

1.Course Identity			
Course name (<i>Nama mata kuliah</i>)	Data Intelligence		
Faculty (<i>Fakultas</i>)	Mathematics and Natural Science	Study Program (<i>Program Studi</i>)	Statistics
Code (<i>Kode</i>)	SST-703	Credit poin Sks (<i>Bobot Sks</i>)	2
Group (<i>Grup</i>)	Study Program	Enrollment obligatory (<i>Sifat pengambilan</i>)	mandatory/ optional *
Semester(s) in which the course is taught (<i>Semester</i>)	4	Availability (<i>Ketersediaan</i>)	Limited
Learning method (<i>Bentuk pembelajaran</i>)	blended learning/ online learning *	Media (<i>Media</i>)	Digital files (slides, video, sheet, etc)
Course category (<i>Rumpun mata kuliah/blok</i>)	university compulsory course/ SSP compulsory course/ practicum/ compulsory of scientific interest/ elective course*	Requirements (<i>Prasyarat</i>)	Programming Algorithm
Lecture (<i>Dosen pengampu</i>)	Arum Handini Primandari, M.Sc.	Semester/ Academic year (<i>Semester/ Tahun Akademik</i>)	Even Semester 2020/2021

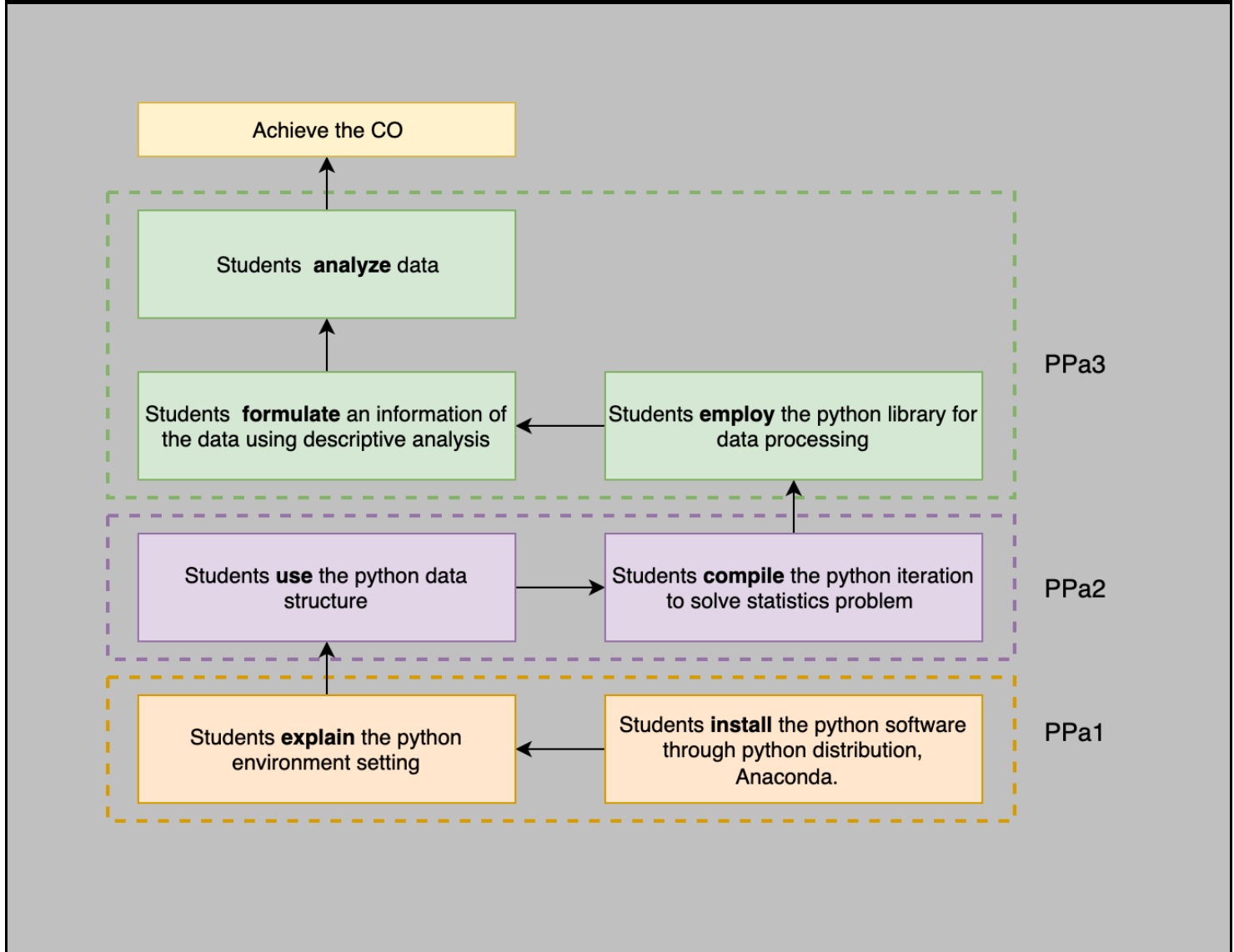
*) cross the unnecessary ones

2a. PROGRAM LEARNING OUTCOME (CAPAIAN PEMBELAJARAN LULUSAN)	
LO Code (Kode CPL)	LO Description (Rumusan CPL)
PPa (Intelligence)	Mastering the concept of probability theory and statistics, mathematics, calculus, elementary linear algebra, statistical analysis methods and elementary computer programming

2b. COURSE OUTCOME (CAPAIAN PEMBELAJARAN MATA KULIAH)					
Support PLO Code (Kode CPL yang didu- kung)	CO Code (Kode CPMK)	CO Descriptions and Indicators (Rumusan CPMK dan Indikator)	Learning Experience (Pengalaman Pembelajaran)	Assessment (Asesmen/penilaian)	Wei ght (Bo - bot)
PPa	PPa1	Students are able use an open-source software, Python	1. Students install the python software through python distribution, Anaconda. 2. Students explain the python environment setting	Quiz, Assignment	10

	PPa2	Students are able to compile programming codes for theory of probability and statistics	<ol style="list-style-type: none"> 1. Students use python data structure 2. Students compile python iteration in order to solve probability problem 	Assignment, Midterm Exam	30
	PPa3	Students are able compose intelligent computer programming or data analysis.	<ol style="list-style-type: none"> 1. Students employ python library for data processing 2. Students formulate an information of the data using descriptive analysis in python 3. Students analyze data using python 	Midterm Exam, Final Exam	60

3. Program Learning Outcome Analysis Map (*Peta Analisis Capaian Pembelajaran*)



4. Reference (*Referensi*)

1. Martelli, Alex; Ravenscroft, Anna Martelli; & Ascher, David. 2005. Python Cookbook, Second Edition. O'Reilly
2. Lambert, Kenneth A.; Osborne, Martin. 2010. Fundamentals of Python: From First Programs Trough Data Structures. Course Technology: Canada.
3. Python Tutorial. Diambil dari <https://www.w3schools.com/python/>

5. Detail of Learning Activities (*Rincian Aktivitas Pembelajaran*)

Sessi on (sesi)	LOC/Sub- LOC/Criterio n (CPMK/Sub- CPMK/ Kriteria)	Study Material (Bahan Kajian)	Activity Design and Duration (Rancangan Aktivitas dan Durasi)	Mode	Learning Media/ Reference (Media Pembelajaran/ Referensi)
