STATISTICS STUDY PROGRAM
UNIVERSITAS ISLAM INDONESIA

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ACADEMIC GUIDEBOOK

ACADEMIC YEAR 2018/2019

ATTENTION
Each student is required to independently read and understand the contents of this Academic Guide carefully, including understanding the sequences of taking courses, each semester/each year evaluations, midterm/final examinations, without having to be given a warning by the Study Program.

VALIDITY SHEET

Bismillahirrahmanirrahim

ACADEMIC GUIDEBOOK

STATISTICS STUDY PROGRAM

FACULTY OF MATHEMATICS AND NATURAL SCIENCES

UNIVERSITAS ISLAM INDONESIA

ACADEMIC YEAR 2018/2019

(in accordance with Rector Decree Number 1102/SK-Rek/DA/X/2017
on the 2017 Curriculum for the Undergraduate Statistics Study Program
Faculty of Mathematics and Natural Sciences
Universitas Islam Indonesia)

On September 01, 2018 in Yogyakarta, it was approved and ratified by:
Dean of Faculty of Mathematics and Natural Sciences UII,

Prof. Riyanto,S.Pd.,M.Si.,Ph.D.

A Welcome from the Dean

Assalamualaikum Warahmatullahi Wabarakatuh

Alhamdulillahirabbil'alamin, the Academic Guidebook for Statistics Study Program, Faculty of Mathematics and Natural Science UII has been published on time. This handbook serves as a guide to students during their study in the Statistics Study Program at the Faculty of Mathematics and Natural Science, UII.

This academic guidebook is intended as students' handbook during their educational participation in the Statistics Study Program at the Faculty of Mathematics and Natural Science UII, to plan, organize, and carry out their studies with good results. Furthermore, it provides information about academic rules, lectures, exams, final project/thesis, curriculum, graduation, and both syllabus of compulsory and elective courses.

The faculty leaders congratulate you on joining the Statistics Study Program of Faculty of Mathematics and Natural Science UII, with the hope of being able to provide optimal service for all students in the Faculty of Mathematics and Natural Science UII environment.

Wassalamualaikum Warahmatullahi Wabarakatuh

Yogyakarta, August 27, 2018
Dean,

Prof. Riyanto,S.Pd.,M.Si.,Ph.D.

A Welcome from the Head of Statistics Study Program

Assalamualaikum Warahmatullahi Wabarakatuh

Alhamdulillahirabbil'alamin, for the favors and gifts Allah has bestowed upon us all. We offer blessings (*salawat)* and peace (*salam)* to our Prophet, Rasul Muhammad Sallallahu 'Alaihi Wassalam, his companions and followers until the end time, and hopefully, we are also among his followers. Furthermore, we congratulate you on your admission to the Statistics Study Program, Faculty of Mathematics and Natural Sciences.

The 2018/2019 Academic Guidebook of the Statistics Study Program, Faculty of Mathematics and Natural Sciences, Universitas Islam Indonesia aims to provide explanations for new students regarding the visions, missions, education systems, and curriculums of the Statistics Study Program, Faculty of Mathematics and Natural Sciences. At the same time, it is the source of information about the organizational structures, academic rules, lectures, exams, final projects, graduations, syllabus of compulsory and elective courses, which are very important during the educational process at the Statistics Study Program, Universitas Islam Indonesia.

This handbook is expected to provide guidelines for new students for the academic year 2018/2019. We wish you success in achieving the goal of becoming a Statistics Study Program graduate who has good morals and can be a leader of the nation and religion.

Aamin yaa rabbal 'alaamin

Wassalamualaikum Warahmatullahi Wabarakatuh

Yogyakarta, August 27, 2018
The Head of Statistics Study Program UII,

Dr. Edy Widodo, S.Si., M.Si.

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CHAPTER 1

INTRODUCTION

1.1 A BRIEF HISTORY OF UII AND STATISTICS STUDY PROGRAM

The Statistics Study Program of Universitas Islam Indonesia (UII) was founded in 1996 with registered status. It is the first study program that is established in the Faculty of Mathematics and Natural Sciences. The Statistics Study Program are currently Accredited "B" by National Accreditation Body for Higher Education (BAN-PT) as defined in SK BAN-PT number: 1133/SK/BAN-PT/Akred/S/ X/2015. This accreditation status is valid until 31 October 2020. The establishment of the Statistics Study Program is aimed to serve society's demands for the needs of Mathematics and Natural Sciences scholars to support the implementation of national development. The permanent education staff at the Statistics Study Program of UII have very prominent education levels. These education staff include 19 permanent lecturers, one of which is a professor; four lecturers have a doctorate; one lecturer is currently pursuing a doctoral program at a domestic university; thirteen people have a master's degree. The learning process in the Statistics Study Program is supported by (1) a Business, Industrial and Social Statistics laboratory, (2) a Disaster Management Statistics laboratory, and (3) a Data Mining laboratory.

In 2016 the Statistics Study Program held a 2016 Data Science Weekend, attended by more than 60 industries engaged in various fields. The success of this event has made the Statistics Study Program known in the industrial world. In this event, the speakers were CEO of Cloudera, Amr Awadallah; CEO of Google, Tayler Akidau; also, CEO of startups in Indonesia such as *Gojek*, *pinjam.co.id*, *pegi-pegi.com*, *Traveloka* and many more.

As of August 2018, the Statistics Study Program of UII has graduated 754 Statistics graduates. A tracer study toward Statistics alumni of UII reveals that the average waiting time of the Statistics graduate to get their first job is 4.8 months. The majority of UII Statistics alumni have worked and are scattered in several agencies, either public or private, such as the Statistics Indonesia (BPS); the Education Quality Assurance Agency (LPMP); the Ministry of Finance (Kemenkeu); the Ministry of Religious Affairs (Kemenag); the Ministry of Transportation (Kemenhub); the Ministry of Manpower and Transmigration (Kemenakertrans); the Nuclear Energy Regulatory Agency (BAPETEN); National Narcotics Agency (BNN); General Election Commission (KPU); colleges; Provincial Government (*Pemerintah Provinsi*); Local Government (*Pemerintah Daerah*); mining; banking, insurance companies; consulting institutions; and industries. The government agencies in which the alumni work include Jakarta Smart City, Directorate General of Taxes, Provincial Government (*Pemerintah Provinsi*), Statistics Indonesia (BPS), the Ministry of Religious Affairs, LPMP, the Ministry of Transportation

(Kemenhub), Regional Development Planning Agency (Bapedda), the Ministry of Education and Culture, BPK, BKD, state universities. Meanwhile, private companies in which the alumni work include *Gojek*, MNC TV, RCTI, Metro TV, Bank Danamon, Cipta TPI Inc., Garuda Indonesia Inc., Rajawali Citra Indonesia Inc., *Detik.com*, Emerio Corporation Inc., The Nielsen Inc., Vale Indonesia Tbk Inc., Gerbang Sarana Baja Inc., Teletama Arta Mandiri Inc., M Inc., Netherlands Maritime Institute of Technology, Eka Hospital Hospital and many more.

1.1.1 VISION OF STATISTICS STUDY PROGRAM

The vision of the Statistics Study Program of UII is

"to become a leading Statistics Study Program that produces data analysts who possess integrity and enthusiasm for society advancement.

1.1.2 MISSIONS OF STATISTICS STUDY PROGRAM

Missions of Statistics Study Program include:

1. Incorporating Islamic values into a statistical way of thinking (*Da'wah Islamiyah*).
2. Developing teaching and learning activities with international standards (education).
3. Carrying out and assisting quality research in the field of statistics to solve human problems (study).
4. Applying skills and statistically thinking for the benefit of the people (community service).

1.1.3 GOALS OF STATISTICS STUDY PROGRAM

Referring to the goals of the University and the Faculty of Mathematics and Natural Sciences, and in accordance with the vision and missions of the Statistics Study Program as a fundamental for generating the goals of the Statistics Study Program, the formulation of the Statistics Study Program goals is stated as follows:

1. Produce data analysts who master theories and methodologies and are ready to act as policy analysts, disaster analysts, data scientists, or actuaries with integrity and enthusiasm at the global level.
2. To produce quality statistical scientific work that is advantageous for the benefit of the people.

1.2 MEANING OF UII LOGO

Gambar 1.1 Logo UII

The UII logo consists of 3 colors, namely:

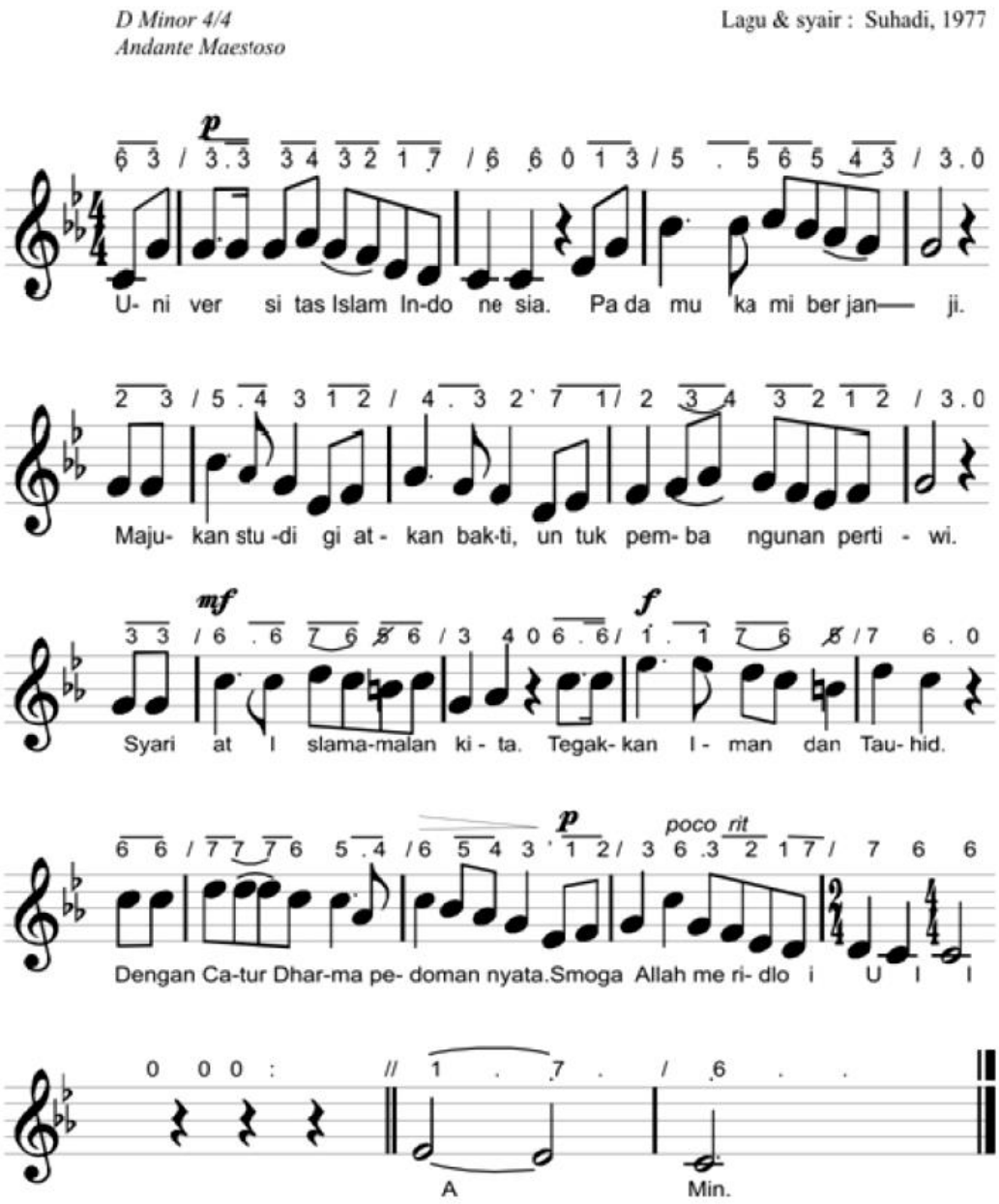
- The blue color signifies firmness or authority.
  It denotes the authority of UII in producing wise Islamic scholars.
- Yellow color or gold decoration signifies hope.
  At the same time, it represents the symbol of education. It implies that UII will produce scholars fulfilling the nation's hope to carry on and continuously spread knowledge through Islamic education.
- The white color signifies sincerity, honesty, and perseverance.
  It means that the traits of UII graduates are honest, diligent, loyal to their country and nation, and devoted to God Almighty in respect to the teachings and ideals of Islam.

The meaning of the logo of Universitas Islam Indonesia itself is:

- The form of shield denotes resilience and defense.
  UII will maintain its name as one of the universities capable of producing scholars in accordance with its goals.
- The shape in the middle is styled into a *qubba* (mosque dome).
  It signifies a symbol of Indonesian culture following Islamic teachings.
- A five crowned flower represents Pancasila, which can also be interpreted as the pillars of Islam.
- The pistil on top that forms a trident.
  It symbolizes three main goals of higher education (*Tri Dharma Perguruan Tinggi*).
- The pen-shaped trident represents education.
- The middle sepals styled as book denotes the Holy Qur'an.
- The lowest part of the sepal are two supports.
  The two supports symbolize the *Shahadah* (Islamic creed). Thus, the symbol in the middle represents the purpose of UII, which is based on Islamic teachings and Pancasila. Meanwhile, the keel ship shape as a mosque door under the petal represents the color of Islamic culture.

1.3 UII HYMNE

UII HYMNE



1.4 LIST OF LECTURERS

The educational and teaching activities in the Statistics Study Program are supported by 20 permanent teaching staff, 1 study program staff, and 1 laboratory assistant. The teaching staff has met the minimum postgraduate or master qualification. The followings are the list of the lecturers:

1. Abdullah Ahmad Dzikrullah, S.Si., M.Sc.
2. Achmad Fauzan, S.Pd., M.Si.
3. Akhmad Fauzy, S.Si., M.Si., Ph.D., Prof.

4. Atina Ahdika, S.Si., M.Si.
5. Arum Handini Primandari, S.Pd.Si., M.Sc.
6. Asharul Mu'ala, S.H.I, M.H.I.
7. Ayundyah Kesumawati, S.Si., M.Si.
8. Dina Tri Utari, S.Si., M.Sc.
9. Edy Widodo, S.Si., M.Si., Dr.
10. Jaka Nugraha, S.Si., M.Si., Dr.
11. Kariyam, S.Si., M.Si.
12. Muhammad Hasan Sidiq K, S.Si., M.Sc.
13. Muhammad Muhajir, S.Si., M.Sc.
14. Mujiati Dwi Kartika, S.Si., M.Sc.
15. RB. Fajriya Hakim, S.Si., M.Si., Dr.
16. Rahmadi Yotenka, S.Si., M.Sc.
17. Rohmatul Fajriyah, S.Si., M.Si., Dr.techn.
18. Sekti Kartika Dini, S.Si., M.Si.
19. Tuti Purwaningsih, S.Stat., M.Si.

1.5 LABORATORY FACILITIES

To support the implementation of the teaching and learning process, the Statistics Study Program, Faculty of Mathematics and Natural Sciences UII has 3 (three) laboratories:

1. Disaster Management Statistics Laboratory (*Laboratorium Statistika Manajemen Kebencanaan*/SMK);
2. Business, Industrial, and Social Statistics Laboratory (*Laboratorium Statistika Bisnis, Industri, dan Sosia*l/BIS);
3. Data Mining Laboratory (*Laboratorium* Data Mining/DM).

1.6 ORGANIZATIONAL STRUCTURES

Dean	: Edy Widodo, S.Si., M.Si., Dr.
Secretary of Study Program	: Muhammad Hasan Sidiq Kurniawan, S.Si., M.Sc.
Laboratory Coordinator	: Arum Handini Primandari, S.Pd.Si., M.Sc.
Head of BIS Laboratory	: Dina Tri Utari, S.Si., M.Sc.
Head of SMK Laboratory	: Achmad Fauzan, S.Pd., M.Si.
Head of DM Laboratory	: Muhammad Muhajir, S.Si., M.Sc.
Staff of Study Program	: Mochammad Achnaf, A.Md.
Laboratory Assistant	: Ridhani Anggit Safitri, A.Md.

CHAPTER 2

ACADEMIC RULES

2.1 General Academic Rules

1. The system to implement the teaching and learning process in study programs in undergraduate program (*Strata 1/*S1) is the Semester Credit System (*Satuan Kredit Semester*/SKS).
2. In the Semester Credit System, students are allowed to prepare their study plan by considering the offered courses, prerequisite courses, and Grade Point Average (*Indeks Prestasi*).
3. The implementation of Semester Credit System in the learning process aims to:
   a. Provide opportunities for capable and active students to complete their studies in the shortest time possible.
   b. Provide opportunities for students to take courses according to their interests, talents, and abilities.
4. The process of learning activities, examinations, registration, and holidays are regulated in the academic calendar.

2.2 Student Registration

At the beginning of each semester, students who will actively participate in academic activities and other compulsory activities are required to register with the following procedures:

1. Students pay the first installment of tuition fee for odd semester registration and the third installment of tuition fee for even semester registration.
2. Students returning from academic leave must:
   a. Arrange for re-active permit from the Faculty.
   b. Pay the first installment of tuition fee for odd semester registration and the third installment of tuition fee for even semester registration.
3. Students update their personal data through http://unisys.uii.ac.id.

Students who have completed their registration must submit a plan for their academic activities, including students who are only/currently working on their thesis/final project. They submit their academic activities plan by directly inputting the courses they will take for one semester in the Academic Plan (*Rencana Akademik Semester*/RAS) through http://unisys.uii.ac.id.

The number of credits that students can take ranges from 12 to 24 credits; it depends on their academic achievement and other requirements related to certain courses. The details can be seen in the matriculation table for calculating the number of credits (See Table 1). The RAS filling period is determined by the University/Faculty and is listed in the academic calendar. The Faculty/Study Program provides Academic Advisors (*Dosen Pembimbing Akademik/*DPA) for students who need consultation on their courses or other academic problems.

Moreover, they assist/direct students in choosing courses, study concentrations, and other academic-related issues.

