PORTOFOLIO
FOOD ANALYSIS

ACADEMIC YEAR 2019/2020 ODD SEMESTER

Course Coordinator:
Prof. Dr. Titik Taufikurohmah, M.Si

Teaching Team:
Prof. Dr. Titik Taufikurohmah, M.Si ; Rusmini S.Pd., M.Si

CHEMISTRY DEPARTMENT

FACULTY OF MATHEMATICS AND SCIENCE
UNIVERSITAS NEGERI SURABAYA

TABLE OF CONTENT

A. SEMESTER LEARNING ACTIYITY PLAN

A.1. COURSE IDETITY

Module Name	Food Analysis
Module level	Bachelor
Abbreviation, if applicable	3074112066
Sub-heading, if applicable	-
Course included in the module, if applicable	-
Semester/term	7rd / fiveth year
Module coordinator(s)	Prof. Dr. Titik Taufikurohmah, M.Si.
Lecturer(s)	Prof. Dr. Titik Taufikurohmah, M.Si. , Rusmini S.Pd., M.Si
Language	Bahasa Indonesia
Classification within the curriculum	optional
Teaching format/class hours per week during the semester:	2 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 points:	2 CU = 2 x 1,587 = 3, 174 ECTS
Prerequisites course(s):	Analytical chemistry 3, analytical chemistry 4, organic chemistry 2, inorganic chemistry 2, biochemistry 2
Targeted learning outcomes:	CLO 1: Students have knowledge of the basic principles of analysis of foodstuffs both macro and micro nutrient ingredients using appropriate methods both classical (gravimetric and volumetric) and modern (UV-Vis Spectrophotometry, AAS, Chromatography and Electrical), as well as method selection. based on exact material properties according to AOAC standard methods, food safety principles and the latest journals CLO 2: Skilled students use tools in analyzing food ingredients, both macro and micro nutrient ingredients, using appropriate methods, both classical (gravimetric and volumetric) and modern (UV-Vis Spectrophotometry, AAS, Chromatography and Electric), as well as method selection based on exact material properties according to AOAC standard methods, food safety principles and the latest journals

	CLO 3: Students have the ability to collaborate and are responsible in carrying out the process of analyzing foodstuffs both macro and micro nutrient food ingredients using appropriate methods both classical (gravimetric and volumetric) and modern (UV-Vis, AAS, Chromatography and Electrical Spectrophotometry), as well as selecting a method based on the properties of the right material according to AOAC standard methods, food safety principles and the latest journals CLO 4: Students have the ability to communicate the results of analysis of foodstuffs both macro and micro nutrient ingredients using appropriate methods both classical (gravimetric and volumetric) and modern (UV-Vis Spectrophotometry, AAS, Chromatography and Electrical), as well as the selection of methods based on exact material properties according to AOAC standard methods, food safety principles and current journals.
Content:	1. preliminary food analysis 2. food analysis methods 3. data analysis techniques 4. analysis of water content in food 5. analysis of ash content in food 6. analysis of mineral content in food 7. analysis of vitamin levels in food 8. Protein content analysis in food 9. analysis of fat content in food 10. analysis of carbohydrate content in food 11. analysis of levels of additives in food 12. analysis of contamination levels in food 13. food safety
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, laboratory
Learning Methods	Individuals assignment, group assignment, discussion, presentation, and practicum
Literature:	1. Slamet Sudarmaji, dkk, 1996. *Analisis Bahan Makanan dan Pertanian*, Yogyakarta: Liberty 2. James, C.S.,1995 *Analitycal Chemistry of Foods, Blackie Academic and Professional* 3. Artikel-artikel Journal yang relevan
Note	Food Analysis covers the activities of theory, practicum and presentation.

A.2. COURSE TOPIC

Study of the basic principles of foodstuff analysis methods and data quality, in terms of chemical structure, analysis and application including validation, analysis of macro and micro-nutrients in various foodstuffs using classical and modern methods and determining appropriate analytical methods based on standard methods, food safety principles or journals which supports it is accompanied by supporting laboratory activities so that students are able to master related concepts, have skills in using tools, are able to cooperate and be responsible and can communicate their knowledge and skills scientifically and their application in the business field.

A.3. COURSE PROGRAM

UNESA	**UNIVERSITAS NEGERI SURABAYA** **FACULTY OF MATHEMATICS AND NATURAL SCIENCE** **UNDERGRADUATE PROGRAMME OF CHEMISTRY EDUCATION**	**Document Code**

RENCANA PEMBELAJARAN SEMESTER

COURSE	**Code**	**Course Group**	**Credit Unit**		**Semester**	**Date**
Food Analysis			**T= 2**	**P= 1**	1	
AUTHORIZATION	**Compiler**	**Coordinator**			**Head of Study Program**	
CHEMISTRY EDUCATION	Rusmini S.Pd., M.Si	**Dr. Pirim Setiarso, M.Si.**			**Dr. Sukarmin, M.Pd**	

Learning Outcomes	**Program Learning Outcomes (PLO)**	
	PLO1 (KNO-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
	PLO 5 (COM-1)	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
	PLO 6 (COM-2)	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
	Course Learning Outcomes (CLO)	
	CLO1	Students have knowledge of the basic principles of analysis of foodstuffs both macro and micro nutrient ingredients using appropriate methods both classical (gravimetric and volumetric) and modern (UV-Vis Spectrophotometry, AAS, Chromatography and Electrical), as well as method selection. based on exact material properties according to AOAC standard methods, food safety principles and the latest journal
	CLO2	Skilled students use tools in analyzing food ingredients, both macro and micro nutrient ingredients, using appropriate methods, both classical (gravimetric and volumetric) and modern (UV-Vis Spectrophotometry,

