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MODULE HANDBOOK

SAMPLING AND SURVEY TECHNIQUES

BACHELOR DEGREE PROGRAM
DEPARTEMENT OF STATISTICS
FACULTY OF SCIENCE AND DATA ANALYTICS
INSTITUT TEKNOLOGI SEPULUH NOPEMBER

ENDORSEMENT PAGE

	MODULE HANDBOOK **SAMPLING AND SURVEY TECHNIQUES** **DEPARTMENT OF STATISTICS** **INSTITUT TEKNOLOGI SEPULUH NOPEMBER**

Proses ***Process***	**Penanggung Jawab** ***Person in Charge***			**Tanggal** ***Date***
	Nama ***Name***	**Jabatan** ***Position***	**Tandatangan** ***Signature***	
Perumus *Preparation*	Dr. Dra. Ismaini Zain, M.Si	Dosen *Lecturer*		**March 28, 2019**
Pemeriksa dan Pengendalian *Review and Control*	Dr. Dra. Ismaini Zain, M.Si; Dr. Dra. Agnes Tuti Rumiati , M.Sc; Dr. Santi Wulan Purnami, S.Si, M.Si ; Erma Oktania Permatasari, S.Si., M.Si.	Tim kurikulum *Curriculum team*		**April 15, 2019**
Persetujuan *Approval*	Dr. Santi Wulan Purnami, S.Si, M.Si	Koordinator RMK *Course Cluster Coordinator*		**July 17, 2019**
Penetapan *Determination*	Dr. Kartika Fithriasari, M.Si	Kepala Departemen *Head of Department*		**July 30, 2019**

MODULE HANDBOOK

SAMPLING AND SURVEY TECHNIQUES

Module name	Sampling Survey and Techniques	
Module level	Undergraduate	
Code	KS184203	
Course (if applicable)	Sampling Survey and Techniques	
Semester	Second Semester (Genap)	
Person responsible for the module	Dr. Dra. Ismaini Zain, M.Si	
Lecturer	Dr. Dra. Ismaini Zain, M.Si; Dr. Dra. Agnes Tuti Rumiati , M.Sc; Dr. Santi Wulan Purnami, S.Si, M.Si ; Erma Oktania Permatasari, S.Si., M.Si.	
Language	Bahasa Indonesia and English	
Relation to curriculum	Undergradute degree program, **mandatory**, 2nd semester	
Type of teaching,contact hours	Lectures, <50 students	
Workload	1. Lectures: 3 x 50 = 150 minutes per week. 2. Exercises and Assignments: 3 x 60 = 130 minutes (3 hours) perweek. 3. Private learning: 3 x 60 = 180 minutes (3 hours) per week.	
Credit points	3 credit points (SKS)	
Requirements according to the examination regulations	A student must have attended at least 80% of the lectures to sit in the exams.	
Mandatory prerequisites	Pengantar Metode Statistika/*Introduction to Statistical Methods*	
Learning outcomes and their corresponding PLOs	*CLO-1a Understand the basic concepts of sampling techniques, advantages and disadvantages of sampling, principles of sampling techniques, random concepts, bias in sampling, mean square error and being able to define the population, sampling frame, parameters and variables to be measured.* *CLO-1b Understand various sampling methods and how to estimate appropriate parameters, understand how to apply them and be able to make a sampling design that is suitable for the objectives andconditions of the population for a survey research* *CLO-2a Able to perform sampling in accordance with the sampling method*	PLO-01 PLO-02