Table 1.1 Credit Calculation Matrix

Cumulative GPA		Semester GPA																																								
		0										1										2										3										4
		0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0
0	0	12																																								
	1	12	12																																							
	2	12	12	12																																						
	3	12	12	12	12																																					
	4	12	12	12	12	12																																				
	5	12	12	12	12	12	12																																			
	6	12	12	12	12	12	12	13																																		
	7	12	12	12	12	12	13	13	13																																	
	8	12	12	12	12	13	13	13	13	14																																
	9	12	12	12	13	13	13	13	14	14	14																															
1	0	12	12	13	13	13	13	14	14	14	14	15																														
	1	12	13	13	13	13	14	14	14	14	15	15	15																													
	2	13	13	13	13	14	14	14	14	15	15	15	15	16																												
	3	13	13	13	14	14	14	14	15	15	15	15	16	16	16																											
	4	13	13	14	14	14	14	15	15	15	15	16	16	16	16	17																										
	5	13	14	14	14	14	15	15	15	15	16	16	16	16	17	17	17																									
	6	14	14	14	14	15	15	15	15	16	16	16	16	17	17	17	17	18																								
	7	14	14	14	15	15	15	15	16	16	16	16	17	17	17	17	18	18	18																							
	8	14	14	15	15	15	15	16	16	16	16	17	17	17	17	18	18	18	18	19																						
	9	14	15	15	15	15	16	16	16	16	17	17	17	17	18	18	18	18	19	19	19																					
2	0	15	15	15	15	16	16	16	16	17	17	17	17	18	18	18	18	19	19	19	19	20																				
	1	15	15	15	16	16	16	16	17	17	17	17	18	18	18	18	19	19	19	19	20	20	20																			
	2	15	15	16	16	16	16	17	17	17	17	18	18	18	18	19	19	19	19	20	20	20	20	21																		
	3	15	16	16	16	16	17	17	17	17	18	18	18	18	19	19	19	19	20	20	20	20	21	21	21																	
	4	16	16	16	16	17	17	17	17	18	18	18	18	19	19	19	19	20	20	20	20	21	21	21	21	22																
	5	16	16	16	17	17	17	17	18	18	18	18	19	19	19	19	20	20	20	20	21	21	21	21	22	22	22															
	6	16	16	17	17	17	17	18	18	18	18	19	19	19	19	20	20	20	20	21	21	21	21	22	22	22	22	23														
	7	16	17	17	17	17	18	18	18	18	19	19	19	19	20	20	20	20	21	21	21	21	22	22	22	22	23	23	23													
	8	17	17	17	17	18	18	18	18	19	19	19	19	20	20	20	20	21	21	21	21	22	22	22	22	23	23	23	23	24												
	9	17	17	17	18	18	18	18	19	19	19	19	20	20	20	20	21	21	21	21	22	22	22	22	23	23	23	23	24	24	24											
3	0	17	17	18	18	18	18	19	19	19	19	20	20	20	20	21	21	21	21	22	22	22	22	23	23	23	23	24	24	24	24	24										
	1	17	18	18	18	18	19	19	19	19	20	20	20	20	21	21	21	21	22	22	22	22	23	23	23	23	24	24	24	24	24	24	24									
	2	18	18	18	18	19	19	19	19	20	20	20	20	21	21	21	21	22	22	22	22	23	23	23	23	24	24	24	24	24	24	24	24	24								
	3	18	18	18	19	19	19	19	20	20	20	20	21	21	21	21	22	22	22	22	23	23	23	23	23	24	24	24	24	24	24	24	24	24	24							
	4	18	18	19	19	19	19	20	20	20	20	21	21	21	21	22	22	22	22	23	23	23	23	24	24	24	24	24	24	24	24	24	24	24	24	24						
	5	18	19	19	19	19	20	20	20	20	21	21	21	21	22	22	22	22	23	23	23	23	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24					
	6	19	19	19	19	20	20	20	20	21	21	21	21	22	22	22	22	23	23	23	23	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24				
	7	19	19	19	20	20	20	20	21	21	21	21	22	22	22	22	23	23	23	23	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24			
	8	19	19	20	20	20	20	21	21	21	21	22	22	22	22	23	23	23	23	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24		
	9	19	20	20	20	20	21	21	21	21	22	22	22	22	23	23	23	23	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	
4	0	20	20	20	20	21	21	21	21	22	22	22	22	23	23	23	23	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24

The procedures for filling out the RAS are as follows:

1. The requirements and procedures for filling out the RAS
   The students are required to:
   a. Complete the registration.
   b. Meet all requirements to complete the RAS.
   c. Consult with Academic Advisors.
   d. Fill out the RAS by the determined schedule
   e. Fill out the courses online according to the credits allowed and request a printout of the RAS form to the Faculty operator after filling it in.
   f. Changes to the RAS input, both in courses and classes, can only be made during the determined RAS revision period.
   g. Fill in the RAS through http://unisys.uii.ac.id .
2. Number of credits/courses to take:
   a. The number of credits that can be taken is based on the number of credits that can be taken is based on the combined matrix of n-1 Semester Grade Point Average and Cumulative Grade Point Average (*Indeks Prestasi Kumulatif*) matrix (See Table 1.1).
   b. For students who are active again:
      1) The allowed credits for students granted academic leave permits are adjusted to the last semester credits before taking a leave of absence.
      2) The maximum credits for students with no academic leave permits are 12 credits.
3. Students who take Community Service (*Kuliah Kerja* Nyata/KKN) (you should see the instructions of credits taking at DPPM UII):
   a. Students who take the Regular Community Service 1 are not permitted to take courses in the regular semester.
   b. Students who take the Regular Community Service 2 are only permitted to take a maximum of 3 courses and are not allowed to take Practicum/Internship courses.
   c. Students who take the Extension or Thematic Community Service are permitted to take courses in accordance with credits available for them, including Community Service credits with a maximum of 16 credits.
4. Students who take Final Project (*Tugas* Akhir/TA):
   The requirements and procedures can be seen in the Guidebook for Internship and Final Project.
5. Students who take Final Project and Community Service
   a. Students who take Final Project and Regular Community Service 1 simultaneously are not permitted to take any courses.
   b. Students who take Final Project and Regular Community Service 2 or Extension Community Service or Thematic Community Service simultaneously are only permitted to take a maximum of 2 courses outside of the Final Project and Community Service.

6. Students who have been declared to have completed all theories are only permitted to take Community Service, Internship, and Final Project courses.

IMPORTANT
Students who do not fill in the RAS during the RAS filling period can fill it in during the RAS revision period with three credits as a fine. **Students who do not fill in the RAS even though they have registered/paid the tuition fee installments are advised to apply for academic leave, while the first or third installments are returned.**

2.3 Student Leave

Students on academic leave are students who are not registered in certain semesters with the permission of the Rector under the following conditions:

1. Academic leave is only granted to students who have actively taken two semesters in the first year.
2. Academic leave is granted per semester with a maximum duration is four semesters.
3. Students who take academic leave are exempted from tuition fees. If the students intend to return, they must pay administrative fees and take credits according to their previous semester's Grade Point Average.
4. Academic leave and return procedures are stipulated by the Rector's regulation.
5. Students who leave without permission are responsible for paying tuition fees for their inactive semesters. This tuition fee must be paid when they return from the leave of absence. Besides, they can only take 12 (twelve) credits.

Academic Leave Procedures

1. Students who wish to take an academic leave must apply for academic leave permission and fill out the form provided by the Faculty by attaching:
   a. An academic leave permit that has been signed by the Dean.
   b. Photocopy of Student Identity Card.
   c. Library Free Certificate (Central and Faculty Library).
   d. Photocopy of the last tuition installment payment receipt for the relevant academic year.
   e. Bank receipt of administrative fees for academic leave (original).
   f. Cumulative Grade Point Average (academic record) signed by Academic Advisor and the Head of the respective Department/Study Program.
2. Students can take the Academic Leave Permit signed by the Vice- Rector no later than two days after the leave request is submitted.
3. The extension of academic leave must include a leave request letter from the Faculty.
4. Students can check the schedule for submitting their academic leave requests in the academic calendar.

2.4 Inactive

Inactive students are not entitled to:

1. Follow the teaching and learning process;
2. Participate in student activities;
3. Obtain academic services.

2.5 Reinstatement

The procedure for reinstatement is as follows:

1. The request for reinstatement is submitted according to the re-registration schedule listed in the academic calendar.
2. Students who will return from academic leave must submit a reinstatement request through the Directorate of Academic Services (*Direktorat Layanan Akademik*/DLA) and an original Academic Leave Permit signed by the Vice-Rector for Academic Development & Research.
3. The approval letter for the reinstatement request can be taken by students 3 (three) days after the reinstatement request is submitted again.

2.6 Learning Evaluation

The Statistics Study Program's learning evaluation refers to the regulation of Universitas Islam Indonesia Number 2 Year 2017 concerning the Education and Learning Process in Universitas Islam Indonesia Environment Part Two Learning Evaluation Articles 41 - 43.

CHAPTER 3
LECTURES, EXAMS, AND FINAL PROJECTS/THESIS

3.1 Lectures

1. Each semester lasts for 16 to 18 weeks, including examination and evaluation weeks.
2. The length of each lecture is 50 minutes per one credit per week.
3. Each study program can organize practicum or other activities according to the needs of study program.
4. Every student is required to fulfill a minimum of 75 % scheduled activities and 100% practicum.

3.2 Exams

1. Midterm Examination (UTS) and Final Examinations (UAS)

Exams are part of the education system and are a means of evaluating students' progress and ability to absorb knowledge, as stated by Grade Point Average (GPA). The GPA measurement carried out at the end of semester is called Semester Grade Point Average (SGPA). Meanwhile, the Cumulative Grade Point Average (CGPA) refers to the overall GPA students earned during their study period, starting from their first-time registration at UII to their final semester.

Exams (other than Final Project/Thesis Defense, Community Service, Internship, and Practicum exams) are administered in the form of scheduled written exams, namely Midterm Exams (*Ujian Tengah* Semester/UTS) and Final Exams (*Ujian Akhir Semeste*r/UAS). The evaluation component can be added with assignments, namely writing scientific papers, seminars, oral examinations, structured/embedded assignments, questions completion, reports, and other tasks that are conducted before the Final Exam.

2. Assessment of Learning Outcomes

Students' activities and learning progress are assessed periodically. This assessment can take the form of exams, assignments, and observations.

a. Exams may be administered through Midterm Exams, and Final Exams, Final Project, or Thesis Defense. Midterm and Final Exams are structured assessments of learning outcomes. They are conducted on a scheduled basis at the middle and the end of the semester.
b. To be eligible to sit in the Midterm and Final Exams, students must meet the following requirements:
    1) Paying the second installment tuition fee for odd semesters and the fourth installments for even semesters.
    2) Taking an exam card at the Faculty's Academic Administration Division.
    3) Ratifying the exam card at the Faculty's Academic Administration Division by showing proof of tuition payment.

4) To be eligible to sit in the Final Exams, students must attend lectures and scheduled activities of at least 75% and 100% attendance from the total practicums.

c. The assignments given by lecturers to students may be in the form of book reading reports, case evaluations, articles/news comments, papers, or other forms of activities carried out by lecturers.

d. The lecturer made observations on students' attendance in class and their activeness during the teaching and learning process.

e. The assessment of learning outcomes is stated in the form of letters, each of which has the following values:

A	4,00	C+	2,25
A-	3,75	C	2,00
A/B	3,50	C-	1,75
B+	3,25	C/D	1,50
B	3,00	D+	1,25
B-	2,75	D	1,00
B/C	2,50	E	0
		F	0

f. The Final Score Criteria are as follows:

A	80,00-100	C+	57,50-59,99
A-	76,25-79,99	C	55,00-57,49
A/B	72,50-76,24	C-	51,25-54,99
B+	68,75-72,49	C/D	47,50-51,24
B	65,00-68,74	D+	43,75-47,49
B-	62,50-64,99	D	40,00-43,74
B/C	60,00-62,49	E	<40,00
F Not eligible for assessment			

3.3 Internship

Internship (*Kerja Praktek*/KP) is an observation and practice activities regarding the application of statistics in a particular agency or industry carried out by Statistics Study Program students who have met the requirements.

Observation is a process in which students observe, study, and understand the application of statistics that they have acquired.

Meanwhile, practice is a process where students take direct action to collect data, process, and analyze data according to the problems and statistical methods.

The requirements of an internship are:

1. Have taken a minimum of 80 credits,
2. Internship is listed in the Semester Academic Plan (RAS) card, and
3. Pay internship fees no later than one month after keying the internship in.

Internship explanations in detail, including the internship seminars' requirements, can be seen in the guidebook of implementing and writing report of internship.

3.4 Final Project and Thesis

Undergraduate final project (*Tugas Akhir*/TA) is a scientific work written by students at the end of their study at the Statistics Study Program, Faculty of Mathematics and Natural Sciences, UII. This scientific work is one of the tasks or requirements that students must fulfill to earn a Bachelor of Statistics (S.Stat.) and is compiled based on the research conducted by students under the supervision of their supervisor.

1. Shows the ability of students in terms of:
    a. Observing, digging, and exploring a particular problem.
    b. Applying an appropriate method to discuss a problem that has been chosen.
    c. Writing the results of the research methodologically, logically, and systematically.
2. Requirements for the Final Project are:
    a. Students have taken a minimum of 110 credits,
    b. Students have taken Research Methodology courses,
    c. Students are taking or have taken Internship courses, and
    d. Final Project is listed on the RAS card in each semester.

A detailed explanation of the Final Project can be seen in the guidebook of implementing and writing report of the Final Project.

CHAPTER 4
STATISTICS STUDY PROGRAM CURRICULUM

4.1 QUALIFICATIONS AND GRADUATES PROFILE

Graduates of the Statistics Department are expected to be data analysts mastering theories and methodologies and competent to play a role as policy analysts, disaster analysts, data scientists, or actuaries with high integrity and enthusiasm.

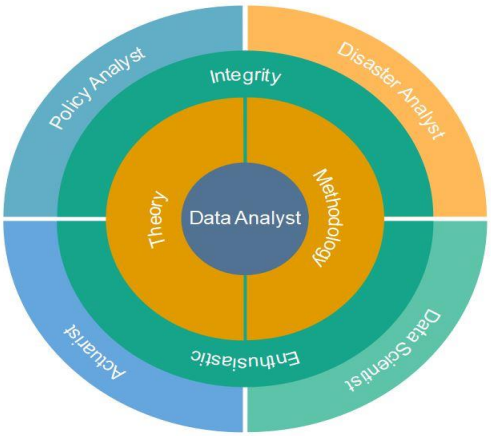


Figure 4.1 Profile of the Statistics Study Program Graduates

In general, there are two broad profiles of graduate groups of the Bachelor of Statistics in the S1 Statistics Study Program, the Faculty of Mathematics and Natural Sciences, Universitas Islam Indonesia, namely:

1. Academicians
   Academicians are people who are highly educated and work as lecturers or researchers at a college, university, or a higher education institution.
2. Data analysts
   Data analysts are people whose jobs range from collecting, processing, analyzing, interpreting, and presenting data to help make management decisions. Graduate profiles as data analysts include:
   a) Data Analyst in various policy and disaster fields
   b) Scientist in various business fields
   c) Actuaries

4.2 LEARNING OUTCOMES

The Learning Outcomes (*Capaian* Pembelajaran/CP) of the Statistics Study Program are formulated by referring to the following rules:

1. A General Description of the Indonesian National Qualification Framework (*Kerangka Kualifikasi Nasional Indonesia*/KKNI) Qualification Level has been established based on Presidential Regulation Number 8 Year 2012 concerning KKNI.
2. The Regulation of the Minister of Education and Culture Number 49 Year 2014 concerning National Higher Education Standards.

3. The Statistics Study Program Communication Forum (FORSTAT) and the Indonesian Mathematical Association (INDOMS) on the general knowledge and special skill aspects.
4. Learning outcomes for the aspects of general attitudes and skills have been determined by the government through the regulation of the Minister of Education and Culture Number 44 Year 2015 concerning National Higher Education Standards. This regulation elaborates Presidential Regulation of Republic of Indonesia Number 8 Year 2012 concerning the Indonesian National Qualifications Framework.
5. American Statistical Association (ASA) Undergraduate Guidelines Workgroup, Curriculum Guidelines for Undergraduate Programs in Statistical Science.

The followings are the learning outcome (LO) formulation of S1 Statistics Study Program by FORSTAT and INDOMS. It is classified according to four parameters described in the learning outcomes description:

Table 4.1 Formulation of FORSTAT and IDOMMS LO

For S1 Statistics Study Program

Parameter	Description of Learning Outcomes	
The ability in the Field of Work (Special Skills)	**KK1**	The students will be able to compile and/or choose an efficient data collection/generation design and apply it in a survey, experiment, or simulation.
	KK2	The students will be able to perform data management and analysis using statistical techniques with the help of software.
	KK3	The students will be able to solve real problems statistically then present and communicate them in a way that is easy to understand both in writing and oral.
Mastery of Knowledge (Knowledge)	**PP1**	The students will be able to master the basic concepts of statistical science and statistical analysis methods that can be applied in various applied fields.
	PP2	The students will be able to master at least two statistical software, including open-source software.
Managerial Skills	**KM1 (KU-M)**	The students will be able to work together and communicate in teams also be responsible for their work.
	KM2 (KK-M)	The students will have professional ethics in the application of statistics.