1.	PPa1	Introduction to python programming	<ul style="list-style-type: none"> - Lecture gives the introduction to python programming: Why python? (30 minutes) - Students discuss about the difference between R and python (70 minutes) 	FF	Slides 1
2.	PPa1	Python installation using anaconda distribution	<ul style="list-style-type: none"> - Lecturer provides a video for installing anaconda distribution and setting environment (15 minutes) - Students install anaconda distribution (30 minutes) - Students open some python IDE (Integrated Development Environment) 	FF	Video 1: Install anaconda
3.	PPa2	Python data structure: tuple, list, dictionary, and set	<ul style="list-style-type: none"> - Lecture provides a video about data structure (15 minutes) - Students apply data structure in order to solve data problems 	SAA	Video 2: python data structure ipybn 1
4.	PPa2	Python decision making and looping: for, while, if-else	<ul style="list-style-type: none"> - Lecture provides a video about python decision making and looping (15 minutes) - Students compose a decision making and looping to solve statistics problem 	SAA	Video 3: python decision making and looping ipybn 2
5.	PPa2	Python lambda and function	<ul style="list-style-type: none"> - Lecture gives a video about python lambda and function (20 minutes) - Students compose lambda and function for probabilistic/mathematics problems (80 minutes) 	FFO	Video 4: python lambda and function ipybn 3
6.	PPa2	List comprehension	<ul style="list-style-type: none"> - Lecture explain about list comprehension (20 minutes) - Students compose list comprehension to solve some statistic problem (80 minutes) 	FFO	ipybn 4: list comprehension
7.	PPa3	Python library for array manipulation (numpy)	<ul style="list-style-type: none"> - Lecture provides a video about array manipulation (20 minutes) - Students practice some array manipulation (80 minutes) 	FF	Video 5: python numpy ipybn 5
8.	PPa3	Midterm Exam			
9.	PPa3	Python library for dataframe manipulation (pandas)	<ul style="list-style-type: none"> - Lecture provides a video about data frame manipulation (20 minutes) - Students practice data frame manipulation using some data (80 minutes) 	FF	Video 6: python pandas ipybn 6
10.	PPa3	Data wrangling using pandas	<ul style="list-style-type: none"> - Lecture explains about data wrangling (20 minutes) - Students practice data wrangling using some data from online source/scraping (80 minutes) 	SSA	ipybn 7: data wrangling
11.	PPa3	Python library for data visualization (matplotlib)	<ul style="list-style-type: none"> - Lecture provides a video about data visualization (20 minutes) - Students practice to make data visualization by making a appropriate graphs according to the data (80 minutes) 	SAA	Video 7: python matplotlib ipybn 8
12.	PPa3	Python library for data visualization (seaborn)	<ul style="list-style-type: none"> - Lecture provides a video about data visualization (20 minutes) - Students practice to make data visualization by making a appropriate graphs according to the data (80 minutes) 	SAA	Video 8: python seaborn ipybn 9: seaborn linear relationship