	CLO-2b Understand the concept of surveys, how to make instruments, data collection methods and survey management in an effort to design a survey and be able to carry out surveys, the organization of surveying to produce valid data. *CLO-3 Able to manage survey data, perform analysis for parameter estimation* *CLO-7 Able to communicate effectively and work together in interdisciplinary and multidisciplinary teams*	PLO-03 PLO-07
Content	*Sampling and Surveying Techniques are courses that underlie the process survey research. The objectives of the Sampling Engineering course are:* *1) capable design a sampling plan for the purposes of the survey accordingly correct sampling procedure;* *2) able to explain the definition of population, sampling frame, experimental unit;* *3) able to understand various kinds Sampling methods include: nonprobability sampling and probability sampling;* *4) able to estimate parameters as well determine the sample size according to the sampling method; and* *5) capable designing and carrying out surveys.* *The learning strategy used in addition to using the lecture method and discussion, students were also given the task of practicing questions, designing assignments sampling and practice conducting surveys. Students are also given assignments field as the final project done in groups, namely carry out sampling design exercises for a particular case taking into account the various possible sampling methods. Result the final project is communicated either in writing or orally*	
Study and examination requirements and forms of examination	• In-class exercises • Assignment 1, 2, 3 • Mid-term examination • Final examination	
Media employed	LCD, whiteboard, websites (myITS Classroom), zoom.	
Reading list	1. Mendenhall, W., Scheaffer R.L., Ott Lyman [1986], Elementary Survey Sampling, 3rd Edition, Duxburry Press Boston . 2. Cochran, W.G.[1977], Sampling Techniques, 3rd Edition, John Wiley & Sons, New York 3. Tryfors P. [1996], Sampling Methode for Applied Research Text and Cases, John Wiley & Sons, New York .	

	Program Studi	Sarjana, Departemen Statistika, FMKSD-ITS
	Mata Kuliah	Teknik Sampling & Survei
	Kode Mata Kuliah	KS184203
	Semester/SKS	II/3
	MK Prasyarat	Pengantar Metode Statistika
RP-S1	Dosen Pengampu	Dr. Dra. Ismaini Zain, M.Si; Dr. Dra. Agnes Tuti Rumiati , M.Sc; Dr. Santi Wulan Purnami, S.Si, M.Si ; Erma Oktania Permatasari, S.Si., M.Si.

Bahan Kajian/*Study Materials*	Dasar Sains, Teori Statistika, Pengumpulan Data, Deskripsi dan Eksplorasi *Basic Science, Statistical Theory, Data Collection, Description and Exploration*
CPL yang dibebankan MK	CPL-1 Mampu menerapkan pengetahuan teori statistika, matematika, dan komputasi CPL-2 Mampu merancang dan melaksanakan pengumpulan data dengan metodologi yang benar CPL-3 Mampu menganalisis data dengan metode statistika yang tepat dan mengintepretasikannya CPL-7 Mampu berkomunikasi secara efektif dan bekerjasama dalam tim yang interdisiplin dan multidisiplin *PLO.1 Able to apply knowledge of statistical theory, mathematics, and computation* *PLO.2 Able to design and implement data collection with correct methodology* *PLO.3 Able to analyze data with appropriate statistical methods and interpret them* *PLO.7 Able to communicate effectively and work together in interdisciplinary and multidisciplinary teams*
CP-MK	CPMK.1a Memahami konsep dasar Teknik Sampling, keuntungan dan kerugian sampling, prinsip teknik sampling, konsep random, bias dalam sampling, mean square error serta mampu mendefinisikan populasi, kerangka sampling, parameter dan variabel yang akan diukur. CPMK.1b Memahami berbagai metode sampling dan cara estimasi parameter yang sesuai memahami cara penerapannya serta mampu membuat rancangan sampling yang sesuai dengan tujuan dan kondisi populasi untuk suatu penelitian survey CPMK.2a Mampu melakukan pengambilan sampel yang sesuai dengan metode sampling CPMK.2b Memahami konsep survey, cara membuat istrumen, metode pengumpulan data dan manajemen survey dalam upaya merancang suatu survey serta mampu melaksanan survey, organisasi pelaksanaan survey untuk menghasilkan data yang valid. CPMK.3 Mampu mengelola data hasil survey, melakukan analisis untuk estimasi parameter CPMK.7 Mampu berkomunikasi secara efektif dan bekerjasama dalam tim yang interdisiplin dan multidisiplin CPMK.8 Memiliki tanggung jawab dan etika profesi CPMK.9 Mampu memotivasi diri untuk berpikir kreatif dan belajar sepanjang hayat *CLO-1a Understand the basic concepts of sampling techniques, advantages and disadvantages of sampling, principles of sampling techniques, random concepts, bias in sampling, mean square error and be able to define the population, sampling frame, parameters and variables to be measured.* *CLO-1b Understand various sampling methods and how to estimate appropriate parameters, understand how to apply them and be able to make a sampling design that is suitable for the objectives and conditions of the population for a survey research* *CLO-2a Able to perform sampling in accordance with the sampling method*

