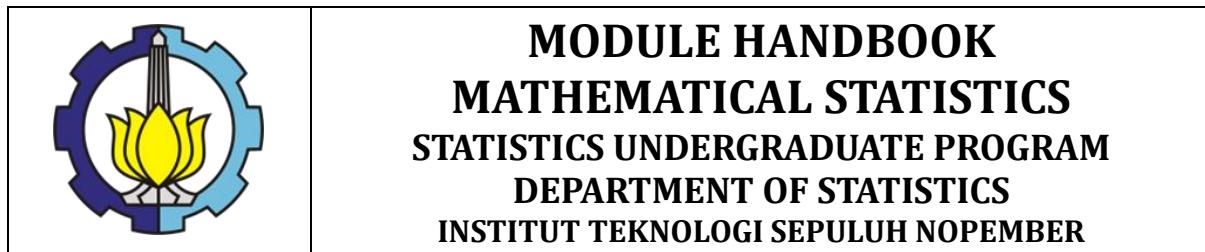# MODULE HANDBOOK

MATHEMATICAL STATISTICS

STATISTICS UNDERGRADUATE PROGRAM
DEPARTMENT OF STATISTICS
FACULTY OF SCIENCE AND DATA ANALYTICS
INSTITUT TEKNOLOGI SEPULUH NOPEMBER
SURABAYA

ENDORSEMENT PAGE

MODULE HANDBOOK
MATHEMATICAL STATISTICS
STATISTICS UNDERGRADUATE PROGRAM
DEPARTMENT OF STATISTICS
INSTITUT TEKNOLOGI SEPULUH NOPEMBER

Proses *Process*	Penanggung Jawab *Person in Charge*			Tanggal *Date*
	Nama *Name*	Jabatan *Position*	Tanda tangan *Signature*	
Perumus *Preparation*	Dr. Purhadi, M.Sc	Dosen Lecturer		
Pemeriksa dan Pengendalian *Review and Control*	Dr. Purhadi, M.Sc; Dr. Bambang Widjanarko Otok, M.Si; Jerry Dwi T.P., S.Si, M.Si, P.hD; Dr. Achmad Choiruddin, S.Si, M.Sc	Tim kurikulum Curriculum team		
Persetujuan *Approval*	Prof. Dr. Bambang Widjanarko Otok, M.Si.	Koordinator RMK Course Cluster Coordinator		
Penetapan *Determination*	Dr. Kartika Fithriasari, M.Si	Kepala Departemen Head of Department		

MODULE HANDBOOK
MATHEMATICAL STATISTICS

Module name	MATHEMATICAL STATISTICS
Module level	Undergraduate
Code	SS234311
Course (if applicable)	MATHEMATICAL STATISTICS
Semester	3
Person responsible for the module	Dr. Purhadi, M.Sc
Lecturer	Dr. Purhadi, M.Sc; Dr. Bambang Widjanarko Otok, M.Si; Jerry Dwi T.P., S.Si, M.Si, P.hD; Dr. Achmad Choiruddin, S.Si, M.Sc
Language	Bahasa Indonesia and English
Relation to curriculum	Undergradute degree program, mandatory, 3rd semester.
Type of teaching, contact hours	Other SCL Methods (%) Non-SCL Methods (%)
Workload	1. Lectures [L]: 5 x 50 = 250 minutes perweek. 2. Exercises and Assignments [EA]: 5 x 60 = 300 minutes (5 hours) per week 3. Independent Learning: 5 x 60 = 300 minutes (5 hours) perweek
Credit points	5 credit points (sks), equivalent to 8 ECT
Requirements according to the examination regulations	A student must have attended at least 80% of the lectures to sit in the exams.
Mandatory prerequisites	Introduction to Probability Theory
Learning outcomes and their corresponding PLOs	CLO..1 Mastering the concepts of Sampling distribution, Statistical order distribution, Law of large numbers, Central limit theorem, Limit distribution, estimation, estimator determination method, estimator properties, loss and risk function, adequacy statistics, Exponential family, unusualness, equivariance, uniformly most powerful test, unusual for hypothesis test, linear hypothesis CLO.2 Can formulate problems Sampling distribution, Statistical order distribution, Law of large numbers, Central limit theorem, Limit distribution, estimation, method of determining estimators, properties of estimators, functions of losses and risks, statistical adequacy,	PLO-4 PLO-5