		AAS, Chromatography and Electric), as well as method selection based on exact material properties according to AOAC standard methods, food safety principles and the latest journals
	CLO3	Students have the ability to collaborate and are responsible in carrying out the process of analyzing foodstuffs both macro and micro nutrient food ingredients using appropriate methods both classical (gravimetric and volumetric) and modern (UV-Vis, AAS, Chromatography and Electrical Spectrophotometry), as well as selecting a method based on the properties of the right material according to AOAC standard methods, food safety principles and the latest journals
	CLO4	Students have the ability to communicate the results of analysis of foodstuffs both macro and micro nutrient ingredients using appropriate methods both classical (gravimetric and volumetric) and modern (UV-Vis Spectrophotometry, AAS, Chromatography and Electrical), as well as the selection of methods based on exact material properties according to AOAC standard methods, food safety principles and current journals.
	Sub-CLO	
	Sub-CLO1	Understand the basic principles in proper analytical methods based on standard methods (AOAC) on food ingredients and sampling
	Sub-CLO2	Understanding how to analyze water content and micronutrients (vitamins, ash and minerals) in foodstuffs
	Sub-CLO3	Understand how to analyze macronutrients (protein, fat and carbohydrates) contained in food ingredients
	Sub-CLO4	Understand how to analyze additives and contaminants in food ingredients
	Sub-CLO5	Understand the principles of food safety
Brief Description of the Course	Study of the basic principles of foodstuff analysis methods and data quality, in terms of chemical structure, analysis and application including validation, analysis of macro and micro-nutrients in various foodstuffs using classical and modern methods and determining appropriate analytical methods based on standard methods, food safety principles or journals which supports it is accompanied by supporting laboratory activities so that students are able to master related concepts, have skills in using tools, are able to cooperate and be responsible and can communicate their knowledge and skills scientifically and their application in the business field.	
Study Materials: Learning Materials	Introduction: food analysis methods, and data analysis techniques Micronutrient analysis in food: analysis of water content, ash content, mineral content and vitamin content Macronutrient analysis in food: analysis of protein content, fat content and carbohydrate content Principles of Food Safety: HACCP, GMP, ISO 22000 version 2017, FSCC version 4	
References	**Main :**	
	1. Slamet Sudarmaji, dkk, 1996. *Analisis Bahan Makanan dan Pertanian*, Yogyakarta: Liberty	

	2. James, C.S.,1995 *Analitycal Chemistry of Foods,* Blackie Academic and Professional
	Additional :
	Articles from scientific journals
Lecturer	Prof. Dr. Titik Taufikurohmah, M,Si. dan Rusmini S.Pd., M.Si
Prerequisite courses	Organic Chemistry, Inorganic Chemistry, Chemical Analytical Instruments

Meeting	**The final ability of each activity**	**Assessment**		**Learning Forms, Learning Methods, Student Assignment**		**Reference**	**Rating Weight (%)**
		Indicator	**Criteria & Form**	**Offline**	**Online**		
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(1)**	**(2)**
1	Understand the basic principles in proper analytical methods based on standard methods (AOAC) on food ingredients and sampling	1. Describe general food analysis 2. Explain the scope of the food analysis 3. Explain the requirements for selecting food analysis methods 4. Determine the quality of the data obtained 5. Determine the method of sampling by type	Essay writing test	Lectures, questions and answers		1. a study contract 2. preliminary food analysis 3. food analysis methods 4. food analysis techniques	**5**
2	Understand the principles of food safety	Describes the principles of food safety based on HACCP, GMP, ISO 22000 version 2017, FSCC version 4	Essay writing test	Lectures and interactive discussions		Principles of food safety based on HACCP, GMP, ISO 22000	**5**

						version 2017, FSCC version 4	
3	Understanding how to analyze water content and micronutrients (vitamins, ash and minerals) in foodstuffs	1. Determine the moisture content of food. 2. Determine the ash content of food 3. Determine the mineral content of food 4. Determine the levels of vitamins from food	Essay writing test	Lectures, discussions, questions and answers		1. Water content 2. Ash content 3. Mineral levels 4. Vitamin levels	**40**
4	Understanding how to analyze water content and micronutrients (vitamins, ash and minerals) in foodstuffs	1. Determine the moisture content of food. 2. Determine the ash content of food 3. Determine the mineral content of food	▪ Observation sheet of practicum performance ▪ Pretest and posttest practicum	Practicum analysis of water, ash, and mineral content		1. Water content 2. Ash content 3. Mineral levels	
5	Understanding how to analyze water content and micronutrients (vitamins, ash and minerals) in foodstuffs	Determine the levels of vitamins from food	• Observation sheet of practicum performance • Pretest and posttest practicum	practicum analysis of vitamin		Vitamin levels	
6	Understanding how to analyze water content and micronutrients (vitamins, ash and minerals) in foodstuffs	Communicating the results of determining the water content, ash content, mineral	• Presentation assessment sheets • Assessment sheet	Presentation of practicum results		1. Water content 2. Ash content 3. Mineral levels	