Learning outcomes following KKNI of Ministry of Research and Technology (Kemenristekdikti) for the Statistics Study Program:

Table 4.02 Formulation of KKNI Kemenristekdikti Learning Outcomes

THE UNDERGRADUATE PROGRAM OF STATISTICS STUDY PROGRAM
ATTITUDE
a. *taqwa* (being cognizant) of God Almighty and able to show a religious attitude; b. upholding human values in carrying out duties based on religion, morals, and ethics; c. contributing to improving the quality of life in society, nation, state, and advancement of civilization based on Pancasila; d. being citizens who are proud and love the country, have nationalism and a sense of responsibility to the state and nation; e. respecting the diversity of cultures, views, religions, and beliefs, as well as the opinions or original findings of others; f. cooperating and have social sensitivity and concern for the community and the environment; g. obeying the law and discipline in social and state life; h. internalizing academic values, norms, and ethics; i. showing a responsible attitude for work in their field of expertise independently; j. internalizing the spirit of independence, struggle, and entrepreneurship.
MASTERY OF KNOWLEDGE
a. mastering the concepts of probability theory and statistics, mathematics, calculus, elementary linear algebra, statistical analysis methods, and the basic of computer programming; b. mastering several statistical methodologies (methods and models) used in solving problems in several fields; c. mastering at least two statistical software, including open-source software.
SPECIFIC SKILL
a. able to conduct experimental design, data collection and generation (in the form of surveys, experiments, or simulations), data organization, data analysis using statistical techniques, and to draw valid conclusions by utilizing at least one statistical software; b. able to solve estimation problems, testing hypotheses, predictions, and forecasts in several fields by utilizing data and several statistical methodologies (methods and models) and presenting them in the form of descriptions that are easy to understand by users;

c. able to analyze several alternative solutions available in the field of statistics to solve problems and present analytical conclusions for the appropriate decision making.
GENERIC SKILL
a. able to apply logical, critical, systematic, and innovative thinking in the context of developing or implementing science and technology that pays attention to and involves humanities values in accordance with their field of expertise; b. able to demonstrate independent, excellent, and measurable performance; c. able to study the implications of the development or the implementation of technological science that pays attention to and applies humanities values according to their expertise based on scientific principles, procedures, and ethics to produce solutions, ideas, designs, or art criticism; d. compile a scientific description of the results of the study mentioned above in the form of a thesis or final project report and upload it on the college page; e. able to make decisions appropriately in the context of solving the problem in their field of expertise, based on the results of information and data analysis; f. able to maintain and develop networks with mentors, colleagues, peers both inside and outside the institution; g. able to be responsible for the achievement of group work results and to supervise and evaluate the completion of work assigned to workers under their responsibility; h. able to carry out the self-evaluation process of the workgroup under their responsibility, and able to manage the learning process independently; i. able to document, store, secure, and recover data to ensure validity and prevent plagiarism.

Based on the formulation in table 4.2, the following is the formulation of learning outcomes for the Statistics Study Program UII.

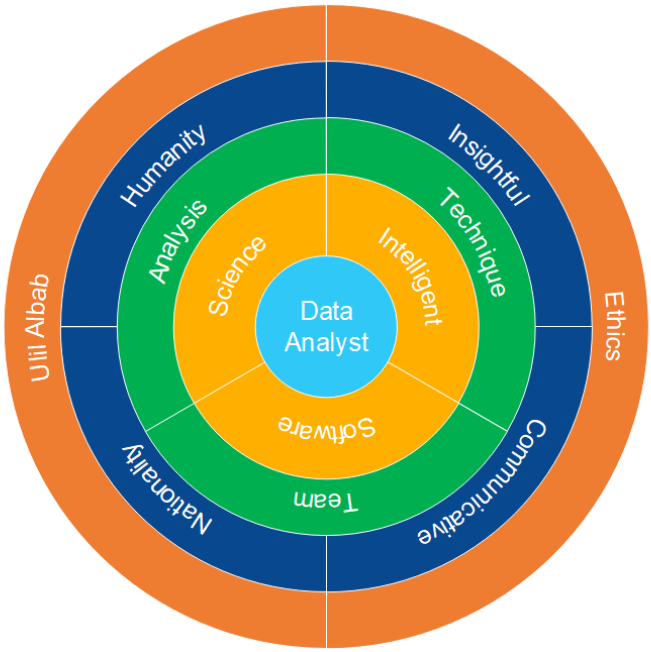
Table 4.3 Formulation of Learning Outcomes of the Statistics Study Program UII

Indicator	Abbreviation	Explanation
Ethics	**S(g)**	Obeying the law and discipline in social and state life
	S(h)	Internalizing academic values, norms, and ethics
	S(i)	Demonstrating an attitude of responsibility for work in their field of expertise independently
Nationality	**S(c)**	Contributing to improving the quality of life in society, nation, state, and advancement of civilization based on Pancasila

Indicator	Abbreviation	Explanation
	S(d)	Being citizens who are proud and love the country, have nationalism and a sense of responsibility to the state and nation
Team	**S(f)**	Cooperating and have social sensitivity and concern for the community and the environment
	KU(f)	Being able to maintain and develop networks with mentors, colleagues, peers both inside and outside the institution
	KU(g)	Being able to be responsible for the achievement of group work results and to supervise and evaluate the completion of work assigned to workers under their responsibility
	KU(h)	Being able to carry out the self-evaluation process of the workgroup under their responsibility, and independently able to manage the learning process
Humanity	**S(b)**	Upholding human values in carrying out duties based on religion, morals, and ethics
	S(e)	Respecting the diversity of cultures, views, religions, and beliefs, as well as the opinions or original findings of others
	KU(c)	Being able to study the implications of the development or the implementation of technological science that pays attention to and applies humanities values according to their expertise based on scientific principles, procedures, and ethics to produce solutions, ideas, designs, or art criticism
Ulil Albab	**S(a)**	*Taqwa* (being cognizant) of God Almighty and able to show a religious attitude
	S(j)	Internalizing the spirit of independence, struggle, and entrepreneurship
Science	**PP(b)**	Mastering several statistical methodologies (methods and models) to be used in solving problems in several fields
	KU(a)	Being able to apply logical, critical, systematic, and innovative thinking in the context of developing or implementing science and technology that pays attention to and involves humanities values in accordance with their field of expertise
Intelligence	**PP(a)**	mastering the concepts of probability theory and statistics, mathematics, calculus, elementary linear algebra, statistical analysis methods, and the basic of computer programming

Indicator	Abbreviation	Explanation
Analysis	**KK(c)**	Being able to analyze several alternative solutions available in the field of statistics to solve problems and present analytical conclusions for the appropriate decision making
Software	**PP(c)**	Mastering at least two statistical software, including open-source software
Techniques	**KK(a)**	Being able to conduct experimental design, data collection and generation (in the form of surveys, experiments, or simulations), data organization, data analysis using statistical techniques, and to draw valid conclusions by utilizing at least one statistical software
	KU(i)	Being able to document, store, secure, and recover data to ensure validity and prevent plagiarism
Insightful	**KU(b)**	Being able to demonstrate independent, excellent, and measurable performance
	KU(e)	Being able to make decisions appropriately in the context of solving the problem in their field of expertise, based on the results of information and data analysis
Communi-cative	**KK(b)**	Being able to solve estimation problems, testing hypotheses, predictions, and forecasts in several fields by utilizing data and several statistical methodologies (methods and models) and presenting them in the form of descriptions that are easy to understand by users
	KU(d)	Compiling a scientific description of the results of the study mentioned above in the form of a thesis or final project report and upload it on the college page

The learning outcomes are arranged in a chart as follows:



Picture 4.2 The 2017 "ENTHUSIASTIC" Curriculum Learning Outcomes

4.3 MAP OF LEARNING OUTCOMES AND COURSES IN STATISTICS STUDY PROGRAM

4.3.1 Map of Learning Outcome

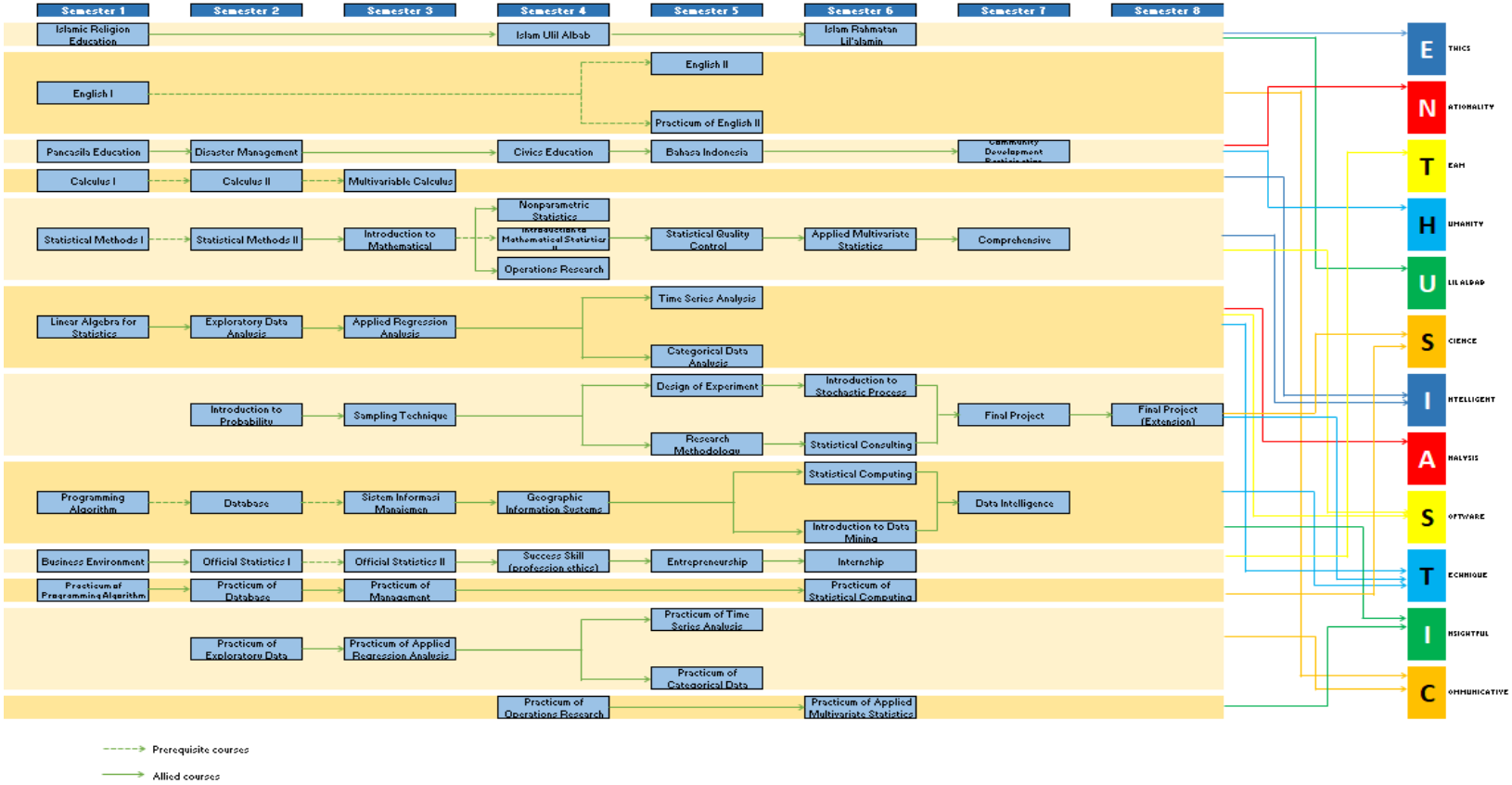


Figure 4.3 Learning Outcome Map

4.3.2 Compulsory Courses

The following are University compulsory courses which consist of 2 courses, namely University Compulsory Courses (*Mata Kuliah Wajib Universitas* /MKWU) and Student Activities:

1. Learning activities are carried out through University Compulsory Courses measured in Semester Credit Units (SKS)

Table 4.4 List of University Compulsory Courses

No	University Compulsory Courses	Credit
1	Islamic Education	2
2	Islam Ulil Albab	3
3	Islam Rahmatan lil'alamin	3
4	Civic Education	2
5	Pancasila	2
6	English Language	2
7	Indonesian Language	2
8	Entrepreneurship	2
9	Community Service (*Kuliah Kerja Nyata*/KKN)	2
	Total	20

2. Student activities are measured in the Participation Credits Unit (*Satuan Kredit Partisipasi*/SKP). University, faculties, study programs, or student organizations may organize these activities. One credit is equivalent to 240 minutes of activities (4 hours).

Table 4.5 Score of Student Activities

No	Activities	SKP	Type
1	In-depth Study of Islamic Basic Values	20	Compulsory
2	Self-development in accordance with Qur'an	20	Compulsory
3	Self-development Training	5	Compulsory
4	Leadership and Da'wah Training	5	Compulsory
5	Leadership Practices	5	Elective
6	Community Service (*Kuliah Kerja Nyata*/KKN)	10	Compulsory

The following is the distribution of compulsory subjects for the Statistics Study Program at Universitas Islam Indonesia:

Table 4.6 Table of Compulsory Courses in Statistics Study Program UII

	Semester 1		Semester 2	
	Courses	Credit	Courses	Credit
Compulsory Courses	Islamic Religion Education	2		
	English I	2		
	Pancasila Education	2		
	Calculus I	3	Exploratory Data Analysis	2
	Statistical Methods I	3	Calculus II	3
	Linear Algebra for Statistics	3	Statistical Method II	3
	Programming Algorithm	2	Introduction to Probability	2
	Business Environment	2	Database	2
			Disaster Management	3
			Official Statistics I	3
	Practicum of Programming Algorithm	1	Practicum of Databse	1
			Practicum of Exploratory Data Analysis	1
	Compulsory Credits	**20**		**20**
	Semester 3		**Semester 4**	
	Courses	**Credit**	**Courses**	**Credit**
			Islam Ulil Albab	3
			Civics Education	2
	Multivariable Calculus	3	Nonparametric Statistics	3
	Sampling Technique	3	Introduction to Mathematical Statistics II	3
	Applied Regression Analysis	2	Geographic Information Systems	3
	Introduction to Mathematical Statistics I	3	Operation Research	2
	Management Information System	2	Success Skill (profession ethics)	1
	Official Statistics II	3		
	Practicum of Programming Algorithm	1	Practicum of Operations Research	1
	Practicum of Management Information System	1		
	Compulsory Credits	**18**		**18**
	Semester 5		**Semester 6**	
	Courses	**Credit**	**Courses**	**Credit**
	English II	1	Islam Rahmatan Lil'alamin	3
	Bahasa Indonesia	2		
	Entrepreneurship	2		
	Research Methodology	2	Internship	2
	Categorical Data Analysis	2	Statistical Consulting	3
	Time Series Analysis	2	Applied Multivariate Statistics	2
	Design of Experiments	3	Introduction to Stochastics Process	3
	Statistical Quality Control	3	Data Mining	3
			Statistical Computing	2
	Practicum of Categorical Data Analysis	1	Practicum of Computational Statistics	1
	Practicum of English II	1	Practicum of Applied Multivariate Statistics	1
	Practicum of Time Series Analysis	1		
	Compulsory Credits	**20**		**20**

	Semester 7		Semester 8	
	Courses	Credit	Courses	Credit
	Community Development Participation	2		
	Final Project	6	Final Project (Extension)	0
	Comprehensive	1		
	Data Intelligence	2		
	Compulsory Credits	**11**		**0**

Information

: University Compulsory Courses

: Core Courses

: Practicum Courses

The following is the distribution of elective courses for the Statistics Study Program at Universitas Islam Indonesia:

Table 4.7 Table of Elective Courses in Statistics Study Program UII

	Semester 3		Semester 4	
	Courses	Credit	Courses	Credit
Elective Courses			Remote Sensing (MK)	3
			Business Decision Analysis (BS)	3
			Information Technology and Big Data (DS)	3
			Life Insurance I (AK)	3
			Work Measurement & Methods (ID)	3
	Simulation Technique*	3	Introduction to Financial Statistics*	3
	Financial Analysis*	3	Cost Accounting*	2
	Managerial Accounting*	2	Introduction to Economics*	2
	Hydrology and Climatology*	2	Introduction to Management*	2
	Elective Credits (Compulsory)	**0**		**3**
	Free Elective Credits	**10**		**9**
	Total Credits Per Semester	10		12
	Semester 5		**Semester 6**	
	Courses	**Credit**	**Courses**	**Credit**
	Geostatistics I (MK)	3	Geostatistics II (MK)	3
	Econometrics for Business (BS)	3	Marketing Research & Strategy (BS)	3
	Business Intelligence dan Machine Learning (DS)	3	Data Visualization (DS)	3
	Life Insurance II (AK)	3	General Insurance (AK)	3
	Production Planning and Control (ID)	3	Total Quality Management (ID)	3
	Advanced Operation Research*	2	Project Management*	3
	Analysis of Variance and Covariance*	2	Introduction to Survival Analysis*	3
	Production Systems*	3	Engineering Economics*	3

			Facility Planning and Layout Design*	3
	Elective Credits (Compulsory)	**3**		**3**
	Free Elective Credits	**7**		**12**
	Total Credits Per Semester	10		15
	Semester 7		**Semester 8**	
	Courses	**Credit**	**Courses**	**Credit**
	Introduction to Reliability Model*	3		
	Surface Response Techniques*	2		
	Advanced Multivariate Statistics*	2		
	Biostatistics*	2		
	Trending Topics on Statistics*	3		
	Elective Credits (Compulsory)	**0**		**0**
	Free Elective Credits	**12**		**0**
	Total Credits Per Semester	12		0

Information:

: Compulsory Courses of Elective Concentration Disaster Management Statistics (*Statistika Manajemen Kebencanaan*/MK)

: Compulsory Courses of Elective Concentration Business and Social (*Bisnis dan Sosial*/BS)

: Compulsory Courses of Elective Concentration Data Science (DS)

: Compulsory Courses of Elective Concentration Actuarial Science (*Aktuaria*/AK)

: Compulsory Courses of Elective Concentration Industrial Statistics (*Statistika Industri*/ID)

* : Free Elective Courses

The relationship between elective courses and concentration is described as follows:

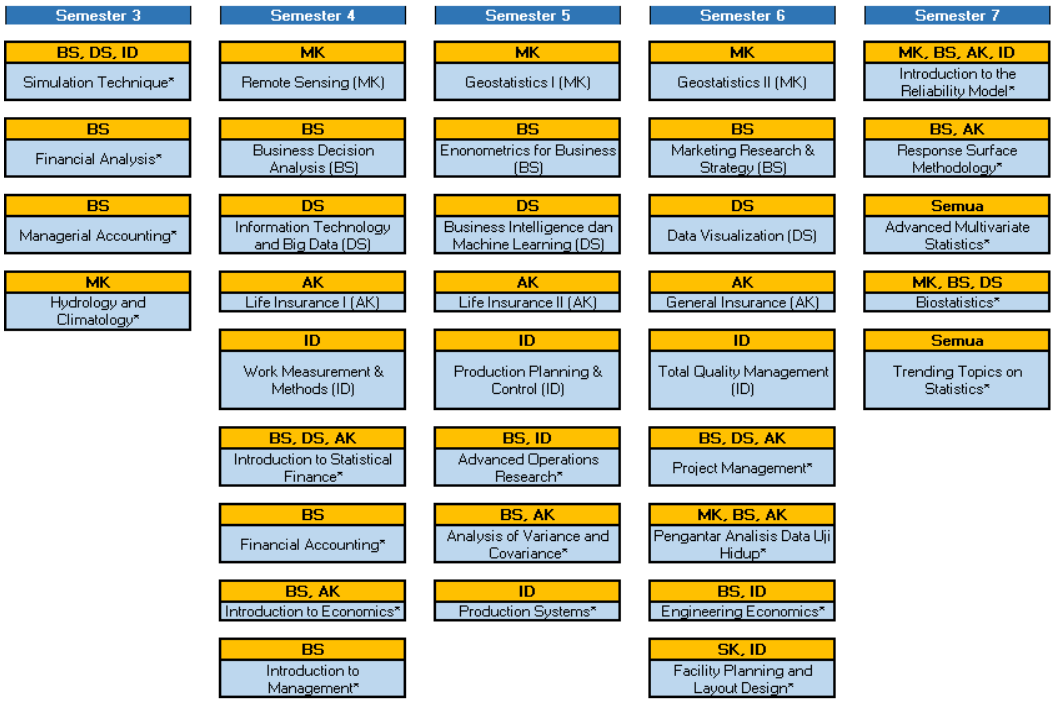


Figure 4.4 The Relationship Between Elective Courses

Information:

Linkage
Course Name

4.3.3 Relationship between Learning Outcomes and Courses

Compulsory Courses

Table 4.7 Compulsory Courses Learning Outcomes

No	Course Name	Credit	Attitude										Generic Skill									Knowledge			Specific Skill			Enthusiastic	
			a	b	c	d	e	f	g	h	i	j	a	b	c	d	e	f	g	h	i	a	b	c	a	b	c		
Semester 1																													
1	Religion Education (*Aqidah*)	2	√																									*Ulil Albab*	
2	Pancasila Education	2			√	√																						Nationality	
3	*Business Environment*	2														√										√		Communicative	
4	Linear Algebra for Statistics	3																				√						Intelligent	
5	Calculus I	3																				√						Intelligent	
6	Statistical Methods I	3																				√		√				Intelligent	Software
7	English Language I	2														√										√		Communicative	
8	Programming Algorithms	2																				√		√				Intelligent	Software
9	Programming Algorithms Practicum	1																				√		√				Software	Technique
	Total Credits	**20**																											
Semester 2																													
1	Official Statistics *1*	3											√										√					Science	
2	Disaster Management	3											√										√					Science	
3	Calculus II	3																				√						Intelligent	
4	Statistical Methods II	3																				√		√				Intelligent	Software

No	Course Name	Credit	Attitude										Generic Skill									Knowledge			Specific Skill			Enthusiastic	
			a	b	c	d	e	f	g	h	i	j	a	b	c	d	e	f	g	h	i	a	b	c	a	b	c		
5	Database	2																			√				√			Techniques	
6	Introduction to Probability	2																				√						Intelligent	
7	Database Practicum	1																			√				√			Techniques	
8	Explorative Data Analysis	2																						√			√	Analysis	Software
9	Explorative Data Analysis Practicum	1																						√			√	Analysis	Software
	Total Credits	**20**																											
Semester 3																													
1	Multivariable Calculus	3																				√						Intelligent	
2	Official Statistics II	3											√										√					Science	
3	Introduction to Mathematical Statistics I	3																				√						Intelligent	
4	Sampling Technique	3																			√				√			Techniques	
5	Applied Regression Analysis	2																						√	√			Software	Techniques
6	Management Information System	2											√										√					Science	
7	Management Information System Practicum	1											√										√					Science	
8	Applied Regression Analysis Practicum	1																						√	√			Software	Techniques
	Total Credits	**18**																											
Semester 4																													
1	Islam Ulil Albab	3	√									√																*Ulil Albab*	
2	Geographic Information System	3																			√				√			Techniques	
3	Success Skill	1														√										√		Communicative	

No	Course Name	Credit	Attitude										Generic Skill									Knowledge			Specific Skill			Enthusiastic	
			a	b	c	d	e	f	g	h	i	j	a	b	c	d	e	f	g	h	i	a	b	c	a	b	c		
4	Civics	2			√	√																						Nationality	
5	Introduction to Mathematical Statistics I	3																				√						Intelligent	
6	Nonparametric Statistics	3																									√	Analysis	
7	Operations Research	2											√										√					Science	
8	Operations Research Practicum	1											√										√					Insightful	Software
	Total Credits	**18**																											
Semester 5																													
1	Entrepreneurship	2						√										√	√	√								Team	
2	English Language II	1														√										√		Communicative	
3	Categorical Data Analysis	2																									√	Analysis	
4	Statistical Quality Control	3																			√				√			Techniques	
5	Experimental Design	3																			√				√			Techniques	
6	Research Methodology	2												√			√											Insightful	
7	Indonesian Language	2							√	√	√																	Ethics	
8	Time Series Analysis	2														√										√		Communicative	
9	English Language Practicum II	1														√										√		Communicative	
10	Categorical Data Analysis Practicum	1																			√				√			Techniques	
11	Time Series Analysis Practicum	1														√										√		Communicative	
	Total Credits	**20**																											
Semester 6																													
1	Internship	2						√										√	√	√								Team	

No	Course Name	Credit	Attitude										Generic Skill									Knowledge			Specific Skill			Enthusiastic	
			a	b	c	d	e	f	g	h	i	j	a	b	c	d	e	f	g	h	i	a	b	c	a	b	c		
2	Islam Rahmatan Lil 'Alamin	3	√	√			√					√			√													*Ulil Albab*	Humanity
3	Statistical Consulting	3						√										√	√	√								Team	
4	Introduction to Stochastic Processes	3											√									√	√					Science	Intelligent
5	Introduction to Data Mining	3												√			√											Insightful	
6	Applied Multivariate Statistics	2																				√						Science	Analysis
7	Computational statistics	2																						√				Software	
8	Applied Multivariate Statistics Practicum	1																				√						Intelligent	
9	Computational statistics Practicum	1																						√				Software	
	Total Credits	**20**																											
Semester 7																													
1	Community Service (*Kuliah Kerja Nyata*/KKN)	2		√			√								√													Humanity	
2	Final Project	6												√			√											Insightful	
3	Comprehensives	1												√			√											Insightful	
4	Data Intelligent	2																				√		√				Intelligent	Software
	Total Credits	**9**																											
Semester 8																													
1	Final Project (Extension)	0												√			√											Insightful	
	Total Credits	**0**																											
	Total Credit of Compulsory Courses	124																											

Elective Courses

Table 4.8 Table of Elective Courses Learning Outcomes

No	Course Name	Credit	Attitude										Generic Skill									Knowledge			Specific Skill			Enthusiastic
			a	b	c	d	e	f	g	h	i	j	a	b	c	d	e	f	g	h	i	a	b	c	a	b	c	
Semester 3																												
1	Simulation Techniques*	3																			√				√			Technique
2	Financial Analysis*	3																									√	Analysis
3	Managerial Accounting*	2														√										√		Communicative
4	Hydrology and Climatology*	2											√										√					Science
	Total Credits	**10**																										
Semester 4																												
1	Remote Sensing (MK)	3																			√				√			Technique
2	Business Decision Analysis (BS)	3												√			√											Insightful
3	Information Technology and Big Data (DS)	3																			√				√			Technique
4	Life insurance I (AK)	3											√									√	√					Science / Intelligent
5	Methods & Work Measurement (ID)	2																			√				√			Technique
6	Introduction to Financial Statistics*	3											√										√					Science
7	Cost accounting*	2																									√	Analysis
8	Introduction to Economics*	2											√										√					Science
9	Introduction to Management*	2														√										√		Communicative

No	Course Name	Credit	Attitude										Generic Skill									Knowledge			Specific Skill			Enthusiastic	
			a	b	c	d	e	f	g	h	i	j	a	b	c	d	e	f	g	h	i	a	b	c	a	b	c		
	Total Credits	**23**																											
Semester 5																													
1	Geostatistics I (MK)	3											√										√					Science	
2	Econometrics for Business (BS)	3											√			√							√			√		Science	Communicative
3	Business Intelligence and Machine Learning (DS)	3																				√						Intelligent	
4	Life Insurance II (AK)	3											√									√	√					Science	Intelligent
5	Production Planning and Control (ID)	3												√			√											Insightful	
6	Advanced Operations Research*	2																			√				√			Technique	
7	Analysis of Covariance Variance*	2											√										√				√	Analysis	Science
8	Production System*	3												√			√											Insightful	
	Total Credits	**19**																											
Semester 6																													
1	Geostatistics II (MK)	3											√										√					Science	Insightful
2	Marketing Research & Strategy (BS)	3												√			√											Insightful	
3	Data visualization (DS)	3														√										√		Communicative	
4	General insurance (AK)	3											√			√							√			√		Science	Communicative
5	Integrated Quality Management (ID)	3											√										√					Science	
6	Project management*	3						√										√	√	√								Team	
7	Pengantar Analisis Data Uji Hidup*	3											√										√					Science	

No	Course Name	Credit	Attitude										Generic Skill									Knowledge			Specific Skill			Enthusiastic
			a	b	c	d	e	f	g	h	i	j	a	b	c	d	e	f	g	h	i	a	b	c	a	b	c	
	Introduction to Life Data Analysis*																											
8	Engineering Economics*	3																			√				√			Technique
9	Facility Layout Planning*	3												√			√											Insightful
	Total Credits	**27**																										
Semester 7																												
1	Introduction to the Reliability Model*	3											√										√					Science
2	Response Surface Methodology*	2																			√				√			Technique
3	Advanced Multivariate Statistics*	2											√										√					Science
4	Biostatistics*	2											√										√					Science
5	Trending Topics on Statistics*	3												√			√											Insightful
	Total Credits	**12**																										

4.3.4 Distribution of Subjects Per Semester and Prerequisites

No	Course Code	Course Name	Credit	Prerequisite
Semester 1				
1	UNI600	Islamic Religion Education (*Aqidah*)	2	-
2	UNI603	Pancasila Education	2	-
3	UNI606	English I	2	-
4	UNI	ONDI (Islamic Basic Value Orientation)	0	-
5	UNI	BTAQ	0	-
6	SST-101	Linear Algebra for Statistics	3	-
7	SST-102	Calculus I	3	-
8	SST-103	Statistical Methods I	3	-
9	SST-104	Business Environment	2	-
10	SST-105	Programming Algorithms	2	-
11	SST-106	Practicum of Programming Algorithms	1	-
Compulsory Credit			20	
Compulsory Elective Credit			0	
Free Elective Credit			0	
Total Credits Per Semester			20	
Semester 2				
1	UNI	LKID (Basic Islamic Leadership Training)	0	-
2	SST-201	*Official Statistics I*	3	-
3	SST-202	Disaster Management	3	-
4	SST-203	Calculus II	3	Calculus I
5	SST-204	Statistical Methods II	3	Statistical Methods I
6	SST-205	Introduction to Probability	2	-
7	SST-206	Exploratory Data Analysis	2	-
8	SST-207	Database	2	Programming Algorithms
9	SST-208	Practicum of Exploratory Data Analysis	1	Currently/have taken Exploratory Data Analysis
10	SST-209	Practicum of Database	1	Currently/have taken Database
Compulsory Credit			20	
Compulsory Elective Credit			0	
Free Elective Credit			0	
Total Credits Per Semester			20	
Semester 3				
1	SST-301	Multivariable Calculus	3	Calculus II
2	SST-302	Introduction to Mathematical Statistics I	3	Introduction to Probability
3	SST-303	Official Statistics II	3	Official Statistics I

4	SST-304	Sampling Technique	3	Statistical Methods I
5	SST-305	Applied Regression Analysis	2	Statistical Methods II
6	SST-306	Management Information System	2	Database
7	SST-307	Practicum of Applied Regression Analysis	1	Currently/have taken Applied Regression Analysis
8	SST-308	Practicum of Management Information System	1	Currently/have taken MIS
9	SST-309	Simulation Technique*	3	Programming Algorithms
10	SST-310	Financial Analysis*	3	-
11	SST-311	Managerial Accounting*	2	-
12	SST-312	Hydrology and Climatology*	2	-
Compulsory Credit			18	
Compulsory Elective Credit			0	
Free Elective Credit			10	
Total Credits Per Semester (Max)			24	
Semester 4				
1	UNI-401	*Islam Ulil Albab*	3	-
2	UNI-402	Civics Education	2	-
3	SST-401	Success Skill	1	-
4	SST-402	Introduction to Mathematical Statistics II	3	Introduction to Mathematical Statistics I
5	SST-403	Geographic Information System	3	Database
6	SST-404	Nonparametric Statistics	3	Statistical Methods II
10	SST-405	Operations Research	2	Introduction to Mathematical Statistics I
11	SST-406	Practicum of Operations Research	1	Currently/have taken Operations Research
12	SST-407	Remote Sensing	3	Disaster Management
13	SST-408	Business Decision Analysis	3	Statistical Methods II
14	SST-409	Information Technology & Big Data	3	Database
15	SST-410	Life Insurance I	3	Introduction to Probability
16	SST-411	Work Measurement & Methods	3	-
17	SST-412	Introduction to Financial Statistics*	3	Introduction to Probability
18	SST-413	Cost Accounting*	2	-
19	SST-414	Introduction to Economics*	2	-
20	SST-415	Introduction to Management*	2	-
Compulsory Credit			18	
Compulsory Elective Credit			15	
Free Elective Credit			9	
Total Credits Per Semester (Max)			24	
Semester 5				
1	UNI605	Entrepreneurship	2	-

2	UNI607	Bahasa Indonesia	2	-
3	UNI606	English II	1	English Language 1
4	SST-501	Research Methodology	2	Statistical Methods II
5	SST-502	Statistical Quality Control	3	Statistical Methods II
6	SST-503	Experimental design	3	Statistical Methods II
7	SST-504	Categorical Data Analysis	2	Statistical Methods II
8	SST-505	Time Series Analysis	2	Applied Regression Analysis
9	SST-506	Practicum of English II	1	Currently/have taken English II
10	SST-507	Practicum of Categorical Data Analysis	1	Currently/have taken Categorical Data Analysis
11	SST-508	Practicum of Time Series Analysis	1	Currently/have taken Time Series Analysis
12	SST-509	Geo Statistics I	3	Disaster Management
13	SST-510	Econometrics for Business	3	Applied Regression Analysis
14	SST-511	Business Intelligence & Machine Learning	3	Database
15	SST-512	Life Insurance II	3	Life Insurance I
16	SST-513	Production Planning & Control	3	Statistical Methods II
17	SST-514	Advanced Operations Research*	2	Operations Research
18	SST-515	Analysis of Covariance variance*	2	Statistical Methods II
19	SST-516	Production System*	3	Currently/have taken Production Planning & Control (ID)
Compulsory Credit			20	
Compulsory Elective Credit			15	
Free Elective Credit			7	
Total Credits Per Semester (Max)			24	
Semester 6				
1	UNI-601	*Islam Rahmatan Lil 'Alamin*	3	-
2	SST-601	Internship	2	Have taken 80 credits
3	SST-602	Applied Multivariate Statistics	2	Introduction to Mathematical Statistics I
4	SST-603	Statistical Consulting	3	Statistical Methods II
5	SST-604	Introduction to Stochastic Process	3	Introduction to Probability
6	SST-605	Introduction to Data Mining	3	Database
7	SST-606	Statistical Computing	2	Programming Algorithms
8	SST-607	Practicum of Applied Multivariate Statistics	1	Currently/have taken Applied Multivariate Statistics
9	SST-608	Practicum of Computational Statistics	1	Currently/ have taken Computational Statistics
10	SST-609	Geo Statistics II	3	Geographic Information System
11	SST-610	Marketing Research & Strategy	3	Statistical Methods II

12	SST-611	Data Visualization	3	Exploratory Data Analysis
13	SST-612	General Insurance	3	Introduction to Probability
14	SST-613	Total Quality Management	3	Statistical Quality Control
15	SST-614	Project Management*	3	-
16	SST-615	Introduction to Survival Analysis *	3	Introduction to Probability
17	SST-616	Engineering Economics *	3	Introduction to Probability
18	SST-617	Facility Planning & Layout Design*	3	-
Compulsory Credit			17	
Compulsory Elective Credit			15	
Free Elective Credit			12	
Total Credits Per Semester (Max)			24	
Semester 7				
1	UNI-701	Community Development Participation (KKN)	2	Have taken 90 credits
2	SST-701	Final Project/Thesis	6	Have taken 120 credits
3	SST-702	Comprehensive Test	1	Have taken 120 credits
4	SST-703	Data Intelligent	2	Programming Algorithms
5	SST-704	Introduction to Reliability Model*	3	Introduction to Mathematical Statistics I
6	SST-705	Response Surface Technique*	2	Applied Regression Analysis
7	SST-706	Advanced Multivariate Statistics*	2	Applied Multivariate Statistics
8	SST-707	Biostatistics*	2	Statistical Methods 2
9	SST-708	Trending Topics on Statistics*	3	Statistical Methods 2
Compulsory Credit			11	
Compulsory Elective Credit			0	
Free Elective Credit			12	
Total Credits Per Semester (Max)			24	
Semester 8				
1	SST-701	Final Project/Thesis (TA) (Extension)	0	Final Project
Compulsory Credit			0	
Compulsory Elective Credit			0	
Free Elective Credit			0	
Total Credits Per Semester (Max)			24	

Information:
* is an Elective Course
Passing a course means already taking and obtaining a minimum score of D in that course (the Universitas Islam Indonesia Regulation Number 2 of 2017 on Education and Learning Process in the Universitas Islam Indonesia Article 39 Paragraph 3)