	Exponential family, unusualness, equivariance, uniformly most powerful test, unusual for hypothesis test, linear hypothesis CLO.3 Can solve Sampling distribution, Statistical order distribution, Law of large numbers, Central limit theorem, Limit distribution, estimation, estimator determination method, estimator properties, loss and risk function, adequacy statistics, Exponential family, unusualness, equivariance, uniformly most powerful test, unusual for hypothesis test, linear hypothesis CLO.4 Can choose the method of determination: Sampling distribution, Statistical order distribution, Limit distribution, point and interval estimator, hypothesis test statistics.and corresponding statistical methods
Content	Mathematical Statistics is one of the basic courses that is part of the field of study in Statistical Theory. The purpose of studying Mathematical Statistics is to master the concepts of Sampling Distribution, Statistical Order Distribution, Law of Large Numbers, Central Limit Theorem, Limit Distribution, sampling distribution, estimation, estimator determination method, estimator properties, loss and risk function, adequacy statistics, Exponential family, unusualness, equivariance, uniformly most powerful test, unusualness, hypothesis test, linear hypothesis and applications in statistical methods so that students will have the learning experience to think in a ethical manner and be able to give the right decisions about the use of these concepts. The learning strategies used are discussions and exercises and tasks
Assessment and its weight	Assignment & Test I – 20% Midterm Exam – 30% Assignment & Test II – 20% Final Exam– 30%
Media employed	LCD, whiteboard, websites (myITS Classroom), zoom
Reading list	1. Hogg, R.V. dan Craig, A.T. (1995). Introduction to Mathematical Statistics, 5th ed. Mac Millon. New York. 2. Mood, A.M., Graybill,F.A. dan Boes, D.C. (1974). Introduction ofthe Theory of Statistics. 4th ed. Mc-Graw Hill. Tokyo. 3. Rice, J.A. (1995). Mathematical Statistics and Data Analysis. Second Ed. Duxbury Press. Belmont, California. 4. Lindgren, B.W. (1976). Statistical Theory. 3th ed. Mac Millon.New York. 5. Rohatgi, V.K. (1976). An Introduction to Probability Theory and Mathematical Statistics. Wiley & Sons. New York.

INSTITUT TEKNOLOGI SEPULUH NOPEMBER FAKULTAS SAINS DAN ANALITIKA DATA PROGRAM STUDI SARJANA STATISTIKA DEPARTEMEN STATISTIKA						
RENCANA PEMBELAJARAN SEMESTER/ *SEMESTER LEARNING PLAN*						
MATA KULIAH (MK)/ *Course*	**KODE/** *Code*	**Rumpun MK/** *Course Group*	**BOBOT (sks)/** *Weight (credit)*		**SEMESTER/** *Semester*	**Tgl Penyusunan/** *Drafting Date*
STATISTIKA MATEMATIKA/ *MATHEMATICAL STATISTICS*	SS234311	LINGKES	**T=5**	**P=0**	III	11 Januari 2023
OTORISASI/ *AUTHORIZATION*	**Pengembang RPS/** *RPS Developer*		**Koordinator RMK/** *Course Group Coordinator*		**Ketua PRODI/** *Head of Department*	
	Dr. Purhadi, M.Sc		Dr. Bambang Widjanarko Otok, M.Si		Dr. Kartika Fithriasari, M.Si	

Capaian Pembelajaran (CP)/ *Learning Achievement*

CPL-PRODI yang dibebankan pada MK/ *PLO*

CPL-4	Mampu menerapkan Sains dan Matematika untuk mendukung pemahaman metode statistika
CPL-5	Mampu menerapkan teori statistika pada metode statistika
PLO-4	*Able to apply science and mathematics to support the understanding of statistical methods*
PLO-5	*Able to apply statistical theory to statistical methods*

Capaian Pembelajaran Mata Kuliah (CPMK)/ *CLO*

CPMK.1 Menguasai konsep Distribusi sampling, Distribusi order statistik , Hukum bilangan besar, Teorema limit pusat, Distribusi limit, penaksiran, metode penentuan penaksir, sifat-sifat penaksir, fungsi kerugian dan resiko, statistik kecukupan, Keluarga eksponensial, ketidakbiasan, equivariance, uniformly most powerfull test, ketidakbiasan untuk uji hipotesis, hipotesis linier