		content, vitamin content of foodstuffs	practicum report				
7	Understanding how to analyze water content and micronutrients (vitamins, ash and minerals) in foodstuffs	Communicating the results of determining the water content, ash content, mineral content, vitamin content of foodstuffs	• Presentation assessment sheets • Assessment sheet practicum report	Presentation of practicum results		Vitamin levels	
8	**Evaluasi Tengah Semester / Ujian Tengan Semester**						
9	Understand how to analyze macronutrients (protein, fat and carbohydrates) contained in food ingredients	1. Determining protein content in food by classical and modern methods 2. Determine the levels of carbohydrates in both complex and simple foodstuffs 3. Understand the selection of the right method based on the standard AOAC method or the latest journal.	Essay writing test	Lectures, discussions, questions and answers		protein, and carbohydrates levels	
10	Understand how to analyze macronutrients (protein, fat and	1. Determine the levels of fat contained in foodstuffs and the	Essay writing test	Lectures, discussions, questions and answers		Fat levels	

	carbohydrates) contained in food ingredients	quality of food fats including iodine bil, lathering bill, ester bill and FFA as well as the MR estimate. 2. Understand the selection of the right method based on the standard AOAC method or the latest journal					
11	Understand how to analyze macronutrients (protein, fat and carbohydrates) contained in food ingredients	Applying analysis of protein, fat and carbohydrate content with selected methods	▪ Observation sheet of practicum performanc ▪ Pretest and posttest practicum	Practicum determination of protein, carbohydrate content		protein, and carbohydrates	
12	Understand how to analyze macronutrients (protein, fat and carbohydrates) contained in food ingredients	Applying analysis of protein, fat and carbohydrate content with selected methods	▪ Observation sheet of practicum performanc ▪ Pretest and posttest practicum	Practicum determination of fat		fat	
13	Understand how to analyze macronutrients (protein, fat and carbohydrates) contained in food ingredients	Communicating the results of the analysis of protein, fat and carbohydrate	• Presentation assessment sheets • Assessment sheet	Presentation of practicum results of protein, fat and carbohydrate		protein, fat and carbohydrates	**30**

		levels using the selected method	practicum report				
14	Understand how to analyze additives and contaminants in food ingredients	1. Determining the types of additives in food. 2. Determining the content of additives in food. 3. Determination of contamination levels in foodstuffs.	Essay writing test	Lectures, discussions, questions and answers		Additives and contaminants in food	**20**
15	Understand how to analyze additives and contaminants in food ingredients	1. Determining the types of additives in food. 2. Determining the content of additives in food. 3. Determination of contamination levels in foodstuffs.	• Observation sheet of practicum performance • Pretest and posttest practicum • Assessment sheet practicum report	Practicum for determining the content of additives and contaminants		Additives and contaminants in food	
16	**Evaluasi Akhir Semester / Ujian Akhir Semester**						**100**

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 Food Analysis.

PEO-01 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-02 Having the higher order thinking skills to communicate ideas verbally and in writing, be able to take the right initiatives and to be a good decision maker and having the ability to lead in group working group at relevant fields

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

	PLO 1 (KNO-1)	PLO 5 (COM-1)	PLO 6 (COM-2)
PEO 1	√	√	√
PEO 2	√	√	√

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 1 (KNO-1)	PLO 5 (COM-1)	PLO 6 (COM-2)	Total
Practicum	20%	30%	50%	100%
Group/Individuals Assignment	20%	30%	50%	100%
Midterm examination	30%	40%	20%	100%
Final examination	30%	40%	20%	100%

Success Criteria of Program Learning Outcomes (PLO)

Excellence	$x \geq 80$
Good	$70 \leq x < 80$
Satisfy	$55 \leq x < 70$
False	$X < 55$

Final index for undergraduate program defined as follow:

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

C. COURSE DEVELOPMENT

C.1. Academic Year 2019/2020 odd semester

Parameter	∑ of person	Percentage
Number or students taking this subject	24	100%
Number of students who pass at first attempt ($>C^+$)	24	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 in the food analysis 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. Average of final score in 2019/2020 is lower than before, due to students have different characteristic, namely they difficult to cooperative with their group and not serious when do the task, therefore the have lack of average score.