ACHIEVEMENT CONTROL FORM FOR COMPULSORY COURSE SCORE

Semester 1			Semester 2			Semester 3			Semester 4			Semester 5			Semester 6			Semester 7		
Course	Credit	Score	Course	Credit	Score	Course	Credit	Score	Course	Credit	Score	Course	Credit	Score	Course	Credit	Score	Course	Credit	Score
English I	1	**										English II	1		Internship	2		Community Development Participation	2	
Pancasila Education	2	**							Civics Education	2	**	Bahasa Indonesia	2	**						
Islamic Religion Education	2	**							Islam Ulil Albab	3	**				Islam Rahmatan Lil 'Alamin	3	**			
Business Environment	2	**							Success Skill	1	**	Entrepreneurship	2	**						
Linear Algebra for Statistics	2	**	Exploratory Data Analysis	2	**	Applied Regression Analysis	2		Geographic Information Systems	3		Research Methodology	2	**	Introduction to Data Mining	3		Comprehensive Test	1	
Calculus I	3	**	Calculus II	3	**	Multivariable Calculus	3								Introduction to Stochastic Process	3		Data Intelligence	2	
Statistical Methods I	3	**	Statistical Methods II	3	**	Sampling Technique	3	**	Nonparametric Statistics	3		Design of Experiment	3	**	Statistical Consulting	3		Final Project	6	
			Introduction to Probability	2	**	Introduction to Mathematical Statistics I	3	**	Introduction to Mathematical Statistics II	3		Statistical Quality Control	3							
Programming Algorithm	2	**	Database	2		Management Information Systems	2		Operations Research	2		Categorical Data Analysis	2	**	Statistical Computing	2	**			
			Disaster Management	3								Time Series Analysis	2		Applied Multivariate Statistics	2				
			Official Statistics I	3		Official Statistics II	3													
Practicum of Programming Algorithm	1	**	Practicum of Exploratory Data Analysis	1	**	Practicum of Applied Regression Analysis	1	**	Practicum of Operations Research	1	**	Practicum of English II	1	**	Practicum of Statistical Computing	1	**			
			Practicum of Database	1	**	Practicum of Management Information Systems	1	**				Practicum of Categorical Data Analysis	1	**	Practicum of Applied Multivariate Statistics	1	**			
												Practicum of Time Series Analysis	1	**						
Compulsory Credits	20			20			18			18			19			20			11	
Elective Credits																				
Total Credits per Semester																				

**Course pass requirements: MINIMUM SCORE OF C

ACHIEVEMENT CONTROL FORM FOR ELECTIVE COURSE

Elective Course Group	Semester 2			Semester 3			Semester 4			Semester 5			Semester 6			Semester 7		
	Course	Credit	Score	Course	Credit	Score	Course	Credit	Score	Course	Credit	Score	Course	Credit	Score	Course	Credit	Score
Disaster Management Statistics							Remote Sensing	3		Geostatistics I	3		Geostatistics II	3				
Business and Social Statistics							Business Decision Analysis	3		Econometrics for Business	3		Marketing Research & Strategy	3				
Industrial Statistics							Work Measurement & Methods	3		Production Planning & Control	3		Total Quality Management	3				
Actuarial Science							Life Insurance I	3		Life Insurance II	3		General Insurance	3				
Data Science							Information Technology and Big Data	3		Business Intelligence and Machine Learning	3		Data Visualization	3				
Free Elective Courses				Managerial Accounting*	2		Cost Accounting*	2		Analysis of Variance and Covariance*	2		Engineering Economics*	3		Biostatistics*	2	
				Financial Analysis*	3		Introduction to Economics*	2		Production Systems*	3		Project Management*	3		Introduction to the Reliability Model*	3	
				Hydrology and Climatology*	2		Introduction to Management*	2		Advanced Operations Research*	2		Introduction to Survival Analysis*	3		Advanced Multivariate Statistics*	2	
				Simulation Techniques*	3		Introduction to Financial Statistics*	3					Facility Planning and Layout Design*	3		Surface Response Techniques*	2	
																Trending Topics on Statistics*	3	

- Free Elective Courses

CHAPER 5
GRADUATION

5.1 REQUIREMENTS OF JUDICIUM ON FINAL COURSE

Statistics Study Program students are declared to have finished taking theories (*Tutup* Teori) in the judicium on final course meeting, with the following requirements:

a. Have taken a minimum of 134 credits (excluding Internship, Community Service, Comprehensive and Final Project/Thesis). The details are:

-University Compulsory Courses: 18 credits
- Compulsory Courses for Statistics Study Program: 98 credits
- Compulsory Course of Elective Concentration: 9 credits
- Free Elective Courses, minimum: 9 credits

b. There are no courses with an E or F.

c. D score, a maximum of 5% out of 145 credits or about seven credits (3 - 4 courses)

d. All courses in the table below get a minimum score of C, namely:

Table 5.1 Courses with minimum score of C

No	Course Title	Credits
1.	Religion Education (*Aqidah*)	2
2.	*Pancasila* Education	2
3.	Civic Education	2
4.	Exploratory Data Analysis	2
5.	Categorical Data Analysis	2
6.	Applied Regression Analysis	2
7.	Programming Algorithms	2
8.	Linear Algebra for Statistics	3
9.	Calculus I	3
10.	Calculus II	3
11.	Computational Statistics	2
12.	Statistical Method I	3
13.	Statistical Method II	3
14.	Introduction to Probability	3
15.	Introduction to Mathematical Statistics I	3
16.	Experimental Design	3
17.	Sampling Technique	3
18.	Research Methodology	3
19.	Exploratory Data Analysis Practicum	1
20.	Categorical Data Analysis Practicum	1
21.	Practical Applied Regression Analysis	1
22.	Time Series Analysis Practicum	1
23.	Database Practicum	1
24.	Computational Statistics Practicum	1
25.	Operations Research Practicum	1
26.	Management Information Systems Practicum	1
27.	Applied Multivariate Statistics Practicum	1

No	Course Title	Credits
28.	English Language Practicum II	1
29.	Programming Algorithms practicum	1
30.	Indonesian Language	2
31.	English Language I	2
32.	English Language II	1
33.	*Islam Ulil Albab*	2
34.	*Islam Rahmatan Lil 'Alamin*	2
35.	Entrepreneurship	2
36.	Statistical Consulting	3
37.	Business Environment	2
38.	Success Skill	1
	Total Credits	74

a. Elective courses to support certain concentrations will be **compulsory** in accordance with the student's concentration choice. The compulsory courses of elective concentration to support concentration are as follows:

Table 5.2 Compulsory Course of Elective Concentration

Concentration	Course Title	Credits	Prerequisite Course
Data Science	Information Technology and *Big Data*	3	Database
	Business Intelligence and Machine Learning	3	Database
	Data Visualization	3	Exploratory Data Analysis
Disaster Management Statistics	Remote Sensing	3	Disaster management
	Geostatistics I	3	Disaster Management
	Geostatistics II	3	Geographic Information System
Business and Social Statistics	Business Decision Analysis	3	Statistical Method II
	Econometrics for Business	3	Applied Regression Analysis
	Marketing Research & Strategy	3	Statistical Method II
Business and Social Statistics	Methods and Work Measurement	3	-
	Integrated Quality Management	3	Statistical Quality Control
	Production Planning and Control	3	Statistical Method II
Actuarial	Life Insurance I	3	Introduction to Probability
	Life Insurance II	3	Life Insurance I
	General insurance	3	Introduction to Probability

5.2 GRADUATION REQUIREMENTS

Statistics Study Program students declared as having finished the study, as determined in the judicium on final study meeting. The followings are the requirements of graduation:

1. Have declared to complete all theories (*Tutup Teori*).
2. Have taken religious activities/examinations organized by the University and Faculties, with a minimum score C, proven by a certificate.
3. Have taken University Compulsory courses with a minimum score of C.
4. Have taken practicum with a minimum grade of C.
5. Have taken the Comprehensive Examination with a minimum score of C
6. Have taken the Thesis Defense and passed with a minimum score of B/C.
7. Cumulative Grade Point Average (CGPA), at least 2.25 **(two point two five)**
8. Have taken the CEPT exam (or a test equivalent to CEPT) and obtained a minimum score of 422.
9. Meet other requirements of Judicium on Final Study as determined by the Faculty.
10. Have finished student activities with a minimum of 60 participation credits unit (*Satuan Kredit Partisipasi/SKP*).

5.3 COURSE SYLABUSES OF STATISTICS STUDY PROGRAM

FIRTS SEMESTER SYLLABUS

- **UNI600 ISLAMIC EDUCATION (*AQIDAH*) (2 CREDITS)**

Prerequisite: none

This course aims to develop and apply an attitude of submission to God Almighty by carrying out His *Shari'a* in everyday life and upholding Islamic morals and universal ethics. This course studies the concept of human nature according to the Qur'an and Hadith, reflects on the suitability of daily behavior with Islamic values, and applies the pillars of faith and pillars of Islam according to the Qur'an and Hadith.

Handbooks:

1. Tim Penyusun. 2016. *Pendidikan Agama Islam untuk Perguruan Tinggi*. Dirjen Pembelajaran dan Kemahasiswaan Kemenristekdikti RI, dapat diakses melalui Ahmad Azhar Basyir, 1990 Pendidikan Agama Islam I (Aqidah), Perpustakaan FH UII.
2. Shalih Bin Fauzan bin Abdullah Al- Fauzan. 1999. *Kitab Tauhid 1, 2 dan 3*. Yogyakarta, Fakultas Ilmu Agama Islam Universitas Islam Indonesia, Pusat Dakwah dan pelayanan Masyarakat Buku DPPAI, bahan ajar Pendidikan Agama.

- **UNI603 *PANCASILA* EDUCATION (2 Credits)**

Prerequisite: None

This course aims to develop an understanding, appreciation, and application of *Pancasila* values in various life aspects for students as prospective Islamic intellectuals. It studies the expression an understanding attitude towards the Pancasila ideology and Indonesian nationality concept in social, national, and state life. It also encourages the students to identify and analyze the relationship between the *Pancasila* ideology and perspective with the Islamic views, study the comparison between the *Pancasila* ideology and other ideologies, reflect on *Pancasila* as a life value and a personal norm. Moreover, it encourages students to reflect on *Pancasila* as an ethical system in developing and applying science and technology in the studied field.

Handbooks:

1. Tim Penyusun. 2016. *Pendidikan Pancasila untuk Perguruan Tinggi*. Dirjen Pembelajaran dan Kemahasiswaan Kemenristekdikti RI Versi UII oleh Pak Suparman.

- **UNI606 ENGLISH LANGUAGE I (2 Credits)**

Prerequisite: None

This course aims to develop students' primary skills to communicate in English in their respective fields of knowledge. The skills include explaining the contents of textbooks in English, explaining paragraphs in English regarding topics in their field of study, and actively speaking to describe their profiles using English in effective and impressive ways.

Handbooks:

1. Anker, S. 2010. *Real Writing with Reading: Paragraph and Essays for College, Work, and Everyday Life*. Boston: Bedford/St. Martin's .
2. Ackert, Patricia. 2004. *Reading & Vocabulary Development 3: Cause & Effect 4th ed*. Boston: Thomson Heinle.
3. Brandon, Lee & Brandon, Kelly. 2005. *Paragraphs and Essays: with integrated readings 11th ed*. USA: Wadsworth.

- **SST101 LINEAR ALGEBRA FOR STATISTICS (3 Credits)**

Prerequisite: None

This course studies the concept of matrices, systems of linear equations, and vectors and their solutions. It also teaches students to solve problems in the statistics field using the concept of linear algebra.

Handbooks:

1. Anton, H. 1994. *Elementary Linear Algebra 7 th ed*. New York: John Wiley and Sons.
2. Anton, H. and Rorres, C. 2000. *Elementary Linear Algebra, Application Version 8 th ed*. John Wiley and son.

- **SST102 CALCULUS I (3 Credits)**

Prerequisite: None

This course studies the concept of sets, real numbers, mathematical logic, permutations, and combinations, functions, limits, and derivatives.

Handbooks:

1. Varberg, D., Purcell, E., and Ridgon, S. 2011. *Calculus 9 th Edition*. Pearson.

2. Hoffmann, L.D., and Bradley, G.L. 2010. *Calculus for Bussiness, Economics, and the Social and the Life Science*. McGraw Hill: New York.

- **SST103 STATISTICAL METHOD I (3 Credits)**

Prerequisite: None

This course studies the concepts of probability theory and statistics, statistical analysis methods using R software and Microsoft Excel for descriptive statistics.

Handbooks:

1. Walpole, R.E., dan Myers, R.H. 2008. *Probability and Statistics for Engineer and Scientist 9 th Edition*. Wiley and Sons. New York.
2. Good, P.I. 2005. *Introduction to Statistics Through Resampling Methods and Microsoft Office Excel*. Wiley Interscience. John Wiley & Sons, Inc. Hoboken, New Jersey.
3. Rumsey Deborah. 2006. *Probability for Dummies*. Wiley Publishing, Inc. Indianapolis, Indiana.
4. Suhov, Y., dan Kelbert, M. 2005. *Probability and Statistics by Example*. Cambridge University.

- **SST104 BUSINESS ENVIROMENT (2 Credits)**

Prerequisite: None

This course studies the prediction of several business environments, then presents a description of the business environment and makes a scientific description of the business environment at hand.

Handbooks:

1. Aswathappa, K. *Essentials of Business Environment*. Himalaya Publishing House. New Delhi.
2. Chaffey, D. *E-Business and E-Commerce Management Strategy, Implementation and Practice, fourth edition*.

- **SST105 PROGRAMMING ALGORITHM (2 CREDITS)**

Prerequisite: None

This course studies the basic concepts of algorithms and programming, the principles of input and output in programming and its data structure, sequential programming techniques, branch programming techniques, loop

programming techniques, dimensional programming, basic matrix programming, data sort programming, use of procedures and functions, and programming with R.

Handbooks:

1. Wachid, F. 1996. *Dasar-Dasar Algoritma dan Pemrograman*. Andi Offset, Yogyakarta.
2. Pranata, A. 2005. *Algoritma dan Pemrograman*. Graha Ilmu, Yogyakarta

- **SST106 PROGRAMMING ALGORITHM PRACTICUM(1 Credit)**

Prerequisite: None

This course studies how to operate R software in designing algorithms, running programming, documenting, and re-running elementary programming.

Handbooks:

1. Ergul, Orgul. 2013. *Guide to Programming and Algorithms Using R*. Springer, London.
2. Wachid, F. 1996. *Dasar-Dasar Algoritma dan Pemrograman*. Andi Offset, Yogyakarta.
3. Supriyono, 2006. *Diktat Algoritma Pemrograman*. FMIPA-UII.

SECOND SEMESTER SYLLABUS

- **SST201 OFFICIAL STATISTICS I (3 Credits)**

Perequisite: None

This course studies the concept of modeling and explains official statistics methods. It encourages students to partite problems of state conditions by modeling official statistics.

Handbooks:

1. BPS. 2007. *Laporan Perekonomian Indonesia 2006*. BPS. Jakarta.
2. BPS. 2006. *Penduduk Hasil SUPAS 2005*. BPS. Jakarta.
3. BPS. 2006. *Statistik Industri Besar dan Sedang 2004*. BPS. Jakarta.
4. StatSoft, Inc. 2006. *Elementary Concept. Electronic Statistics Textbook*. Tulsa, OK: StatSoft. WEB: http://www.statsoft.com/textbook/stathome.html.

- **SST202 DISASTER MANAGEMENT (3 Credits)**

Prerequisite: None

This course aims to equip students with management knowledge by understanding the disaster management cycles either before a disaster occurs (pre-disaster), during a disaster (syn-disaster), or post-disaster. It also equips students with management knowledge of both international and national aspects of disaster management platforms, concepts and terms in disaster management and natural disasters types (endogenous natural disasters and exogenous natural disasters), the process of natural disasters, controlling factors and triggers of natural disasters (natural physical factors & human factors), effects of natural disasters, spatial distribution and efforts mitigation that can be taken.

Handbooks:

1. Coburn and Spence. 1994. *Disaster Mitigation*. United Kingdom : Cambridge Arschitectural.
2. Mulyo, Agung. 2004. *Pengantar Ilmu Kebumian*. Bandung : Pustaka Setia.
3. L Don and Leet. 1964. *Gempa Bumi ; Penyelidikan Ilmiah dan Sederhana*. Yogyakarta : Kreasi Wacana.
4. Soemarwotto. 1985. *Dasar Dasar Ekologi*. Jakarta : Gramedia.

- **SST203 CALCULUS II (3 Credits)**

Prerequisite: Calculus I

This course studies the concepts and theories of mathematics and calculus and explains the flow of the analysis.

Handbooks:

1. Purcell, E.L.. 1989. *Kalkulus dan Geometri Analitik (Terjemahan).* Erlangga, Jakarta.
2. Fajriyah, R. *Diktat Kalkulus II*. FMIPA UII, Yogyakarta.

- **SST204 STATISTICAL METHODS II (3 Credits)**

Prerequisite: Statistical Methods I

This course studies the concepts of probability theory and statistics, statistical analysis methods using R software and *Microsoft Excel* for inference statistics.

Handbooks:

1. Good, P.I. 2005. *Introduction to Statistics Through Resampling Methods and Microsoft Office Excel*. Wiley Interscience. John Wiley & Sons, Inc. Hoboken, New Jersey.
2. Rumsey Deborah. 2006. *Probability for Dummies*. Wiley Publishing, Inc. Indianapolis, Indiana.
3. Suhov, Y., dan Kelbert, M. 2005. *Probability and Statistics by Example*. Cambridge University.

- **SST205 INTRODUCTION TO PROBABILITY (2 CREDITS)**

Prerequisite: None

This course studies the concepts of probability theory and statistics and methods of statistical analysis.

Handbooks:

1. Ross, S. 1997. *Introduction to Probability Models 6th ed*. Academic Press, San Diego.
2. Hogg, R. V. and Tanis, E. A. 1993. *Probability and Statistical Inference 4th ed.* MacMillan, New York.
3. Hoffman-Jorgensen, J. 1994. *Probability with a View towards Statistics*. Chapman and Hall, New York.
4. Bain, LJ and Engelhart, M. 1992. *Introduction to Probability and Mathematical Statistics*. Duxbury Press.

- **SST206 EXPLORATORY DATA ANALYSIS (2 CREDITS)**

Prerequisite: None

This course studies the concept of exploratory data analysis and techniques in its research; and its calculations using SPSS and R software.

Handbook:

1. Tukey, J. W. 1997. *Exploratory Data Analysis*. Addison Wesley, Canada.
2. Kartiko, S. H. 1986. *Analisis Data Statistik*. Karunika, Jakarta.
3. Ott, R. L. 1993. *An Introduction to Statistical Methods and Data analysis 4th ed.* Duxbury Press, London.

4. Ericson, B. H dan T.A. Nosanchuk. 1983. *Memahami Data*. LP3ES, Jakarta.
5. Aunuddin. 1989. *Analisis Data*. PAU IPB, Bogor.