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	MK Prasyarat	Pengantar Metode Statistika
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	CLO-2b Understand the concept of surveys, how to make instruments, data collection methods and survey management in an effort to design a survey and be able to carry out surveys, the organization of surveying to produce valid data. *CLO-3 Able to manage survey data, perform analysis for parameter estimation* *CLO-7 Able to communicate effectively and work together in interdisciplinary and multidisciplinary teams* *CLO-8 Have professional responsibilities and ethics* *CLO-9 Able to motivate oneself to think creatively and learn throughout life*

Perte-muan/ *Meeting*	**Kemampuan Akhir Sub CP-MK/** *Sub CLO Final Capability*	**Keluasan (materi pembelajaran)** *Extent (Learning Materials)*	**Metode Pembelajaran** *Learning Methods*	**Estimasi Waktu** *Estimated Time*	**Bentuk Evaluasi** *Evaluation Form*	**Kriteria dan Indikator Penilaian** *Assessment Criteria and Indicators*	**Bobot Penilaian** *Scoring Weight*
1	1. Dapat menjelaskan konsep dasar statistika dan teknik sampling *1. Can explain the basic concepts of statistics and sampling techniques*	Konsep teknik Sampling, estimasi parameter, prinsip teknik sampling, kemungkinan bias, proses pengambilan sampel secara acak *Sampling technique concept, parameter estimation, sampling technique principle, bias possibility, random sampling process*	Ceramah, Diskusi Lecture, discussion	150 menit *150 Minutes*	Tugas Individu I *Individual task I*	1.1 Dapat menjelaskan pengertian sampling, keuntungan dan kerugian, permaslahan dalam sampling 1.2 Dapat menjelaskan pengertian populasi, sampel, parameter statistik , taksiran parameter 1.3 Dapat menjelaskan kemungkinan bias dalam sampling dan pengaruhnya terhadap ukuran kualitas taksiran 1.4 Dapat menjelaskan proses pemilihan sampel secara acak *1.1 Can explain the meaning of sampling, advantages and*	5%/5%

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						disadvantages, problems in sampling *1.2 Can explain the meaning of population, sample, statistical parameters, parameter estimates* *1.3 Can explain possible bias insampling and its effect on measures of estimated quality* *1.4 Can explain the random sample selection process*	
2-3	2. Dapat menerapkan rancangan SAS dengan tepat dan dapat menen tukan ukuran sampel serta menaksir parameternya *2. Can apply SAS designs precisely and can determine samplesize and estimate parameters*	Sampling Acak Sederhana (SAS): prosedur, definisi notasi, berbagai metode penaksiran parameter. Pemahaman sub populasi dan penaksirannya *Simple Random Sampling (SAS): procedures, notation definitions, various parameter estimation methods.*	Ceramah, diskusi , Latihan soal *Lecture, discussion* Exercise	2x 150 menit 2x150 Minutes	Tugas/latihan soal Diskusi dalam membuat rancangan sampling dengan metode SAS Kuis 1 *Task / practice questions Discussion in making a sampling design with the SAS method* *Quiz 1*	2.1 Mampu membuat Rancangan Sampling Acak Sederhana untuk sebuah survey tertentu 2.2 Mampu menentukan besar ukuran sampel serta melakukan proses pengambilannya 2.3. Mampu menghitung taksiran parameter rata-rata, total, proporsi, varians 2.4. Mampu menjelaskan penaksiran didasarkan pada sub populasi. *2.1 Able to make random sampling design Simple for a particular survey*	10/15%