C.3. Solutive Strategy

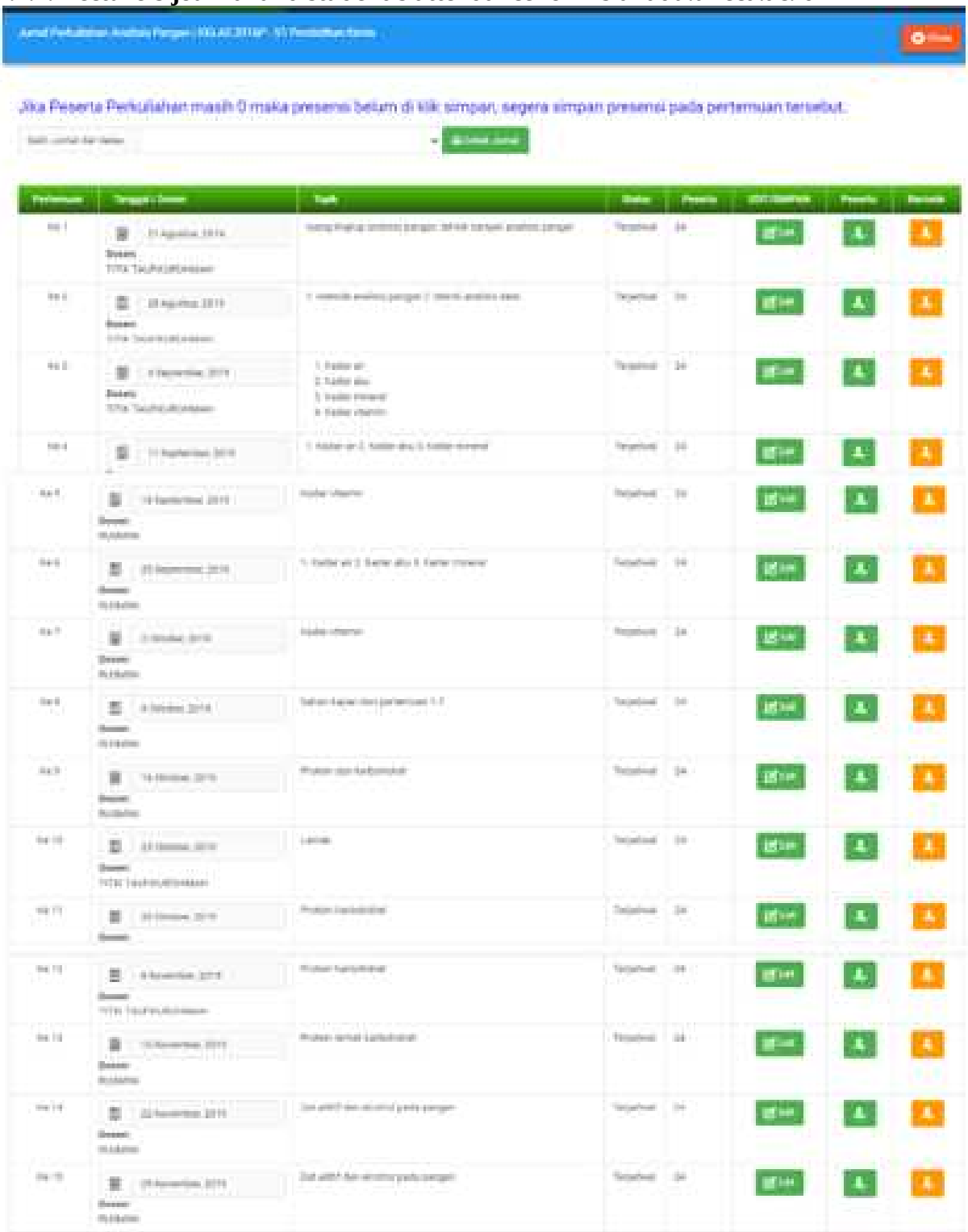
New teaching and learning methods should be developed for the next academic years, consisting of:

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 siakadu.uneca.ac.id



KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN
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Faksimile :+6231-99424932
e-mail :bakpk@unesa.ac.id

PRESENSI KULIAH

Periode 2019/2020 Gasal

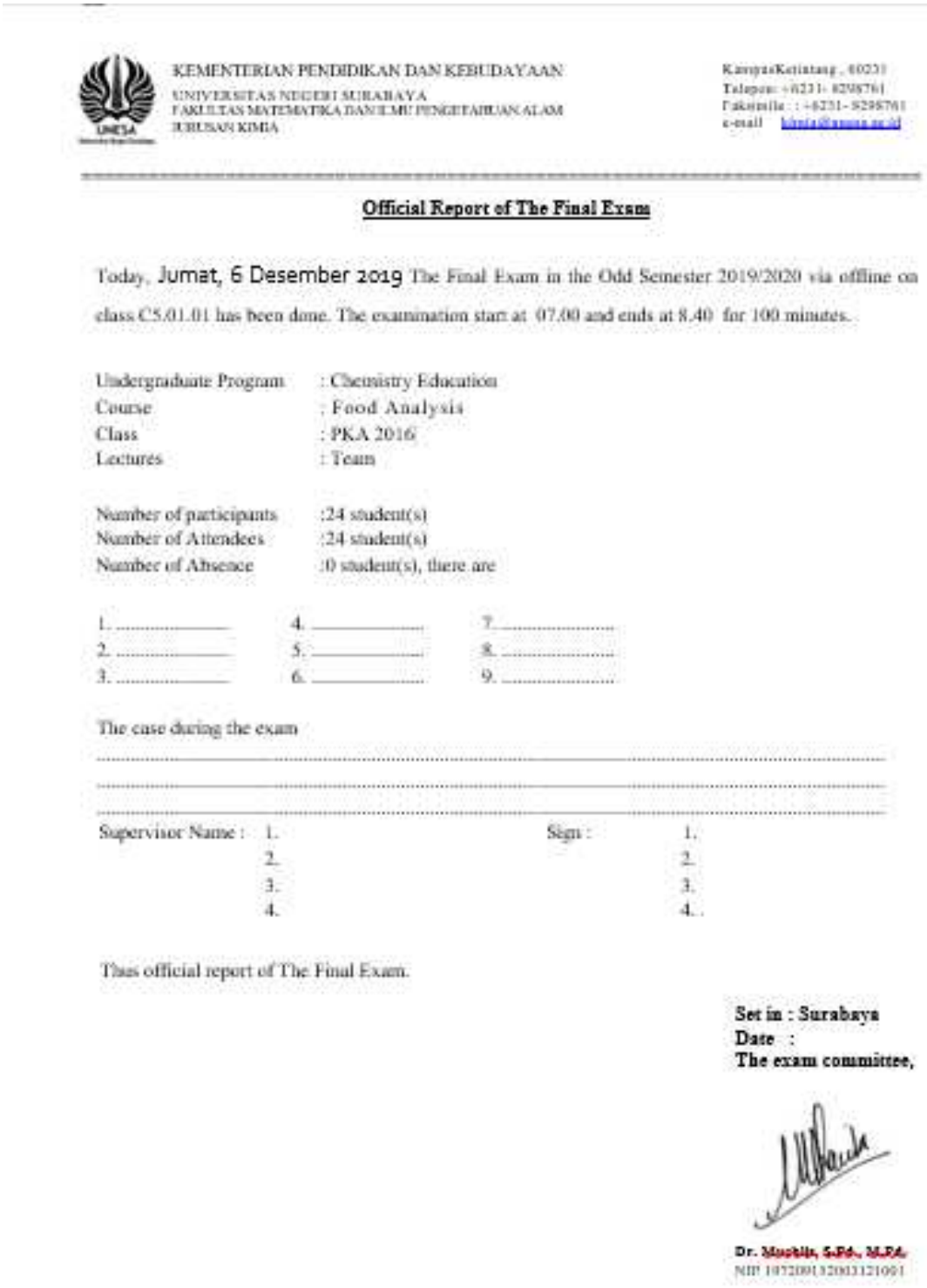
Mata Kuliah : Analisis Pangan
Kelas : 2016P
Prodi : S1 Pendidikan Kimia