- **SST207 DATABASE (2 CREDITS)**

Prerequisite: Programming Algorithm
This course studies the concept of introduction to database, levels in database, store/retrieve data, ER data models, Hierarchy + Network data models, query/SQL /DDL, Query/SQL/DML, query/SQL/DCL, relational models, relational algebra, normalization, and database design.

Handbook:

1. Han. Jiawei, Micheline Kamber, Jian Pei. 2012. *Data Mining Concepts and Techniques*. Morgan Kaufman publisher, Elsevier.
2. Klemens, Ben. 2009. *Modelling with Data, Tools and Techniques for Scientific Computing*. Princenton University Press.
3. Tan, Pang-Ning, Steinbach, Michael., Kumar, Vipin. 2006. *Introduction to Data Mining*. Pearson Addison-Wesley.
4. Bain, LJ and Engelhart, M. 1992. *Introduction to Probability and Mathematical Statistics*. Duxbury Press.

- **SST208 EXPLORATORY DATA ANALYSIS PRACTICUM (1 Credit)**

Prerequisite: currently/have been taking Explorative Data Analysis
This course studies the concept of exploratory data analysis and techniques in its research, and its calculations using SPSS and R software.

Handbooks:

1. Tukey, J. W. 1997. *Exploratory Data Analysis*. Addison Wesley, Canada.
2. Ott, R. L. 1993. *An Introduction to Statistical Methods and Data analysis 4th ed.* Duxbury Press, London.
3. Gunardi 2003. *Modul Praktikum Analisis Data*. FMIPA UII, Yogyakarta.
4. Supandi, E.D. 2005. *Modul Praktikum Analisis Data*. FMIPA UII, Yogyakarta.

- **SST209 DATABASE PRACTICUM (1 credit)**

Prerequisite:currently taking/ have taken Database
This course studies the concept of designing, organizing, and collecting data, programming, and documenting programs. It also relates to documented program reuse with MySQL and HTML software.

Handbooks:

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THIRD SEMESTER SYLLABUS

- **SST301 MULTIVARIABLE CALCULUS (3 Credits)**

Prerequisite: Calculus II

This course studies the concepts of graphics, domains, partial derivatives, limit and continuity of two-variable functions, derivatives of two or more variables, integral functions of two variables, and application to the field of statistics.

Handbooks:

1. Purcell, E. J & D. Vanberg. 1999. *Terjemahan, Kalkulus dan Geometri Analitis, Jilid 1 dan 2*. Jakarta : Erlangga.
2. Spiegel. M. & Wrede R.C. 2002. *Theory and Problem of Advanced Calculus*. Schaum Outline Series. Mc Graw-Hill.
3. Purcell, E. J & D. Vanberg. 2003. *Terjemahan, Kalkulus , Jilid 2*. Jakarta : Erlangga.

- **SST302 INTRODUCTION TO MATHEMATICAL STATISTICS I (3 Credits)**

Prerequisite: Introduction to Probability

This course studies the concepts and theories of opportunity as well as elementary statistical methods.

Handbooks:

1. Bain, LJ and Engelhart, M. 1992. *Introduction to Probability and Mathematical Statistics*. Duxbury Press.
2. Hogg, R. V. and Craig, A.T. 1995. *Introduction to Mathematical Statistics 5th ed*. Prentice Hall, Englewood Cliffs.
3. Rice, J. 1995. *Mathematical Statistics and Data Analysis*. Duxbury Press, California.

- **SST303 OFFICIAL STATISTICS I (3 Credits)**

Prerequisite: Official Statistics I

This course studies the concept of modeling and explaining official statistical methods and partitioning the problems of state conditions by modeling official statistics.

Handbooks:

1. Buku Pedoman Pengumpulan dan Pengolahan Data Tanaman Pangan, Badan Pusat Statistik dan Departemen Pertanian, 2007.
2. Buku Pedoman Pengumpulan dan Pengolahan Data Tanaman Hortikultura, Badan Pusat Statistik dan Departemen Pertanian, 2007.
3. Buku Pedoman Pelaksanaan Kegiatan Statistik Perkebunan, Badan Pusat Statistik.
4. Buku Pedoman Pelaksanaan Kegiatan Kehutanan, Badan Pusat Statistik.
5. Buku Pedoman Pelaksanaan Kegiatan Perikanan, Badan Pusat Statistik.
6. Buku Pedoman Pelaksanaan Kegiaatan Statitistik Peternakan, Badan Pusat Statistik.

- **SST304 SAMPLING TECHNIQUE (3 Credits)**

Prerequisite: Statistical Methods II

This course studies the basic concepts of sampling techniques, sampling methods, simple random sampling, sampling error, stratification sampling, systematic sampling. Moreover, it relates to cluster sampling and sampling techniques for social, business, and industrial cases.

Handbooks:

1. Alreck, P.L. and Settle, R.B. 1995. *The Survey Research Handbook*. Irwin, Toronto.
2. Scheaffer, R.L., Mendenhall, W III, and Ott, R.L. 1996. *Elementary Survey Sampling 5th ed*. Duxbury Press, New York.
3. Cochran, W. 1991. *Teknik Penarikan Sampel Ed.3*, UI-Press, Jakarta.
4. Eriyanto. 2007. *Teknik Sampling Analisis Opini Publik* LKIS.

- **SST305 APPLIED REGRESSION ANALYSIS (2 Credits)**

Prerequisite: Statistical Method II

This course studies the concepts of simple linear regression and correlation, statistical inference in simple linear regression, and multiple regression analysis**.**

Handbooks:

1. Montgomery, D. C. & Peck, E.A. 1992. *Introduction to Linear Regression Analysis*. John Wiley & Sons, New York.
2. Myer, R.H. 1990. *Classical and Modern Regression with Applications*. PWS-KENT, Boston.
3. Dielman, Terry E. 2001. *Applied Regression Analysis for Bussiness and Economics*.
4. Mendenhall., W, and Sincich., T. 1996. *A Second Course in Statistics: Regression Analysis*.

- **SST306 MANAGEMENT INFORMATION SYSTEM (2 Credits)**

Prerequisite: Programming Algorithm

This course studies the concept of information systems and their development and application in the industrial world, security and control of information systems, e-business, and e-commerce, and implements object-oriented programming in making mobile-based applications.

Handbooks:

1. O'Brien J.A., and Marakas, G.M. 2011. *Management Information System, 9 th ed*. McGraw-Hill.
2. Armor, D. 2000. *The e-business (R) Evolution: Living and Working in a Interconnected World.* Upper Saddle River, Nj: Prentice Hall.
3. Fallestein, Craig, and Roon, W. 2000. *Exploring e-commerce, Global e-societies*. Upper Saddle River, Nj: Prentice Hall.
4. Bosse, R., and Sugumaran, V. 1999. *Application of Intelegence Agent technology for managerial database for advances in information system*. ACM Digital Library.
5. Christensen, C. 1997. *The Innovators Dillema When New Technology Cause Great Firms to fail*. Boston: Harvard business school Press.
6. David, M. 2013. *Building Websites with HTML5 to Work with Mobile Phones. Visualizing web*: Focal Press.

- **SST307 APPLIED REGRESSION ANALYSIS PRACTICUM (1 Credit)**

Prerequisite: currently/have taken Applied Regression Analysis

This course studies the concept of problem-solving in regression analysis using SPSS and R software.

Handbooks:

1. Draper, N.R. and Smith,H. 1982. *Applied Regresion Analysis 2nd ed.* John Wiley and Sons, New York.
2. Everitt, B. S. 1994. *A Handbook of Statistical Analysis Using S-PLUS*. Chapman and Hall, London.
3. Dielman, T. E. 2001. *Applied Regression Analysis for Bussiness and Economics*. Duxbury Press, New York.

- **SST308 MANAGEMENT INFORMATION SYSTEM PRACTICUM (1 Credit)**

Prerequisite: currently/have taken the Management Information System

This course studies form PHP concepts, MySQL, and website applications.

Handbooks:

1. O'Brien J.A., and Marakas, G.M. 2011. *Management Information System, 9 th ed*. McGraw-Hill.
2. Armor, D. 2000. *The e-business (R) Evolution: Living and Working in a Interconnected World.* Upper Saddle River, Nj: Prentice Hall.
3. Fallestein, Craig, and Roon, W. 2000. *Exploring e-commerce, Global e-societies*. Upper Saddle River, Nj: Prentice Hall.
4. Bosse, R., and Sugumaran, V. 1999. *Application of Intelegence Agent technology for managerial database for advances in information system*. ACM Digital Library.
5. Christensen, C. 1997. *The Innovators Dillema When New Technology cause Great Firms to fail*. Boston: Harvard business school Press.
6. David, M. 2013. *Building Websites with HTML5 to Work with Mobile Phones. Visualizing web*: Focal Press.

- **SST309 SIMULATION TECHNIQUES (3 Credits)**

Prerequisite: Programming Algorithm

This course studies the concept of queuing theory and composing queuing model programs using MATLAB software.

Handbooks:

1. Law. A and David. K. 1991. *Modelling and Analysis*. Mc Graw-Hill, USA.
2. Saur and Chandy. 1981. *Computer System Performance*. Prestice-Hall, USA.
3. Supriyono. 2006. *Diktat Teknik Simulasi*. FMIPA-UII.

- **SST310 FINANCIAL ANALYSIS (3 CREDITS)**

Prerequisite: None

This course studies the concepts of financial analysis, financial reports, investment analysis, and investment risk management.

Handbooks:

1. Wild, John & Subramanyam. 2008. *Analisis Laporan Keuangan*. Mc.Graw Hill Inc., New York.
2. Fahmi, Irham. 2013. *Pengantar Manajemen Keuangan*. Alfabeta, Bandung.
3. Harjito, Agus & Martono. 2008. *Manajemen Keuangan*. Ekonisia, Yogyakarta.

- **SST311 MANAGEMENT ACCOUNTING (2 CREDITS)**

Prerequisite: None

This course studies managerial accounting concepts, asset components, accounting equations and accounting records, accounting principles, financial reports, financial statement analysis, break-even analysis, and financial data research.

Handbooks:

1. Gray R. 1982. *Cost and Managerial Accounting*. Mc.Graw Hill Inc., New York.
2. Hermanson R.H., Edwards, J.D., & Solomon R.F. *Accounting Principles 3rd ed*.
3. Matz, A., Uzry, M.F., & Hammer L.H. 1984. *Cost Accounting-Planning and Control*. South-Western Publishing Co., Cincinnati.
4. Smith, J.L., R.M. Kcith & W.L. Stephens. *Accounting Principles*. Mc.Graw Hill.
5. Warsono, Sony., Darmawan, Arif., & Ridha, Arsyado. *Akuntansi Pengantar 1 Berbasis Matematika*.

- **SST312 HYDROLOGY AND CLIMATOLOGY (2 CREDITS)**

Prerequisite: None

This course studies the concepts and theories of hydrology and climatology and resolves problems using statistical techniques.

Handbooks:

1. Ralph J.C., et.al. 2001. *Climate Change Science*. Washington D.C.: National Academy Press.

FOURTH SEMESTER SYLLABUS

- **UNI601 ISLAM ULIL ALBAB (2 Credits)**

Prerequisite: None

This course aims to develop students' abilities to understand and reflect on the concept human of *ulil albab* and take lessons from Muslim scholars' thoughts, the exemplary figures of UII's founding figures, and from the development of Islamic culture.

Handbooks:

1. Tim Penyusun. 2016. *Pendidikan Agama Islam untuk Perguruan Tinggi*. Dirjen Pembelajaran dan Kemahasiswaan Kemenristekdikti RI.
2. Antonio, Syafii Muhammad. 2007. *Muhammad SAW: The Super Leader Super Manager*. Jakarta: ProLM Centre & Tazkia Multimedia.
3. Karim, M. Abdul. 2012. *Sejarah Pemikiran Peradaban Islam*. Bagaskara: Yogyakarta.
4. Universitas Islam Indonesia. 2015. *9 Windu Universitas Islam Indonesia*. Yogyakarta.

- **UNI604 CIVIC EDUCATION (2Credits)**

Prerequisite: None

This course aims to develop students' abilities as citizens in civic knowledge, civic skills, and civic dispositions. Civic knowledge is related to the content or what citizens should know. Civic skills are skills that citizens need to possess, including intellectual skills and participation skills. In contrast, civic dispositions are related to citizens' personal and public character to be maintained and improved.

Handbooks:

1. Tim Penyusun. 2016. *Pendidikan Kewarganegaraan untuk Perguruan Tinggi*. Dirjen Pembelajaran dan Kemahasiswaan Kemenristekdikti RI.

- **SST401 SUCCESS SKILL (1 Credit)**

Prerequisite: None

This course aims to enable students to perform academic support skills to succeed, such as making lecture notes, storing data, summarizing statistical methods and models, managing time, and financial management. It also enables students to create plans and strategies for encountering the campus environment and the statistical community. Moreover, it encourages students to make scientific descriptions as steps to increase self-ability and responsibility.

Handbooks:

1. Van Blerkom, D. 2011. *College study skills: Becoming a strategic learner (7th Ed.)*. Wadsworth Cengage Learning. ISBN: 9780495913511
2. Carter, C., Bishop, J., & Kravits, S. L. 2011. *Keys to Effective Learning: Study Skills & Habits for Success (6th ed.).* ISBN: 9780137007509

- **SST402 INTRODUCTION TO MATHEMATICAL STATISTICS II (3 CREDITS)**

Prerequisite: Introduction to Mathematical Statistics I

This course studies the concepts of opportunity theory and statistics, mastery of assessment problems, and hypothesis testing.

Handbooks:

1. Bain, LJ and Engelhart, M. 1992. *Introduction to Probability and Mathematical Statistics*. Duxbury Press.
2. Hogg, R. V. and Craig, A.T. 1995. *Introduction to Mathematical Statistics 5th ed*. Prentice Hall, Englewood Cliffs.
3. Rice, J. 1995. *Mathematical Statistics and Data Analysis*. Duxbury Press, California.

- **SST403 GEOGRAPHIC INFORMATION SYSTEM (3 CREDITS)**

Prerequisite: Database

This course studies the basic principles of GIS and the basic components of GIS both hardware, software and brainware, vector data systems and raster data, types of spatial data in geographic information systems in disaster management through spatial data analysis based on raster or vector (mapping, assessment, monitoring, management, prediction (forecasting)).

Handbooks:

1. Longley, P., Goodchild, M., Maguire, D., dan Rhind, D. 2005. *Geographic Information System and Science*. Chichester, John Wiley & Sons.

2. Chang, K. 2006. *Introduction to Geographic Information Systems*. Singapore, McGraw-Hill.
3. Faiz, S., dan Krichen, S. 2013. *Geographical Information Systems and Spatial Optimization*. Boca Raton, Taylor & Francis Group.
4. Kennedy, M. 2013. *Introducing Geographic Information Systems with ArcGIS*. New Jersey, John Wiley & Sons.
5. Zeiler, M. 1999. *Modelling Our World, California, Environmental System Research Institute*. Inc.
6. Budiyanto, Eko. 2016. *Sistem Informasi Geografis dengan Quantum GIS*. Penerbit Andi.

- **SST404 NONPARAMETRIC STATISTICS (3 CREDITS)**

Prerequisite: Statistical Method II

This course studies the basic concepts of nonparametric statistics, nonparametric tests, the goodness of fit tests, correlation analysis, and regression.

Handbooks:

1. Conover, W. J. 1988. *Practical Non Parametrik Statistics*. John Wiley and Sons Inc., New York.
2. Daniel , W. W. 1989. *Statistik Non Parametrik Terapan (Terjemahan)*. Gramedia, Jakarta.
3. Siegel, S. 1997. *Statistik Nonparametrik untuk Ilmu-ilmu Sosial (Terjemahan)*. Gramedia, Jakarta.
4. Mendenhall, W. and Sincich, T. 1984. *Statistics for Engineering and Computer Sciences*. Duxbury Press, New York.

- **SST405 OPERATIONS RESEARCH (2 Credits)**

Prerequisite: Introduction to Mathematical Statistics I

This course studies the basic concepts of operations research, linear programming and the solution methods, and the optimum solution of linear programming problems using several methods.

Handbooks:

1. Taha, H. A. 2007. *Operations Research: An Introduction (8 th ed.)*. Upper Saddle River,NJ: Pretince-Hall.

2. Hillier, F. S., & Lieberman, G. J. 2001. *Intoduction To Operation Research (7 th ed.)*. New York: McGraw-Hill.

- **SST406 operations research PRACTICUM (1 Credit)**

Prerequisite: Currently/have taken Operations Research

This course studies the completion of linear programming using Microsoft Excel and R software.

Handbooks:

1. Taha, H. A. 2011. *Operations Research: An Introduction (9 th ed.)*. Upper Saddle River,NJ: Pretince-Hall.
2. Sallan M. Jose, Lordan Oriol, Vicenc Fernandez. 2015. *Modeling and Solving Linear Programming with R*. OmniaScience.

- **SST407 REMOTE SENSING (3 Credits)**

Prerequisite: Disaster Management

This course studies the concept of spatial/spatial data analysis through an interpretation of remote sensing images and digitization as a result of satellite recording and aerial photographs, the principles of remote sensing, acquisition, editing, analysis and presentation of spatial data, integration between spatial data and remote sensing applications in disaster management.

Handbooks:

1. Alfred Stein, Freek van der meer, Ben Gorte. *Spatial Statistics for Remote Sensing.*
2. Dede Sugandi. 1999. *Dasar-dasar Penginderaan Jauh*. Geografi FPIPS. IKIP Bandung.
3. Howard JA. 1996. *Penginderaan Jauh Untuk Sumberdaya Hutan*.
4. Liliesand dan Kiefer. 1990. *Penginderaan Jauh dan Interpretasi Citra.* Gadjah Mada University Press.
5. Sabin. 1978. *Remote Sensing and Interpretation*. Mc Graw Hill. New York.
6. Sutanto. 1999. *Penginderaan Jauh.* Gadjah Mada University Press.

- **SST408 BUSINESS DECISION ANALYSIS (3 CREDITS)**

Prerequisite: Statistical Method II

This course studies business concepts, the relationship between business problems and statistics, and its analysis to obtain the right business decisions.