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		Understanding the sub-population and its assessment				*2.2 Able to determine sample size as well do the taking process* *2.3. Able to calculate average, total, proportion, variance parameter estimates* *2.4. Be able to explain assessments based on sub-populations.*	
4-6	3. Dapat menerapkan rancangan Sampling Acak Stra tifikasi dengan tepat dan dapat menentukan ukuran sampel serta menaksir parameternya *3. Be able to apply the Stratification Randomized Sampling design appropriately and be able to determine the sample size and estimate its parameters*	Sampling Acak Stratifikasi (SAStra) *Stratified Random Sampling (SAStra)*	Ceramah, diskusi, Latihan soal Prakt lapngn *Lecture, discussion, exercises* Field practicum	3 x 150 menit *3x150 Minutes*	Latihan soal Tugas Individu 2 *Exercise* *Individual Task 2*	4.1 Mampu menentukan Rancangan Sampling Acak Stratifikasi untuk sebuah survei dari kasus riil 4.2 Mampu menghitung taksiran parameter rata-rata, total dan proporsi, varians besaran ukuran sampel 4.3 Mampu menentukan anggota Strata dengan aturan Optimal Mampu menerapkan proses pengambilan sampel dengan metode Sistematik Sampling *4.1 Able to determine a stratified random sampling design for a survey of real cases* *4.2 Able to calculate the estimated parameter mean, total and proportion, variance of sample size*	5% /20%

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						4.3 Able to determine Strata members with Optimal rules Able to apply the sampling process with the systematic sampling method	
7	4. Dapat menerapkan ran cangan Sampling Siste matik dengan tepat dan dapat menentukan ukuran sampel serta menaksir parameter nya *4. Can apply the automatic Sampling System design appropriately and can determine sample size and estimate its parameters*	Sampling Sistematik (SS) *Systematic Sampling (SS)*	Ceramah, diskusi , Latihan soal Praktek membuat rancangan sampling dengan metode sistematik *Lecture, discussion, exercises Practice making a sampling design with a systematic method*	150 menit *150 Minutes*	Latihan soal Diskusi merancang sistematik sampling *Exercises Discussion on designing systematic sampling*	3.1 Mampu menentukan Rancangan Sampling Siste-matik untuk survey tertentu (menggunakan kasus riil) 3.2 Mampu menghitung taksiran parameter rata-rata, total , proporsi, varians 3.3 Mampu menentukan besar ukuran sampel serta melakukan proses pengambilannya 4.4 Mampu menerapkan proses pengambilan sampel dengan metode Sistematik Sampling *3.1 Able to determine the Sampling System Design automatic for certain surveys (using real cases)* *3.2 Able to calculate average parameter estimates, total, proportion, variance*	-/20%

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						3.3 Able to determine sample size as well do the taking process *4.4 Able to apply the sampling process with the systematic sampling method*	
8	Mampu meyelesaikan permasalahan sampling dan mengungkapkan ide atau gagasan rancangan sampling secara tertulis. *Able to solve sampling problems and express sampling design ideas in writing.*	**Evaluasi Tengah Semester : Melakukan Ujian Tengah Semester** *Midterm Examination*				Mampu menjawab soal ETS yang diberikan dengan seluruh materi dari M1-M7 *Able to answer Midterm questions given with all material from M1-M7*	20%/40%
9-11	5. Dapat menerapkan rancangan Sampling Klaster Satu Tahap dan smpling kombinasi stratifikasi Klaster dan da pat menentukan ukuran sampel serta menaksir parameternya *5. Can apply the single-stage cluster*	Sampling Klaster Satu Tahap (SK 1 thp) *One-stage Cluster Sampling (1-stage SK)*	Ceramah, diskusi , Latihan soal *Lectures, Discussions, Exercise*		Tugas Individu 3 : Cluster Aktifitas di kelas *Individual Task 3: Clusters Class activities*	5.1 Mampu menentukan Rancangan Sampling Klaster (SK) Satu Tahap untuk kasus riil 5.2 Mampu menghitung taksiran parameter rata-rata, total dan proporsi, besaran ukuran sampel serta melakukan proses pengambilannya 5.3 Mampu menentukan ukuran sampel dengan teknik SK satu tahap 5.4 Mampu melakukan kombinasi SAStra dan SK satu tahap	10% / 50%