Dosen : Rusmiri, S.Pd., M.Si.
Prof. Dr. Titik Taufikurohmah, S.Si., M.Si

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	06 Nov 19	13 Nov 19	22 Nov 19	29 Nov 19	
1.	16030194001	HIKI SUGHANTORO	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100%
2.	16030194002	LUCKY ANZANI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100%
3.	16030194003	NADHEATUS SHIFA AL-MIRA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100%
4.	16030194007	ZAINAB	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100%
5.	16030194009	ILO ISALOKA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100%
6.	16030194013	MUHAMMAD BADRUL UYUN	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100%
7.	16030194031	ELLEN SUTOPO PUTRI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100%
8.	16030194033	LUKIYATUL LUTFIANA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100%
9.	16030194036	NURIL LAILYAH ISWAHYUNI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100%
10.	16030194037	ERLIA YUDHA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100%
11.	16030194042	IZAUL HAQ	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100%
12.	16030194048	BALQIS LUTHFIYYATUS ZAHRO	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100%
13.	16030194049	WISMA IMELDA SETYOWATI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100%
14.	16030194056	KHOLIFA NABILA HASANAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100%
15.	16030194057	REZA ALFIYANTI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100%
16.	16030194058	FADILAH ROHMAH YULIANING	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100%
17.	16030194059	NABILA YUNIAR MANDASARI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100%
18.	16030194061	ROUDLOTUL JANNAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100%
19.	16030194064	IZZATUN NISA'	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100%
20.	16030194067	FITRIA NURUL HIDAYATI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100%
21.	16030194069	NURLAILY YULIA SAFITRI	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100%
22.	16030194070	REZI ULYA FAUZIAH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100%
23.	16030194076	VIRGINIA AISANI SALSABILA	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	100%
24.	16030194080	MOCH NURWAHYUDI	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

(Scan Berita Acara Ujian Analisis Pangan)



KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN
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e-mail

Official Report of The Final Exam

Today, Jumat, 6 Desember 2019 The Final Exam in the Odd Semester 2019/2020 via offline on class C5.01.01 has been done. The examination start at 07.00 and ends at 8.40 for 100 minutes.

Undergraduate Program	: Chemistry Education
Course	: Food Analysis
Class	: PKA 2016
Lectures	: Team

Number of participants	:24 student(s)
Number of Attendees	:24 student(s)
Number of Absence	:0 student(s), there are

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

The case during the exam

.....
.....
.....

Supervisor Name : 1. Sign : 1.
2. 2.
3. 3.
4. 4.

Thus official report of The Final Exam.

Set in : Surabaya
Date :
The exam committee,

Dr. Muslih, S.Pd., M.Pd.
NIP 197209132003121001

D.2. SAMPLE OF STUDENT WORK

D.2.1. Sample of Test Paper

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

SOAL UJIAN AKHIR SEMESTER GASAL 2019/2020

Mata Ujian	: Analisis Pangan
Jurusan/Fakultas	: Kimia / MIPA
Program/Angkatan	: S1 Pendidikan Kimia /2016
Hari/Tanggal	: Jumat, 6 Desember 2019
Jam ke	: 1
Waktu	: 07.00-08.40
Dosen	: Rusmini S.Pd., M.Si.
Sifat Ujian	: *Closed Books*

Do this question correctly !