Handbooks:

1. Siswanto Sutojo. 1996. *Studi Kelayakan Proyek, Teori dan Praktik.* Pustaka Binawan Pressindo.
2. Suad Hasnan dan Suwarsono. 1997. *Studi Kelayakan Proyek, edisi 3*. UPP AMP YKPN.
3. Masykur Wiratmo. 1996. *Pengantar Kewiraswastaan, Edisi I*. BPFE.
4. Philip Kotler. 1994. *Manajemen Pemasaran, Buku I*. Salemba Empat.
5. James F. Engel. 1994. *Perilaku Konsumen, Jilid 1, Edisi 6.* Binarupa Aksara.
6. Bambang Riyanto. 1995. *Dasar-dasar pembelanjaan, edisi 4*. BFFE.
7. Slamet Munawir. 1998. *Analisa Laporan Keuangan*. Liberty, Yogyakarta.

- **SST409 INFORMATION TECHNOLOGY AND BIG DATA (3 CREDITS)**

Prerequisite: Database

This course studies preprocessing data and uses at least one open-source to process data using AI (Artificial Intelligence).

Handbooks:

1. Hastie, T., Tibshirani, R., and Friedmann, J. 2009. *The Elements of Statistical Learning: Data Mining, Inference, Prediction*. Springer.
2. Chen, et al. 2014. *Big Data Related Technologies, Challenges and Future Prospects*. Springer.
3. Milton, M. 2009. *Head First Data Analysis*. O'Reilly.

- **SST410 LIFE INSURANCE I (3 CREDITS)**

Prerequisite: Introduction to Probability

This course studies the concept of opportunity in life insurance and mastery of several statistical methodologies (methods and models) in solving problems in the life insurance field.

Handbooks:

1. Sembiring, R.K. 1986. *Buku Materi Pokok: Asuransi 1*. Jakarta: Penerbit Karunika, Universitas Terbuka.
2. Bowers, N.L., dkk. 1997. *Actuarial Mathematics*. The Society of Actuaries.

- **SST411 WORK MEASUREMENT METHOD (3 CREDITS)**

Prerequisite: None
This course studies experimental design concepts and statistical techniques in data computation.

Handbooks:

1. Barner, R.M. 1988. *Motion and Time Study Design & Measurement of Work (7 th ed.)*. John Wiley & Sons: New York.
2. Niebel., Benjamin. 2003. *Methods, Standards, And Work Design (11 th ed.)*. McGraw-Hill.
3. Cochran, W. 1991.*Teknik Penarikan Sampel Ed.3*. UI-Press: Jakarta.

- **SST412 INTRODUCTION TO FINANCIAL STATISTICS (3 CREDITS)**

Prerequisite: Introduction to Probability
This course studies financial concepts such as securities prices, interest, annuities, and volatility.

Handbook:

1. Hull, C. John. 2006. *Option, Futures, and Other Derivatives 6th edition*. Pearson Education Inc, New Jersey, USA.
2. Kellison, Stephen G.. 2009. *Theory of Interest 3rd*. McGraw-Hill, Singapore.
3. Drake, P.P., and Fabozzi, F.J. 2010. *The Basic of Finance: An Introduction to Financial Markets, Business Finance, and Portfolio Management*. Wiley, US.

- **SST413 COST ACCOUNTING (2 CREDITS)**

Prerequisite: None
This course studies accounting theories, concepts, processes, techniques, and mechanisms to develop students' skills in applying statistical concepts in cost accounting.

Handbooks:

1. Matz, A., Milton, F. U., and Hammer, L. H. 1993. *Akuntansi Biaya, Perencanaan dan Pengendalian (Terjemahan)edisi 9 Jilid 1*. Erlangga, Jakarta.
2. Thacker, R. J. 1979. *Accounting Principles*. Prentice Hall, New Jersey.
3. Haryono, Y. 1987. *Dasar-dasar Akuntansi*. YKPN, Yogyakarta.

4. Mas'ud Machfoedz. 1999. *Akuntansi Biaya-Ihtisar Teori dan Soal Jawab, Edisi Revisi*. BPFE, Yogyakarta.

5. Adolph Marz dan Milton F. Usry. 1990. *Cost Accounting-Planning and Control, Seven Edition*. South Western Publishing Co, Cincinnati, Ohio.

- **SST414 INTRODUCTION TO ECONOMIC SCIENCE (2 CREDITS)**

Prerequisite: None

This course studies economic concepts and theories as well as solving problems with statistical techniques.

Handbooks:

1. Lipsey, R.G. 1981. *Economics*. Harper, London.

2. Rosyidi, S. 1987. *Pengantar Teori Ekonom.* Ur Printing, Surabaya.

3. Partadiredja, A. 1994. *Pengantar Ekonomika*. BPFE, Yogyakarta.

- **SST415 INTRODUCTION TO MANAGEMENT (2 CREDITS)**

Prerequisite: None

This course studies management basic concepts. Besides, it encourages students to solve management problems using statistical methodologies.

Handbooks:

1. Handoko, T. H. 1996. *Manajemen, edisi 2*. BPFE, Yogyakarta.

2. Reksohadirpojo, S. 1992. *Dasar-dasar Manajemen*. BPFE, Yogyakarta.

3. Manulang, M. *Dasar-dasar Manajemen*. Ghalia Indonesia, Jakarta.

4. Wahyosumidjo. 1984. *Kepemimpinan dan Motivasi*. Ghalia Indonesia, Jakarta.

5. Koontz, H., O'Donnel, C., and Heinz., W. 1995. *Manajemen*. Erlangga, Jakarta.

6. Drucker, P F. 1982. *Pengantar Manajemen*. Binaman Pressindo-LPPM, Jakarta.

7. Gibson, J. L., Donelly dan Ivanevich. 1996. *Manajemen*. Erlangga, Jakarta.

8. Schermerhon., J. Jr. 1997. *Manajemen*. Andi, Yogyakarta.

FIFTH SEMESTER SYLLABUS

- **UNI605 ENTREPRENEURSHIP (2 Credits)**

Prerequisite: None

This course aims to develop a spirit of independence, struggle, and entrepreneurship for students. It is necessary because the spirit will shape entrepreneurial characters such as creative and innovative, independent, and persistent. Besides, integrity and the spirit of seizing opportunity are essential for students to be both entrepreneurs and professionals.

Handbooks:

1. Ducker, P. 2006. *Innovation and Entrepreneurship: Practice and principles*. New York: Harper and Row.
2. Johnson. D.K. 2013. *The Entrepreneur Mind: 100 Essential Beliefs, Characteristics, and Habits of Elite Entrepreneurs*. New York, Johnson Media.Inc.

- **UNI606 ENGLISH LANGUAGE II (1 Credit)**

Prerequisite : English Language I

This course aims to develop students' primary skills to communicate in English in their respective fields of knowledge. The skills include explaining the contents of textbooks in English, explaining paragraphs in English regarding topics in their field of study, and actively speaking to describe their profiles using English in effective and impressive ways.

Handbooks:

1. Azar, B.S. 1992. *Fundamental of English Grammar 2nd ed*. Prentice Hall, Englewood, dan Introduction to Statistics by Ronald E. Walpole, 1974.

- **UNI607 INDONESIAN LANGUAGE(2 Credits)**

Prerequisite: None

This course aims to develop students' abilities in composing writing in a coherent and structured academic context. Besides, it is to advance students' abilities in meeting the General Guidelines for Indonesian Spelling rules, scientific writing, and anti-plagiarism.

Handbooks:

1. Direktorat Jendral Pembelajaran dan Kemahasiswaan. 2016. *Buku Ajar Mata Kuliah Wajib Umum Bahasa Indonesia : Ekspresi Diri dan Akademik*.

Direktorat Jendral Pembelajaran dan Kemahasiswaan Kementerian RIset, Teknologi dan Pendidikan Tinggi.

- **SST501 RESEARCH METHODS (2Credits)**

Perequisite : Statistical Method II

This course aims to develop students' abilities in finding studies related to research in statistics. Furthermore, it is also to increase students' abilities to solve research problems using statistical methods.

Handbooks:

1. Daniel WW. 1999. *Biostatistics: A Foundation for Analysis in the Health Sciences. 7thEd*. John Wiley & Son. United States of America
2. Myatt. GJ. 2007. *Making Sense of Data, A practical Guide to Exploratory Data Analysis and Data Mining*. Wiley.
3. Montgomery DC. 2001. *Design and Analysis Experimental. Fifth Edition*. John Wiley and Son.

- **SST502 STATISTICAL QUALITY CONTROL (3 CREDITS)**

Prerequisite: Statistical Method II

This course studies statistical methodologies (methods and models) used in completing several fields. Students can analyze several alternative solutions available in statistics to solve problems and present analytical conclusions for making appropriate decisions.

Handbooks:

1. Montgomery, D.C. 1991. *Statistical Process Control in Manufacturing*. Marcell Dekker, New York.
2. Montgomery, D.C. 1996. *Pengantar Pengendalian Kualitas Statistik (terjemahan)*. GMU Press, Yogyakarta.
3. Grant, E. L. and Leavenworth, R. 1988. *Statistical Quality Control 6th ed.* McGraw Hill, New York.
4. Ariani, Dorothea Wahyu. 2004. *Pengendalian Kualitas Statistik : pendekatan kuantitatif dalam Manajemen*. Yogyakarta.

- **SST503 DESIGN OF EXPERIMENT (3 CREDITS)**

Prerequisite: Statistical Method II
This course studies the concept of experimentation using one-factor and two-factor experimental methods.

Handbooks:
1. Montgomery, Douglas C. 2001. *Design and Analysis of Experiments Fifth Edition*. John Wiley and Sons, New York.
2. Mattjik, Ahmad Ansori dan Sumertajaya, I Made. 2006. *Perancangan Percobaan dengan Aplikasi SAS dan Minitab Jilid I*. IPB Press, Bogor.

- **SST504 CATEGORIC DATA ANALYSIS (2 CREDITS)**

Prerequisite: Statistical Method II
This course studies the concept of distribution, contingency table testing, and some regression analysis.

Handbooks:
1. Alan Agresti. 2007. *An Introduction to Categorical Data Analysis*. Second Edition, John Wiley & Son.
2. Alan Agresti. 2002. *Categorical Data Analysis*. Second Edition, John Wiley & Son.
3. Agung. 2001. *Statistika Analisis Hubungan Kausal Berdasarkan Data Kategorik*. Raja Grafindo Persada, Jakarta.

- **SST505 TIME SERIES ANALYSIS (2 CREDITS)**

Prerequisite: Applied Regression Analysis
This course studies the concept of time series data modeling.

Handbooks:
1. Hyndman, Rob J., et al. 2008. *Forecasting with Exponential Smoothing*. Springer: Germany.
2. Montgomery, Douglas C., et al. 2015. *Introduction to Time Series Analysis and Forecasting 2nd Ed*. Wiley: Canada.
3. Makridakis. 2008. *Forecasting: method and application 3rd Ed.* Wiley.

- **SST506 – ENGLISH LANGUAGE PRACTICUM II (1 Credit)**

Prerequisite: Currently/have taken English Language I

This course aims to develop students' primary skills to communicate in English in their respective fields of knowledge. The skills include explaining the contents of textbooks in English, explaining paragraphs in English regarding topics in their field of study, and actively speaking to describe their profiles using English in effective and impressive ways.

Handbooks:

1. Azar, B.S. 1992. *Fundamental of English Grammar 2nd ed*. Prentice Hall, Englewood, dan Introduction to Statistics by Ronald E. Walpole, 1974.

- **SST507CATEGORIC DATA ANALYSIS PRACTICUM (1 Credit)**

Prerequisite: currently / have taken Categorical Data Analysis

This course studies concepts and creates categorical data analysis programs using SPSS and R software.

Handbooks:

1. Alan Agresti. 2007. *An Introduction to Categorical Data Analysis*. Second Edition, John Wiley & Son.
2. Alan Agresti. 2002. *Categorical Data Analysis*. Second Edition, John Wiley & Son.
3. Agung. 2001. *Statistika Analisis Hubungan Kausal Berdasarkan Data Kategorik*. Raja Grafindo Persada, Jakarta.

- **SST508 TIME SERIES ANALYSIS PRACTICUM (1 Credit)**

Prerequisite: Currently/have taken Time Series Analysis

This course studies time-series data modeling using Microsoft Excel and R software.

Handbooks:

1. Montgomery, Douglas C., et al. 2015. *Introduction to Time Series Analysis and Forecasting 2nd Ed*. Wiley: Canada.
2. Makridakis. 2008. *Forecasting: method and application 3rd Ed.* Wiley.
3. Modul Praktikum Analisis Runtun Waktu.

- **SST509 GEO STATISTICS I (3 CREDITS)**

Prerequisite: Geographical Information System

This course studies the concept of Spatial Data, spatial correlation, spatial interpolation, spatial classification, and Spatial Autoregressive Model (SAR). Those methods are applicable in daily cases related to economic, social, industrial, and other things.

Handbooks:

1. Brian D. Ripley. 1952. *Spatial Statistics*. John Wiley & Sons.
2. Anselin L. 2009. *Spatial Regression*. Fotheringham AS, PA Rogerson, editor, Handbook of Spatial Analysis. London: Sage Publications.
3. Baltagi BH. 2005. *Econometrics Analysis of Panel Data. Ed ke-3*. England : John Wiley and Sons, LTD.
4. Elhorst JP. 2010. *Spatial Panel Data Models*. Fischer MM, A Getis, editor, Handbook of Applied Spatial Analysis. New York : Springer.
5. Fotheringham A.S., Brunsdon C., Chartlon M. 2002. *Geographically Weighted Regression, the analysis of spatially varying relationships*. John Wiley and Sons, LTD.
6. Fotheringham AS, Rogerson PA. 2009. *Spatial Analysis*. London: Sage Publications, Inc.
7. Lee LF, Yu J. 2009. *Some recent developments in spatial panel data models. Regional Science and Urban Economics*: REGEC-02729; No of Pages 17.
8. Oliver Schabenberger, Carol A. Gotway. 2005. *Statistical methods for spatial data analysis*. Chapman & Hall/CRC.
9. Margaret Armstrong. 1998. *Basic Linear Geostatistics*. Springer-Verlag Berlin Heidelberg New York.

- **SST510 ECONOMETRICS FOR BUSINESS (3 CREDITS)**

Prerequisite: Applied Regression Analysis

This course studies the basic concepts of econometrics and the stages of econometric modeling, and the use of statistical methods to solve problems in the economic, business, and social fields.

Handbooks:

1. Gujarati, D. 2003. *Basic Econometrics Fourth Edition*. McGraw Hill, New York.
2. Heij, Cristian et.al. 2004. *Econometric Methods with Application in Business and Economics*. Oxford University Press, UK.

- **SST511 BUSINESS INTELLEGENCE AND MACHINE LEARNING (3 CREDITS)**

Prerequisite: None

This course studies statistical concepts for business intelligence. Students are expected to be able to do computer programming for business intelligence and machine learning.

Handbooks:

1. Trevor Hastie, Robert Tibshirani, Jerome Friedman. 2001. *The Elements of Statistical Learning*, Available at http://www-stat.stanford.edu/tibs/ElemStatLearn/.
2. Chris Bishop. 2006. *Pattern Recognition and Machine Learning*.

- **SST512 LIFE INSURANCE II (3 CREDITS)**

Prerequisite: Life Insurance I

This course studies the concept of opportunity in life insurance and mastery of several statistical methodologies (methods and models) in solving problems in the field of life insurance.

Handbooks:

1. Sembiring, R.K. 1986. *Buku Materi Pokok: Asuransi 1*. Jakarta: Penerbit Karunika, Universitas Terbuka.
2. Bowers, N.L., dkk. 1997. *Actuarial Mathematics*. The Society of Actuaries.

- **SST513 PRODUCTION PLANNING AND CONTROL (3 CREDITS)**

Prerequisite: Statistical Method II

This course studies the concepts of manufacturing systems and production systems, aggregated and aggregated inventory and planning, and Material Requirement Planning (MPS).

Handbooks:

1. Bedwarth, D. D. et al. 1987. *Integral Production Control System*. John Wiley and Sons, New York.

2. Narasimhan, S. L., McLeavy, D. W. and Billington, P. J. 1995. *Production, Planning and Inventory Control*. Prentice Hall, New Jersey.

3. Heizer Jay, Render Barry. 2011. *Operation Management, Edisi kesepuluh*. Pretice Hall, New Jersey.

- **SST514 ADVANCED OPERATIONS RESEARCH (2 CREDITS)**

Prerequisite: Operations Research

This course studies the concepts of game theory, queuing theory, and obtaining optimum solutions using statistical techniques.

Handbooks:

1. Taha, H. A. 2007. *Operations Research: An Introduction (8 th ed.)*. Upper Saddle River,NJ: Pretince-Hall.

2. Taylor, B. W. 2007. *Introduction to Management Science (9 th ed.)*. Upper Saddle River,NJ: Prentice Hall.

3. Wiston, W. L., & Goldberg, J.B. 2004. *Operation Research: Application And Algorithm (4 th ed.)*. Belmont, CA:Thomson/Brooks/Cole.

- **SST515 ANALYSIS OF COVARIANT VARIANTS (2 CREDITS)**

Prerequisite: Statistical Method II

This course studies the concepts of several statistical methodologies related to variance and covariance, such as one-way anova, two-way anova, and multidirectional anova.

Handbooks:

1. Montgomery. 2001. *Design and Analysis of Experiments 5-th*. John Willey.

2. Dean A, dan Voss d. 1999. *Design and Analysis of Experiment.* Springer.

- **SST516 PRODUCTION SYSTEM (3 CREDITS)**

Prerequisite: Production Planning and Control

This course studies the concepts of production system concepts and project planning.

Handbooks:

1. Elsayed A. Elsayed, Thomas O. Bouncher. 1994. *Analysis and Control of Production Systems, Edisi kedua*. Prentice Hall, New Jersey.

2. Heizer Jay, Render Barry. 2011. *Operation Management, Edisi kesepuluh*. Pretice Hall, New Jersey.

3. Buffa Elwood S., Sarin Rakesh K. 1996. *Manajemen Operasi & Produksi Modern, Edisi kedelapan*. Bina Rupa Aksara, Jakarta.

SIXTH SEMESTER SYLLABUS

- **UNI602 *ISLAM RAHMATAN LIL ALAMIN* (3 CREDITS)**

Prerequisite: None

This course aims to develop students' abilities to integrate Islamic values and formulate personal contributions in the science field they are engaged in for Islamic civilization improvement.