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	sampling design and cluster stratification combination sampling and can determine sample size and estimate its parameters					*5.1 Able to determine the One-Stage Cluster Sampling Design (SK) for real cases* *5.2 Able to calculate average, total and proportion parameter estimates, sample size and carry out the collection process* *5.3 Able to determine sample size using the one-stage SK technique* *5.4 Able to do a one-stage combination of SAStra and SK*	
12	6. Dapat menerapkan rancangan Sampling Klaster dua Tahap dengan tepat dan dapat menentukan ukuran sampel serta menaksir parameternya *6. Be able to apply the two-stage cluster sampling design appropriately and be able to determine sample size and estimate parameters*	Sampling Klaster Dua Tahap (SK 2 thp) *Two-stage Cluster Sampling (2-stage SK*	Ceramah, diskusi , Latihan soal Praktek penerapan *Lectures, discussions, practice questions Practice of application*		Aktifitas di kls, Observasi lapangan (K. 1 dan 2 tahap , kombinasi *Class activities, Field observations (K. 1 and 2 stages, combination*	6.1 Mampu menentukan Rancangan Sampling Klaster (SK) dua Tahap untuk kasus riil 6.2 Mampu menghitung taksiran parameter rata-rata, total dan proporsi 6.3 Mampu melakukan proses pengambilan sampel dengan teknik SK 2 tahap *6.1 Able to determine a two-stage cluster sampling design (SK) for real cases* *6.2 Able to calculate average, total and proportion parameter estimates*	-/ 60%

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						6.3 Able to carry out the sampling process using the 2-stage SK technique	
13	7. Dapat menjelaskan metode penaksiran ukuran populasi dan menentukan ukuran sampel pertama dan kedua *7. Can explain the method of population size estimation and determine the first and second sample sizes*	Wildlife Sampling *Wildlife Sampling*	Ceramah, diskusi , Latihan soal *Lectures, Discussions, Exercise*		Diskusi Aktifitas di kelas Kuis 2 *Discussion* *Class activities* *Quiz 2*	7.1 Dapat menjelaskan prosedur pengambilan sampel dengan metode Direct dan Invers 7.2 Dapat menghitung taksiran ukuran populasi dan menentukan ukuran sampel pertama dan kedua *7.1 Can explain the sampling procedure using the Direct and Inverse methods* *7.2 Can calculate estimated population size and determine first and second sample sizes*	10/ 60%
14-15	8. Dapat menerapkan ran cangan sampling untuk suatu penelitian, menge lola dan mengorga nisasi survei lapangan berikut pemetaan lokasi unit sampling yang terpilih sebagai sampel	Organisasi Survei dan ***Final Project*** (Praktek Survei Pemetaan Lokasi sampel terpilih) *Survey Organization and Final Project (Survey Mapping Practice Selected sample locations)*	Diskusi, Praktek lapgn (kelompok) : 1. merancang splg, 2. survei lokasi, pemetaan lokasi dari unit sampling terpilih		Final Project : Merancang Sampling Presentasi, Laporan hasil *Final Project: Designing Sampling Presentation, Report on results*	8.1 Dapat membuat/menentukan rancangan sampling sesuai kasus 8.2 Dapat mengorganisasi survei lapangan (manajemen survei) 8.3 Dapat membuat gambar/ pemetaan lokasi unit sampling terpilihnya pada wilayah penelitian *8.1 Can make / determine the sampling design according to the case*	20%/80%

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	8. Can apply a sampling design to a study, manage and organize field surveys along with mapping the location of the selected sampling unit as the sample.		*Discussion, practice field (group): 1.design splg, 2. location survey, mapping the location of the selected sampling unit*			*8.2 Can organize field surveys (survey management)* *8.3 Can draw / map the location of the selected sampling unit in the research area*	
16	**Evaluasi Akhir Semester** *Finalterm Examination*					8.4 Mampu menjawab soal ETS yang diberikan dengan seluruh materi dari M8-M15 *8.4 Able to answer Midterm questions given with all material from M8-M15*	20%/100%

PUSTAKA/*References* **:**

4. Mendenhall, W., Scheaffer R.L., Ott Lyman [1986], Elementary Survey Sampling, 3rd Edition, Duxburry Press Boston .
5. Cochran, W.G.[1977], Sampling Techniques, 3rd Edition, John Wiley & Sons, New York
6. Tryfors P. [1996], Sampling Methode for Applied Research Text and Cases, John Wiley & Sons, New York .

