	A-	100 %
23.	18030194054	TARIQA SADIAH	75.00	84.00	81.00	71.00	77.7	B+	100 %
24.	18030194055	NURIL RODHOTUL JANAH	78.00	84.00	83.00	89.00	84.1	A-	100 %
25.	18030194056	VINA RACHMAWATI	75.00	87.00	84.00	84.00	83.1	A-	100 %
26.	18030194058	UMI LUTHFIYAH	75.00	87.00	84.00	85.00	83.4	A-	100 %
27.	18030194059	ARINA SUKMA TANJUNG ASRI	75.00	87.00	84.00	83.00	82.8	A-	100 %
28.	18030194070	MILA MEITA SARI	75.00	87.00	82.00	80.00	81.5	A-	100 %
29.	18030194071	FITRI WULANDARI	75.00	84.00	82.00	81.00	80.9	A-	100 %
30.	18030194072	RATIH MIFTAKHUR ROSIDAH	74.00	84.00	81.00	72.00	77.8	B+	100 %
31.	18030194073	LAILA NUR CHOLIFATUL ISNAINI SABILA	81.00	85.00	83.00	65.00	77.8	B+	100 %
32.	18030194088	CINDY KUMALA SARI	78.00	85.00	82.00	87.00	83.6	A-	100 %
33.	18030194090	SITI MUTMAINAH	75.00	85.00	84.00	80.00	81.3	A-	100 %
34.	18030194091	IKTIFAUL ULYA	75.00	85.00	84.00	66.00	77.1	B+	100 %
35.	18030194092	SYAM QEISHA KAUKABA	78.00	85.00	84.00	80.00	81.9	A-	100 %
36.	18030194093	EKA HIDAYATUL MUSTAFIDAH	75.00	85.00	85.00	85.00	83.0	A-	100 %

D.3.3 Percentage of PLO achievements of Laboratory Organization at Academic Year 2019/2020

	PLO-1	PLO-2	PLO-3	PLO-4	PLO-5	PLO-6	PLO-7	PLO-8
EXELENCE			90%				74%	80%
GOOD			9%				24%	19%
SATISFY			1%				1%	1%
FALSE			0%				0%	0%
	0%	0%	100%	0%	0%	0%	100%	100%