Handbooks:

1. Tim Penyusun. 2016. *Pendidikan Agama Islam untuk Perguruan Tinggi.* Dirjen Pembelajaran dan Kemahasiswaan Kemenristekdikti RI.

2. Fazlur Rahman. 1985. *Islam dan Modernitas, Tentang Tranformasi Intelektual*.

3. Fazlur Rahman. *Islam. terj. Ahsin Muhammad*. Pustaka Bandung.

4. Nurchalish Madjid. *Islam Doktrin dan Peradaban Quraish Shihab, membumikan Al-Quran.*

- **SST601 INTERNSHIP (2 CREDITS)**

Prerequisite: Credits > 90

This course aims to apply and compare theories and methodologies in lectures with activities in companies or institutions outlined in scientific studies.

Handbooks:

1. Jasfi, E. 1987. *Management Project*. Erlangga: Jakarta.

2. Priyono. 1992. *Tata Laksana Proyek*. Andi Offset: Yogyakarta.

- **SST602 APPLIED MULTIVARIATE STATISTICS (2 CREDITS)**

Prerequisite: Introduction to Mathematical Statistics I

This course studies the concept of methods in applied multivariate statistics and can solve statistical problems and data analysis using applied multivariate statistics.

Handbooks:

1. Johnson, R.A., and Wichern, D.W. 1992. *Applied Multivariate Statistical Analysis (3nd ed)*, New Jersey : Prentice Hall.
2. Hair, J.F, Anderson, R.E., Tatham, R.L., and Black, W.G. 1995. *Multivariate Data Analysis with Reading(4 th ed)*. New Jersey : Prentice Hall.

- **SST603 STATISTICAL CONSULTING (3 CREDITS)**

Prerequisite: Statistical Method II

This course studies the concept of applying statistical techniques and methods in a case study.

Handbooks:

1. It takes from various sources according to each student's needs related to types of analysis.

- **SST604 INTRODUCTION TO STOCHASTIC PROCESSES (3 CREDITS)**

Prerequisite: Introduction to Probability

This course studies the concepts of opportunity theory, statistics, and mastery of several statistical methodologies (methods and models) to solve problems in several fields. It also digs up students' ability to provide several alternative solutions in solving problems and draw conclusions appropriately based on analysis results.

Handbooks:

1. Ross, M. Sheldon. 2014. *Introduction to Probability Models, 11 th Edition*. Oxford: Academic Press.
2. Taylor, H.M, and Karlin, S. 1998. *An Introduction to Stochastic Modeling, 3 rd Edition*. USA: Academic Press.
3. Kallenberg, L.C.M., and Spieksma, F.M. *Stochastic Modelling: Performance and Control*. Universiteit Leiden.

- **SST605 INTRODUCTION TO DATA MINING (3 CREDITS)**

Prerequisite: Database

This course studies the definition and background of data mining, the position and role of statistics in data mining, R and Rosetta's software programs and

packages in data mining implementation, the stages in data mining, the main techniques in data mining, theory and clustering techniques, classification, association rules, regression and rough set and their presentation in intelligible descriptions.

Handbooks:

1. Han. Jiawei, Micheline Kamber, Jian Pei. 2012. *Data Mining Concepts and Techniques*. Morgan Kaufman publisher, Elsevier.
2. Klemens, Ben. 2009. *Modelling with Data, Tools and Techniques for Scientific Computing*, Princenton University Press.
3. Tan, Pang-Ning, Steinbach, Michael., Kumar, Vipin. 2006. *Introduction to Data Mining*. Pearson Addison-Wesley.

- **SST606 COMPUTATIONAL STATISTICS (2 CREDITS)**

Prerequisite: Programming Algorithm
This course studies the concept of data analysis based on computational statistics.

Handbooks:
-

- **SST607 APPLIED MULTIVARIATE STATISTICS PRACTICUM (1 Credit)**

Prerequisite: currently taking/have taken Applied Multivariate Statistics
This course studies the concept of statistical problem-solving and analyzing data using applied multivariate statistics using R software.

Handbooks:

1. Brian, E., and Tosrten, H. 2011. *An Introduction to Applied Multivariate Analysis with R*. Springer.
2. Daniel, Z. 2015. *Applied Multivariate Statistics with R*. Springer.

- **SST608 COMPUTATIONAL STATISTICS PRACTICUM (1 Credit)**

Prerequisite: Currently/have taken Computational Statistics
This course studies the concept of operating R software for elementary and advanced programming.

Handbooks:

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- **SST609 GEO STATISTICS II (3 CREDITS)**

  Prerequisite: Geographical Information System
  This course studies the concept of the Spatial Error Model (SEM), the Generalized Spatial Model (GSM), Geographically Weighted Regression (GWR), and the application of various models on the GIS Web, where the methods are applicable in daily cases related to economic, social, industrial, and other things.

  Handbooks:

1. Brian D. Ripley. 1952. *Spatial Statistics*. John Wiley & Sons.
2. Anselin L. 2009. *Spatial Regression*. Fotheringham AS, PA Rogerson, editor, Handbook of Spatial Analysis. London: Sage Publications.
3. Baltagi BH. 2005. *Econometrics Analysis of Panel Data. Ed ke-3*. England : John Wiley and Sons, LTD.
4. Elhorst JP. 2010. *Spatial Panel Data Models*. Fischer MM, A Getis, editor, Handbook of Applied Spatial Analysis. New York : Springer.
5. Fotheringham A.S., Brunsdon C., Chartlon M. 2002. *Geographically Weighted Regression, the analysis of spatially varying relationships*. John Wiley and Sons, LTD.
6. Fotheringham AS, Rogerson PA. 2009. *Spatial Analysis*. London: Sage Publications, Inc.
7. Lee LF, Yu J. 2009. *Some recent developments in spatial panel data models. Regional Science and Urban Economics*: REGEC-02729; No of Pages 17.
8. Oliver Schabenberger, Carol A. Gotway. 2005. *Statistical methods for spatial data analysis*. Chapman & Hall/CRC.
9. Margaret Armstrong. 1998. *Basic Linear Geostatistics*. Springer-Verlag Berlin Heidelberg New York.

- **SST610 RESEARCH AND MARKETING STRATEGY (3 CREDITS)**

  Prerequisite: Statistical Method II
  This course studies the study concept of research and marketing strategies related to statistical problems and their solutions using statistical methods.

Handbooks:

1. Crask, M, dan Fox, Richard J. 1995. *Marketing Research, Prinsiples & Applications*. Prentice Hall, New Jersey.
2. Aaker, David A. 1998. *Marketing Research,6th ed*. John Wiley & Son, Inc.
3. Kotler, Phillip. 2006. *Marketing Management, Twelfth ed*. Pearson Education, Inc.
4. Istijanto. 2005. *Apikasi Praktis Riset Pemasaran.* Gramedia, Jakarta.
5. Ranfkuti, Freddy. 2002. *Riset Pemasaran*. Gramedia Pustaka Utama, Jakarta.
6. Simamora, Bilson. 2004. *Riset Pemasaran*. Gramedia Pustaka Utama, Jakarta.

- **SST611 DATA VISUALIZATION (3 CREDITS)**

Prerequisite: Exploratory Data Analysis

This course studies the concept of data visualization using Tableau software.

Handbooks:

1. Cybertrend. 2016. *Tableau Classroom Training Dekstop Fundamental and Advanced*. Tableau Silver Partner.
2. Chen, C., Hardle, W., and Unwin, A. *Handbook of Data Visualization*. Springer.

- **SST612GENERAL INSURANCE (3 CREDITS)**

Prerequisite: Introduction to Probability

This course studies the basic concepts of risk modeling and the fundamental problems of general insurance.

Handbooks:

1. Klugman, S.A., Panjr, H.H., and Wilmot, G.E. 2004. *Loss Models: From Data to Decision, 2nd Edition*. John Wiley & Sons, Inc.
2. Tse, Y. 2009. *Nonlife Actuarial Models: Theory, Methods, and Evaluation*. Cambridge University Press.
3. Wuthrich & Merz. 2008. *Stochastic Claims Reserving Methods in Insurance*. John Wiley & Sons, Ltd.

- **SST613 INTEGRATED QUALITY MANAGEMENT (3 CREDITS)**

Prerequisite: Statistical Quality Control

This course studies the concept of integrated quality management *(MKT),* forming customer focus, total employee engagement and empowerment, leadership, team building and teamwork, decision making and problem-solving, benchmarking, and continuous improvement and just in time. It also relates to the basic concept of six sigma, six sigma and define, measure, improve, and control.

Handbook:

1. Goetsch, D., L., and Davis, S., B. 1997. *Introduction To Total Quality : Quality Management for Production, Processing and Services, Second Edition*. Prentice- Hall International Inc, New Jersey.
2. Gaspersz, V. 2002. *Pedoman Implementasi Program SIX SIGMA*. Gramedia, Jakarta.

- **SST614 PROJECT MANAGEMENT (3 CREDITS)**

Prerequisite: None

This course studies the concepts, techniques, and evaluation of the organization's management, planning, and project scheduling.

Handbooks:

1. Soeharto, I. 1997. *Manajemen Proyek, dari Konseptul sampai Operasional.* Penerbit Erlangga, Jakarta.
2. Kertzner. 1989. P*roject Management, A System Approach to Planning, Scheduling and Controlling*. Van Nostrand Reinhold.
3. Ahuja, H.N. 1984. *Project Management, Techniques in Planning and Controlling Construction Project*. John Wiley and Sons Inc.

- **SST615 INTRODUCTION TO LIFE DATA ANALYSIS (3 CREDITS)**

Prerequisite: Statistical Method II

This course studies the concepts of probability theory and statistics, mathematics, calculus, elementary linear algebra, methods of statistical analysis, and elementary computer programming, mastery of several statistical methodologies (methods and models) for use in solving problems in several fields. Besides, it relates to the ability to conduct experimental design, data collection and generation (in the form of surveys, experiments, or simulations), data organizing, data analysis using statistical techniques, and

drawing valid conclusions by utilizing at least one statistical software. Moreover, it studies the ability to solve estimation problems, testing hypotheses, predictions, and forecasts in several fields, using data and several statistical methodologies (methods and models) and presenting them in intelligible descriptions.

Handbooks:

1. Lawless, J. F. 2003. *Statistical models and methods for lifetime data (2nd ed.)*.
2. Miller, R. G. 1981. *Survival analysis*. New York: John Wiley & Sons.
3. Therneau, T. M. & Grambsch, P. 2000. *Modeling survival data: extending the Cox model*. New York: Springer-Verlag.
4. Lee, E. T. & Wang, J. W. 2003. *Statistical Methods for Survival Data Analysis (3rd ed)*. John Wiley & Sons.

- **SST616 ENGINEERING ECONOMICS (3 CREDITS)**

Prerequisite: Introduction to Probability

This course studies the concept of experimental design, data collection, and documenting experimental design using methods in engineering economics.

Handbooks:

1. Dadan Kurniawan. *Prinsip-prinsip Ekonomi Teknik*. Penerbit Rosda Jaya Putra, Jakarta.
2. E P. De Garmo. *Ekonomi Teknik*. Penerbit Prenhallindo, Jakarta.
3. Iman Suharto. *Manajemen Proyek*. Penerbit Erlangga.

- **SST617 FACILITY LAYOUT PLANNING (3 CREDITS)**

Prerequisite: None

This course studies the concept of experimental design, data collection, and documenting experimental design related to facility layout planning.

Handbooks:

1. Apple, J., M. 1977. *Plant Layout and Material Handling*. John Willey & Sons, New York.
2. Francis ,R.,L., White, J.,A. 1974. F*acility Layout and Location : Analytical Approach*. Prentice Hall, Englewood Cliffs, New Jersey.

3. Thompkins , J., A., White, JA. 1994. *Facility Planning*. John Willey & Sons, New York.

SEVENTH SEMESTER SYLLABUS

- **UNI608 COMMUNITY SERVICE (2 CREDITS)**

Prerequisites: Credits> 100, CGPA> 2.25

This course is a form of integration of the learning process through community service activities. Through this course, students learn, preach, and work in community service and empowerment activities. The implementation of Community Service *(KKN)* includes all *Catur Dharma* components of UII (education and learning, research, community service, and Islamic preaching) carried out in groups and interdisciplinary.

Handbooks:

1. Tim Penyusun. *Pedoman Penyelenggaraan Kuliah Kerja Nyata*. Pusat KKN Direktorat Penelitian dan Pengabdian Masyarakat Universitas Islam Indonesia, Tidak Diterbitkan.

- **SST701 FINAL PROJECT/ THESIS *(TA)* (6 CREDITS)**

Prerequisite: Credits > 110, Research Methods

The course objective is to develop students' abilities in assessing the implications of developing or implementing science and technology. It requires students to pay attention and apply humanity values according to their expertise based on rules and procedures. Besides, it teaches students to draw up a scientific description of the implication study results in a thesis or final project report, then upload it on the college website.

Handbooks:

1. Final Project/Thesis Guidelines for Statistics Study Program, Faculty of Mathematics and Natural Science, Universitas Islam Indonesia.

- **SST702 COLOKIUM (1 CREDIT)**

Prerequisite: Credits > 90

This course has the main objective of measuring students' ability to understand a comprehensive range of basic statistical concepts and methods in the Statistical Methods I, Statistics Method II, Introduction to Probability, Introduction to Mathematical Statistics I, and Introduction to Mathematical Statistics II.

Handbooks:

2. Walpole, Ronald E. dan Myers, Raymond H. 2009. *Probability and Statistics for Engineers and Scientists, 9th Edition.* Virginia Polytechnic Institute.
3. Bain, Lee J. and Engelhardt, Max. 2000. *Introduction to Probability and Mathematical Statistics, Second Edition*. Wiley.

- **SST703 INTELLIGENT DATA (2 CREDITS)**

Prerequisite: None

This course aims for students to master open-source R software and run intelligent computer programming for data analysis.

Handbooks:

1. N. Matloff and N.S. Matloff. 2011. *The Art of R Programming: A Tour of Statistical Software Design*. No Starch Press.
2. G. James, D. Witten, T. Hastie, and R. Tibshirani. 2014. *An Introduction to Statistical Learning: with Applications in R*. Springer Texts in Statistics. Springer New York.

- **SST704 INTRODUCTION TO RELIABILITY MODEL (3 CREDITS)**

Prerequisite: Introduction to Mathematical Statistics I

This course studies the concept of reliability. It explains methods for solving reliability problems and performing reliability modeling.

Handbooks:

1. Elsayed, E. A. 1996. *Reliabililty Engineering*. Addison Wesley Longman, Inc.
2. Sunha, K. 1980. *Reliability Estimation and Life testing*. Wiley Eastern Limited, New Delhi.

- **SST705 RESPONSE SURFACE ENGINEERING (2 CREDITS)**

Prerequisite: Applied Regression Analysis

This course studies the concept of experimental design, data collection, and documentation of experimental design using response surface techniques.

Handbooks:

1. Myers, R. H. 1971. *Respon Surface Methodology*. Allynn and Bacon, New York.

2. Box, G. E. P., Hunter, W. G., and Hunter, J. S. 1978. *Statistics for experimenter : An Introduction to Design Data Analysis, and Model Building*. John Wiley&Sons, New York.

3. Carnell, J. A. 1981. *Experiment with Mixtures Design Models and the Analysis of Mixtures Data*. John Wiley & Sons, Canada.

- **SST706 ADVANCED MULTIVARIATE STATISTICS (2 CREDITS)**

Prerequisite: Applied Multivariate Statistics

This course studies the concept of methods in advanced multivariate statistics. It aims for students to solve statistical problems using advanced multivariate statistics.

Handbooks:

1. Johnson, R.A., and Wichern, D.W. 1992. *Applied Multivariate Statistical Analysis, (3rd ed)*. New Jersey : Prentice Hall.

2. Hair, J.F, Anderson, R.E., Tatham, R.L., and Black, W.G. 1995. *Multivariate Data Analysis with Reading (4th ed)*. New Jersey : Prentice-Hall.

- **SST707 BIOSTATISTICS (2 CREDITS)**

Prerequisite: Statistical Method II

This course studies the concept of biostatistical models. It aims for students to solve statistical problems using the biostatistical method and perform biostatistical modeling.

Handbooks:

1. Daniel, W. W. 1991. *Biostatistics: A Foundation for Analysis in the Health Sciences*. John Wiley, New York.

2. Klein, J. P., and Moeschberger, M. L. 1997. *Survival Analysis: Techniques for Censored and Truncated Data*. Springer, New York.

- **SST708 TRENDING TOPICS ON STATISTICS (3 CREDITS)**

Prerequisite: Statistical Method II

This course studies concepts and studies of current issues related to statistical problems and the solution using statistical methods.

Handbooks:

1. Various learning resources (depends on the material agreed upon for the current semester).

References

Olivia, P. F., (2003). Developing the Curriculum: Sixth Edition. NY: Longman 2003, pp 28-41.

Dikti, Dirjen. (2008). Buku Panduan Pengembangan Kurikulum Berbasis Kompetensi Pendidikan Tinggi. Jakarta.

Perpres. (2012). Peraturan Presiden Republik Indonesia Nomor 8 Tahun 2012 Tentang Kerangkan Kualifikasi Nasional Indonesia. Jakarta.

Kepmendiknas. (2000). Kepmendiknas No 232-U-2000 Tentang Pedoman Penyusunan Kurikulum Perguruan Tinggi dan Penilaian Hasil Belajar Mahasiswa. Jakarta.

Law Number 20 Year 2003 concerning the National Education System

Law Number 14 Year 2005 concerning Teachers and Lecturers

Law Number 12 Year 2012 concerning Higher Education.

Republic of Indonesia Presidential Regulation Number 8 of 2012 on the Indonesian National Qualification Framework

Government Regulation Number 13 Year 2015 concerning the National Education Standards.

The regulation of the Minister of Education and Culture of the Republic of Indonesia Number 73 Year 2013 concerning the Implementation of the Indonesian Qualifications Framework for Higher Education.

The Regulation of the Minister of Education and Culture Number 44 Year 2015 concerning the National Higher Education Standards.

Higher Education Curriculum Book year of 2014

Buku Panduan Penyusunan kurikulum pendidikan Tinggi Kementerian Riset, Teknologi dan Pendididikan Tinggi Direktorat Jenderal Pembelajaran dan Kemahasiswaan Direktorat pembelajaran 2016.