	RENCANA ASSESSMENT & EVALUASI Prodi Sarjana Statistika **MK TEKNIK SAMPLING DAN SURVEI** *Assessment and Evaluation Plan* *Undergraduate of Statistics* *Sampling and Survey Techniques*		**RA&E** SLK-06
Kode: KS184203	**Bobot sks (T/P):** 3 *Credit: 3*	**Rumpun MK:** Statistika Teori dan Pemodelan *Course Group:* *Statistical Theory and Modelling*	Smt: 2 *Semester: 2*
OTORISASI	**Penyusun RA & E** *RA & E Authority* Dr. Dra. Ismaini Zain, M.Si	**Koordinator RMK** *Course Group Coordinator*	**Ka PRODI** *Head of Department* Dr. Kartika F, M.Si

Mg ke (1) *Weeks*	**Sub CP-MK (2)** *Sub CLO*	**Bentuk Asesmen (Penilaian) (3)** *Assessment Form (Scoring)*	**Bobot (%) (4)** *Weight*
1	**CPMK-1a** Dapat menjelaskan konsep dasar statistika dan teknik sampling *CLO-1a* *Able to explain the basic concepts of statistics and sampling techniques*	Tugas Individu I : menyelesaikan contoh pengambilan sampil non probability sampling dan probability *Individual Task I: complete non probability sampling and probability sampling*	5%/5%
2-3	**CPMK-1b** Dapat menerapkan rancangan SAS dengan tepat dan dapat menen tukan ukuran sampel serta menaksir parameternya *CLO-1b* *Can apply SAS designs precisely and can determine sample size and estimate parameters*	Kuiz 1 Tugas membuat rancangan sampling dengan metode SAS *Quiz 1* *The task of making a sampling design using the SAS method*	10%/15%
4-6	**CPMK-1b** Dapat menerapkan rancangan Sampling Acak Stra tifikasi dengan tepat dan dapat menentukan ukuran sampel serta menaksir parameternya *CLO-1b* *Able to apply the Standardized Random Sampling design appropriately and be able to determine*	Tugas Individu 2: Tugas merancang Sampling Acak Stratifikasi *Individual Task 2:* *Task of designing Stratified Random Sampling*	5%/20%

Mg ke (1) *Weeks*	Sub CP-MK (2) *Sub CLO*	Bentuk Asesmen (Penilaian) (3) *Assessment Form (Scoring)*	Bobot (%) (4) *Weight*
	sample size and estimate its parameters		
8	CPMK 3: Evaluasi Tengah Semester *CLO- 3: Midterm Evaluation*	Dilakukan dengan Ujian Tengah Semester sesuai dengan jadwal ETS *Conducted by Mid-Semester Examination according to the ETS schedule*	20%/40%
9-11	**CPMK-1b** Dapat menerapkan rancangan Sampling Klaster Satu Tahap dan smpling kombinasi stratifikasi Klaster dan da pat menentukan ukuran sampel serta menaksir parameternya *CLO-1b* *Can apply the One-Stage Cluster Sampling design and the combination of cluster stratification and can determine sample size and estimate its parameters*	Tugas Individu 3 : Cluster *Individual task 3 : Cluster*	10%/50%
13	**CPMK-1b** Dapat menjelaskan metode penaksiran ukuran populasi dan menentukan ukuran sampel pertama dan kedua *CLO-1b* *Can explain the method of population size estimation and determine the first and second sample sizes*	Kuis 2 *Quiz 2*	10%/60%
14-15	**CPMK-2b dan CPMK-7** Dapat menerapkan ran cangan sampling untuk suatu penelitian, menge lola dan mengorga nisasi survei lapangan berikut pemetaan lokasi unit sampling yang terpilih sebagai sampel *CLO-2b and CLO-7* *Can apply a sampling design to a study, manage and organize field surveys along with mapping the location of the selected sampling unit as the sample.*	Final Project : Rancangan Sampling Presentasi : desain Rancangan Sampling *Final Project: Sampling Design* *Presentation: Sampling Design*	10%/70% 10%/80%

Mg ke (1) *Weeks*	Sub CP-MK (2) *Sub CLO*	Bentuk Asesmen (Penilaian) (3) *Assessment Form (Scoring)*	Bobot (%) (4) *Weight*
16	CPMK-3 Evaluasi Akhir Semester *CLO-3 Final Term*	Tuliskan bentuk evaluasi / dapat dituliskan dalam bentuk UAS / validasi hasil asesmen *Write down the evaluation form / it can be written in the form of Final Term Test / assessment result validation*	20%/100%
		Total bobot penilaian/ *Total Scoring Weight*	**100%**