CPMK.2 Dapat memformulasikan permasalahan Distribusi sampling, Distribusi order statistik , Hukum bilangan besar, Teorema limit pusat, Distribusi limit, penaksiran, metode penentuan penaksir, sifat-sifat penaksir, fungsi kerugian dan resiko, statistik kecukupan, Keluarga eksponensial, ketidakbiasan, equivariance, uniformly most powerfull test, ketidakbiasan untuk uji hipotesis, hipotesis linier

CPMK.3 Dapat menyelesaikan Distribusi sampling, Distribusi order statistik , Hukum bilangan besar, Teorema limit pusat, Distribusi limit, penaksiran, metode penentuan penaksir, sifat-sifat penaksir, fungsi kerugian dan resiko, statistik kecukupan, Keluarga eksponensial, ketidakbiasan, equivariance, uniformly most powerfull test, ketidakbiasan untuk uji hipotesis, hipotesis linier

CPMK.4 Dapat memilih metode penentuan : Distribusi sampling, Distribusi order statistik , Distribusi limit, penaksir titik dan interval, statistik uji hipotesis.

CLO..1 Mastering the concepts of Sampling distribution, Statistical order distribution, Law of large numbers, Central limit theorem, Limit distribution, estimation, estimator determination method, estimator properties, loss and risk function, adequacy statistics, Exponential family, unusualness, equivariance, uniformly most powerful test, unusual for hypothesis test, linear hypothesis

CLO.2 Can formulate problems Sampling distribution, Statistical order distribution, Law of large numbers, Central limit theorem, Limit distribution, estimation, method of determining estimators, properties of estimators, functions of losses and risks, statistical adequacy, Exponential family, unusualness, equivariance, uniformly most powerful test, unusual for hypothesis test, linear hypothesis

CLO.3 Can solve Sampling distribution, Statistical order distribution, Law of large numbers, Central limit theorem, Limit distribution, estimation, estimator determination method, estimator properties, loss and risk function, adequacy statistics, Exponential family, unusualness, equivariance, uniformly most powerful test, unusual for hypothesis test, linear hypothesis

CLO.4 Can choose the method of determination: Sampling distribution, Statistical order distribution, Limit distribution, point and interval estimator, hypothesis test statistics.

Matrik CPL – CPMK

PLO-CLO Matrix

CPMK	CPL-4	CPL-5		
CPMK-1	V	V		
CPMK-2	V	V		
CPMK-3	V	V		
CPMK-4	V	V		

Deskripsi Singkat MK/ *Course Description*

Statistika Matematika merupakan salah satu mata kuliah dasar yang merupakan bagian dari bidang kajian dalam Teori Statistika. Tujuan mempelajari Statistika Matematika adalah untuk menguasai konsep Distribusi Sampling, Distribusi Order Statistik, Hukum Bilangan Besar, Teorema Limit Pusat, Distribusi Limit, distribusi sampling, penaksiran, metode penentuan penaksir, sifat-sifat penaksir, fungsi kerugian dan resiko, statistik kecukupan, Keluarga eksponensial, ketidakbiasan, equivariance, uniformly most powerfull test, ketidakbiasan , uji hipotesis, hipotesis linier serta aplikasi dalam metode statistika sehingga mahasiswa akan memiliki pengalaman belajar untuk berfikir secara kristis dan mampu memberikan keputusan yang tepat tentang penggunaan konsep tersebut. Strategi pembelajaran yang digunakan adalah diskusi dan latihan serta tugas

Mathematical Statistics is one of the basic courses that is part of the field of study in Statistical Theory. The purpose of studying Mathematical Statistics is to master the concepts of Sampling Distribution, Statistical Order Distribution, Law of Large Numbers, Central Limit Theorem, Limit Distribution, sampling distribution, estimation, estimator determination method, estimator properties, loss and risk function, adequacy statistics, Exponential family, unusualness, equivariance, uniformly most powerful test, unusualness, hypothesis test, linear hypothesis and applications in statistical methods so that students will have the learning experience to think in a ethical manner and be able to give the right decisions about the use of these concepts. The learning strategies used are

		discussions and exercises and tasks					

Bahan Kajian: Materi Pembelajaran/ *Course Material*	Dasar Sains, Teori Statistika, dan Pemodelan *Basic Science, Statistical Theory, and Modeling*

Pustaka/ *References*	**Utama/***Primary*:
	6. Hogg, R.V. dan Craig, A.T. (1995). Introduction to Mathematical Statistics, 5th ed. Mac Millon. New York.
	Pendukung/*Secondary*:
	1. Mood, A.M., Graybill,F.A. dan Boes, D.C. (1974). Introduction of the Theory of Statistics. 4th ed. Mc-Graw Hill. Tokyo. 2. Rice, J.A. (1995). Mathematical Statistics and Data Analysis. Second Ed. Duxbury Press. Belmont, California. 3. Lindgren, B.W. (1976). Statistical Theory. 3th ed. Mac Millon. New York. 4. Rohatgi, V.K. (1976). An Introduction to Probability Theory and Mathematical Statistics. Wiley & Sons. New York.