					ipybnb 10: seaborn categorical data ipybnb 11: seaborn data distribution
13.	PPa3	Python for hypothesis test (scipy and stat)	<ul style="list-style-type: none"> - Lecture provides a video about hypothesis testing using python (20 minutes) - Students solve statistic problem related to hypothesis testing using python (80 minutes) 	SAA	Video 9: python hypothesis test ipybnb 12
14.	PPa3	Descriptive analysis using python	<ul style="list-style-type: none"> - Lectures gives a trigger about descriptive analysis (20 minutes) - Student compose program to perform descriptive analysis (60 minutes) - Students formulate conclusion and insight of the data (20 minutes) 	FF	ipybnb 13: descriptive analysis
15.	PPa3	Clustering analysis using python	<ul style="list-style-type: none"> - Lecture explains about clustering theory (20 minutes) - Students compile a program for clustering analysis (25 minutes) - Student formulate the cluster segmentation/profil (15 minutes) 	FF	ipybnb 14: kmeans
16.	PPa3	Final Exam			

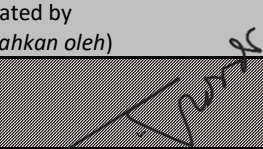
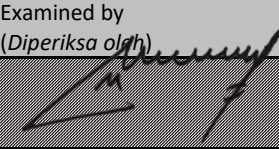
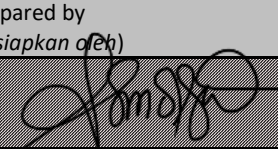
Information:

For mode, enter one of the following codes

- FF = activities that require **face-to-face** meetings in class (*aktivitas yang memerlukan tatap muka (TM) langsung di kelas*);
- FFO = activities that require **face to face online** (*aktivitas yang memerlukan tatap muka secara daring (tatap maya/TMD)*);
- SAA = standalone asynchronous online activity (*aktivitas daring asinkron mandiri/ASM*);
- CAA = collaborative asynchronous online activities (*aktivitas daring asinkron kolaborasi/ASK*);

Learning / reference media can be in the form of (1) self-produced results, (2) curated results: media sourced from the internet or other sources chosen by the lecturer, and / or (3) students' own exploration results.

6. Assessment and Evaluation System (Sistem Penilaian dan Evaluasi)	
Assessment System (Sistem Penilaian)	The grading system uses one of these two systems: <ul style="list-style-type: none"> • PAP (<i>Penilaian Acuan Patokan/ Benchmark Reference Assessment</i>) is an assessment using the University / Faculty / Study Program's standard values. • PAN (<i>Penilaian Acuan Normal/ Normal Reference Assessment</i>) is an assessment based on relative class passing standards, for example based on a normal distribution.
Evaluation System (Sistem Evaluasi)	Evaluation is a decision taken after students finish lectures. Each student must achieve a minimum grade / predicate of C for the overall average score. If it has not fulfilled it, then the student is obliged to carry out an examination / repair assignment.

Date:	Date:	Date:
Validated by (Disyahkan oleh)	Examined by (Diperiksa oleh)	Prepared by (Disiapkan oleh)
		
Dr. Edy Widodo, M.Si.	Muhammad Muhajir, M.Sc.	Arum Handini Primandari, M.Sc.