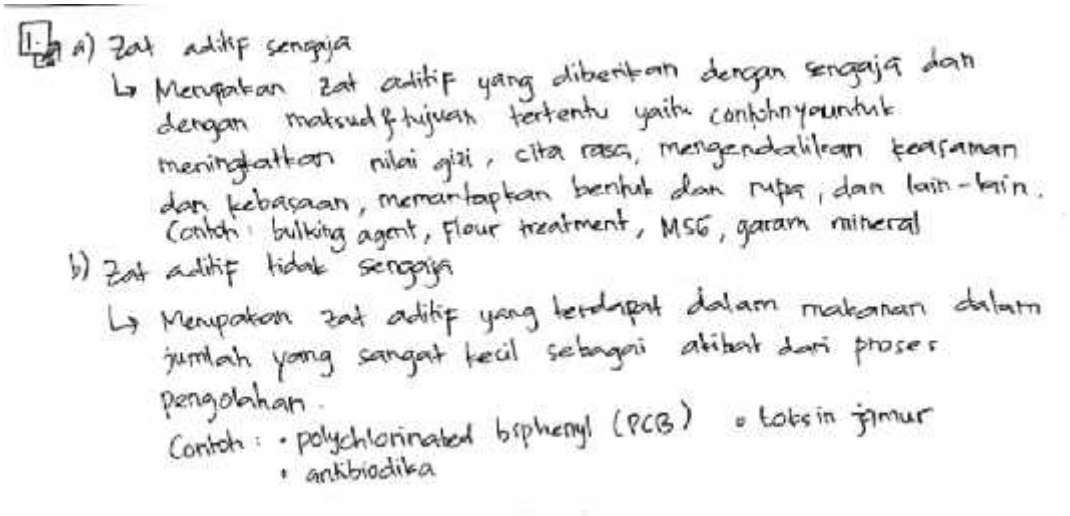
1. Regarding the use of additives, some are said to be deliberate additives and accidental additives. Describe the differences between the 2 terms and give examples of each! (score 10)
2. Nitrite can bind to amino and amide contained in meat protein to form healthy nitrosamine derivatives. Give your opinion on whether the statement is true or false. If it is wrong then correct the statement! (score 5)
3. On a food product in the form of solids, if it feels wet and is not dry, brand x is written as 20% fat content of dry weight. Meanwhile, other brands say that the fat content is 20% of the wet weight. Analyze the difference between the two things which is the greater the fat content! (score 10)
   Note: may be accompanied by calculations to provide an explanation that is easily understood by the general public
4. In the manufacture of ote-ote, the main ingredients are wheat flour which is added with carrots which contain vitamin A and sprouts containing vitamin E. Then the flour and vegetable dough is fried in hot oil. What do you think about adding carrots and sprouts as an effort to add nutrition (especially vitamins) to these ote! (Score 5)
5. Mineral fortification is the addition of certain minerals to food products. Iron (Fe) is often used as fortification. Fe is a prooxidant, which can oxidize unsaturated fatty acids, vitamins A, C, and E which results in the formation of free radicals. Fe fortification in wheat flour will trigger the oxidation process and reduce the quality of the bread produced.
   Make an experimental design related to the phenomenon of iron mineral fortification in food. Please you want to see what part is based on this phenomenon. (Score 20)

The experimental design includes:

a. Title
b. Formulation of the problem
c. Hypothesis
d. Research design
    1) Population and sample
    2) Control variable
    3) Variable manipulation
    4) Variable response
e. Work steps
f. Observation table design only
g. data analysis techniques

Note: may be qualitative or quantitative data

D.2.2. Sample of Student's Work



2. Pernyataan tersebut salah.

Nitrit didalam produk daging olahan digunakan sebagai pengawet untuk mempertahankan warna daging justru menimbulkan efek yang membahayakan bagi kesehatan. Pada reaksinya nitrit dapat bereaksi dengan amino atau amida kemudian membentuk turunan nitrosamin yg bersifat karsinogenik.

Reaksi: $R_2NH + HNO_2 \rightarrow R_2N-NO + H_2O$

3. Merk X : • dipegang terasa basah • kadar lemak 20 % dari berat kering
• tidak kering

Merk Y : kadar lemak 20 % dari berat basahnya

Jawaban :

Lebih berat kadar lemak 20 % dari berat kering, artinya pengukuran total lemak kasar (sudah tdk mengandung air)

$$\text{Kadar Lemak} = \frac{\text{berat lemak}}{\text{berat sampel}} \times 100\ \% \qquad (1)$$

Kadar lemak pada berat basah lebih rendah karena dlm bentuk basah masih memiliki kandungan air yg tinggi. Menurut Almatsier (2009) menyatakan bahwa kandungan lemak berbanding terbalik dengan kadar air yang terdapat pada suatu bahan. Kadar air yg tinggi menyebabkan kadar lemak menurun secara proporsional.

4. Menurut saya, penambahan wortel yg mengandung vitamin A dan kecambah yang mengandung vitamin E sangat bagus dalam produk makanan namun jika pada proses pembuatannya ada proses penggorengan dalam minyak panas dlm jumlah banyak maka produk pangan tersebut akan kehilangan banyak kandungan vitamin E dan A, karena kedua vitamin tersebut bisa rusak pada suhu tinggi.

a) Judul : Pemanfaatan Hati Ayam sebagai Fortifikan Zat Besi dalam Bubur Bayi Instan dari Ubi Jalar Ungu

b) Rumusan masalah :
1. Bagaimana metode yang digunakan dalam penentuan kadar Fe pada penambahan Fortifikan yang bersumber pada hati ayam ?
2. Bagaimana perbandingan kadar Fe dengan konsentrasi yang berbeda ?

c) Hipotesis

Mineral yang berasal dari hati ayam lebih mudah diabsorbsi oleh tubuh. Semakin tinggi konsentrasi hati ayam yang ditambahkan maka semakin tinggi kadar Fe.

d) Rancangan Penelitian

Penelitian ini merupakan penelitian eksperimental, menggunakan Rancangan Acak Lengkap (RAL) yang terdiri dari penambahan hati ayam terhadap pangan bubur bayi. Faktor penambahan hati ayam terdiri atas 5 formulasi kadar zat besi yang dikandungnya, yaitu F0 (4 mg/100 gram), F1 (6 mg/100 gram), F2 (8 mg/100 gram), F3 (10 mg/100 gram), F4 (12 mg/100 gram) dari kadar zat besi total dalam hati ayam.

(2)

1) Populasi dan Sampel

- Populasi

Populasi hati ayam dan ubi jalar ungu diambil di Kota Surabaya, Jawa Timur

- Sampel

Sampel hati ayam dan ubi jalar ungu diperoleh dari Kelurahan Margorejo Kecamatan Wonocolo Kota Surabaya, Jawa Timur.

2) Variabel Kontrol

Bubur terbuat dari Ubi jalar ungu, berat bubur

3) Variabel Manipulasi

Hati ayam yang ditambahkan masing-masing variabel mengandung kadar zat besi sebesar 4 mg/100 gram, 6 mg/100 gram, 8 mg/100 gram, 10 mg/100 gram, 12 mg/100 gram dari kadar zat besi total dalam hati ayam.

4) Langkah Kerja

a) Pembuatan tepung hati ayam

b) Pembuatan Tepung Ubi Jalar Ungu

1. Ubi jalar ungu disortir, dikupas, dicuci dengan air hingga bersih.
2. Diris tipis dengan slicer
3. Ubi jalar direndam dg larutan $Na_2S_2O_5$ 0,3% 30 menit
4. Ubi jalar dikeringkan menggunakan oven dg suhu 100 °C 20 jam
5. Diperkecil ukurannya menggunakan disk mill
6. Diayak menggunakan sieving

Tepung berukuran 80 mesh

c) Fortifikasi Zat Besi

100 gram tepung ubi ungu

1. Dicampur dg tepung hati ayam sesuai variabel
2. Ditambah NaFeEDTA dg perbandingan terhadap fortifikan 1:1
3. Campuran dilarutkan dalam air bebas mineral (1:1)
4. Campuran dimasukkan ke dlm mixer hingga menjadi homogen

Slury

d) Pembuatan Bubur Bayi instan

Slury

1. Dikeringkan dg suhu 100°C ± 3 jam
2. Hasil pengeringan berupa flake
3. Diayak 60 mesh
4. Ditambah air panas (60° - 70°) C

Bubur instan

f) Rancangan Tabel pengamatan

	Tanpa fortifikan	4 mg/100 gr	6 mg/100 gr	8 mg/100 gr	10 mg/100 gr	12 mg/100 gr
Kadar Fe						

g) Teknik Analisis Data

Uji kuantitatif dengan menggunakan AAS (Spektrofotometer Serapan Atom)

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 Evaluation Results of Food analysis

PROGRAM STUDI S1 Pendidikan Kimia

DAFTAR NILAI MAHASISWA

Mata Kuliah : Analisis Pangan

Kelas : 2016P

Tahun Ajaran : 2019/2020 Gasal

Original data :

Keterangan :

1. Komponen nilai yang diisi hanya : Part,Tugas,UTS dan UAS
2. Nilai UAS mahasiswa dengan kehadiran dibawah 73.3% (kolom dg warna merah) tidak akan disimpan
3. Jangan merubah apapun di dokumen ini kecuali pada point nomer satu di atas.
4. PPTI / BAAK tidak menerima file nilai untuk diupload. Proses upload nilai dilakukan oleh dosen pengampu yang bersangkutan.

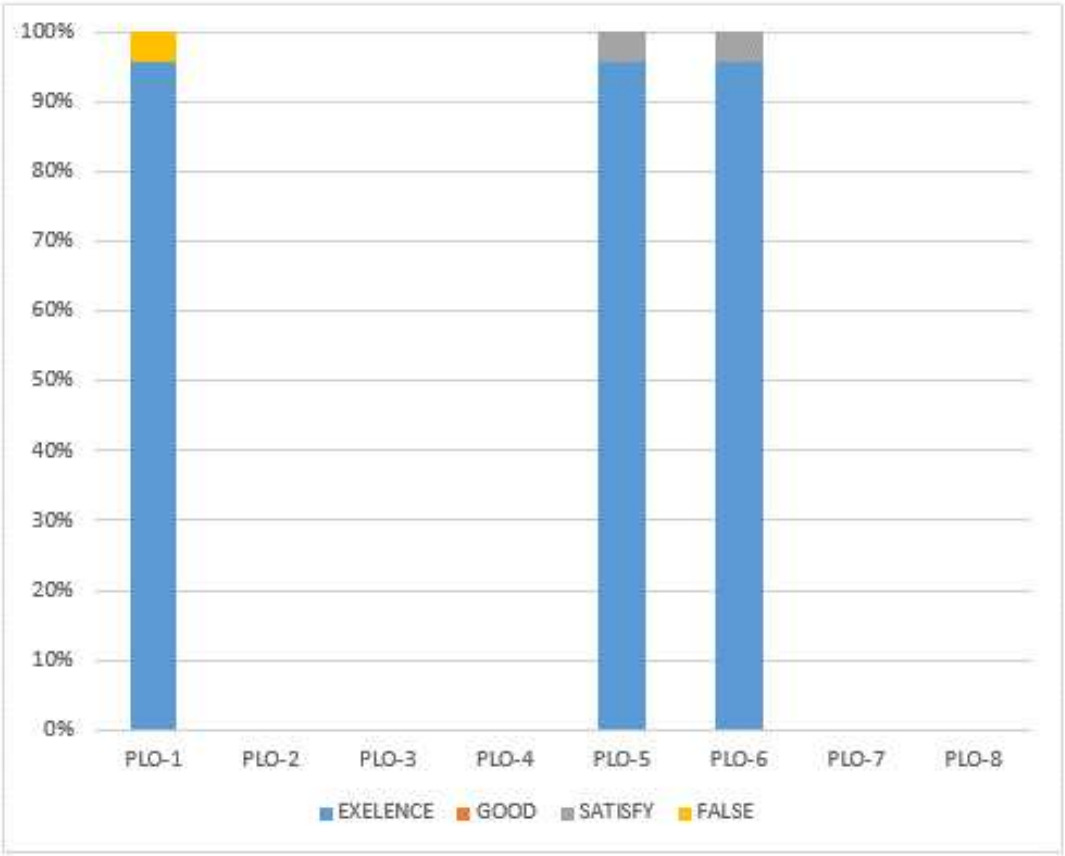
No	NIM	Nama Mahasiswa	Angkatan	Kehadiran	Part	Tugas	UTS	UAS	NA	Huruf	Pakai
1	16030194001	FIKRI SUGIYANTORO	2016	100%	80	88,5	90	87	86,7	A	1
2	16030194002	LUCKY ANZANI	2016	100%	81	88,5	90	87	86,9	A	1
3	16030194003	NADHIFATUS SHIFA' AL-MIR	2016	100%	80	86,5	90	87	86,1	A	1
4	16030194007	ZAINAB	2016	100%	81	89	90	87	87	A	1
5	16030194005	ILO ISALOKA	2016	100%	82	88,5	90	87	87,1	A	1
6	16030194023	MUHAMMAD BADRUL UYU	2016	100%	80	89	90	87	86,8	A	1
7	16030194031	ELLEN SUTOPO PUTRI	2016	100%	81	88,5	90	87	86,9	A	1
8	16030194033	LUKJIJATUL LUTFIANA	2016	100%	81	88,5	90	87	86,9	A	1
9	16030194036	NURIL LAILIYAH ISWAHYUNI	2016	100%	84	88	90	87	87,3	A	1
10	16030194037	ERLIA YUDHA	2016	100%	81	88	90	87	86,7	A	1
11	16030194042	IZAUL HAQ	2016	100%	80	88,5	90	87	86,7	A	1
12	16030194048	BALQIS LUTHFIYYATUS ZAH	2016	100%	83	88	90	87	87,1	A	1
13	16030194043	WISMA IMELDA SETYOWAT	2016	100%	81	88	90	87	86,7	A	1
14	16030194056	KHOLIFIA NABILA HASANAH	2016	100%	80	88,5	90	87	86,7	A	1
15	16030194057	REZA ALFIYANTI	2016	100%	83	89	90	87	87,4	A	1
16	16030194058	FADILAH ROHMAH YULIANIN	2016	100%	83	89	90	87	87,4	A	1
17	16030194059	NABILA YUNIAR MANDASA	2016	100%	81	89	90	87	87	A	1
18	16030194061	ROUDLOTUL JANNAH	2016	100%	82	88,5	90	87	87,1	A	1
19	16030194064	IZZATUN NISA'	2016	100%	82	88,5	90	87	87,1	A	1
20	16030194067	FITRIA NURUL HIDAYATI	2016	100%	81	89	90	87	87	A	1
21	16030194063	NURLAILY YULIA SAFITRI	2016	100%	82	89	90	87	87,2	A	1
22	16030194070	REZI ULYA FAUZIAH	2016	100%	82	89	90	87	87,2	A	1
23	16030194076	VIRGINIA AHSANI SALSABIL	2016	100%	75	89	85	0	58,7	C	1
24	16030194080	MOCH. NURWAHYUDI	2016	100%	82	89	90	87	87,2	A	1

D.3.3 Percentage of PLO achievements of food analysis at Academic Year 2019/2020

PLO ASSESSMENT

Lecture : Food Analysis
Code : 8420402001
Department : Chemistry Education Department
Total of Student : 24

	PLO-1	PLO-2	PLO-3	PLO-4	PLO-5	PLC-6	PLO-7	PLO-8
EXELENCE	96%				96%	96%		
GOOD	0%				0%	0%		
SATISFY	0%				4%	4%		
FALSE	4%				0%	0%		
	100%	0%	0%	0%	100%	100%	0%	0%


100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
PLO-1
PLO-2
PLO-3
PLO-4
PLO-5
PLO-6
PLO-7
PLO-8
EXELENCE
GOOD
SATISFY
FALSE