Dosen Pengampu/ *Lecturers*	Dr. Purhadi, M.Sc; Dr. Bambang Widjanarko Otok, M.Si; Jerry Dwi T.P., S.Si, M.Si, P.hD; Dr. Achmad Choiruddin, S.Si, M.Sc

Matakuliah syarat/ *Pre-requisite Course*	Pengantar Teori Peluang *Introduction to Probability Theory*

Mg Ke- *Week*	**Kemampuan akhir tiap tahapan belajar (Sub-CPMK)** *Final capability for each learning step*	**Penilaian** *Evaluation*		**Bantuk Pembelajaran, Metode Pembelajaran, Penugasan Mahasiswa, [Estimasi Waktu]** *Learning Format Learning Methods Assignment for Student [Estimated Time]*		**Materi Pembelajaran [Pustaka]** *Learning Material [References]*	**Bobot Penilaian (%)** *Evaluation Weight (%)*
		Indikator *Indicator*	**Kriteria & Bentuk** *Criteria and*	**Luring** *Offline*	**Daring** *Online*		

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(1)	(2)	(3)	Format (4)	(5)	(6)	(7)	(8)
1	Mampu menentukan distribusi sampling variabel random diskrit *Able to determine the sampling distribution of discrete random variables*	3.1. Mampu menjelaskan tentang konsep distribusi sampling. 3.2. Mampu menentukan distribusi dari Rata-rata, variansi sampel variabel random diskrit 3.3. Dapat menentukan distribusi sampling untuk variabel random diskrit meliputi distribusi Binomial, Geometrik, Poisson, Multinomial. *1. Able to explain the concept of sampling distribution.* *2. Able to determine the distribution of the Average, the variance of the sample of discrete random variables* *3. Can determine sampling distributions for discrete random variables including Binomial, Geometric, Poisson, Multinomial distributions.*	Tes Tulis, Tugas, Observasi di kelas *written tests, assignments, Observation in the classroom*	Ceramah Interaktif, Diskusi, Latihan Soal *Interactive Lectures, Discusssion, Exercise* Pertemuan - 1 **TM: 1x3x50"** **LT: 1x3x60"** **BM: 1x3x60"** Pertemuan - 2 **TM: 1x2x50"** **LT: 1x2x60"** **BM: 1x2x60"**		Distribusi sampling variabel random diskrit *Discrete random variable sampling distribution* *[1] Bab 4 dan Bab 5*	8%
2	Mampu menentukan distribusi sampling variabel random kontinyu *Able to determine the sampling distribution*	1. Mampu menjelaskan tentang konsep distribusi sampling. 2. Mampu menentukan distribusi dari Rata2, variansi sampel	Tes Tulis, Tugas, Observasi di kelas *written tests, assignments, Observation in the classroom*	Ceramah Interaktif, Diskusi, Latihan Soal *Interactive Lectures, Discusssion, Exercise*		Distribusi sampling variabel random kontinyu *Continuous random variable sampling*	7%

No							
	of continuous random variables	variabel random kontinyu. 3. Dapat menentukan distribusi sampling untuk variabel random kontinyu meliputi distribusi Eksponensial, Normal. Gamma, Weibull *Able to explain the concept of sampling distribution .* *Able to determine the distribution of average, the variance of the sample of continuous random variables.* 4. *Can determine sampling distributions for continuous random variables including Exponential distribution, Normal. Gamma, Weibull*		Pertemuan - 1 **TM: 1x3x50"** **LT: 1x3x60"** **BM: 1x3x60"** Pertemuan - 2 **TM: 1x2x50"** **LT: 1x2x60"** **BM: 1x2x60"**		*distribution* *[1] Bab 4 dan Bab 5*	
3	Mampu menentukan Distribusi orde statistik *Able to determine the distribution of statistical orders*	5.1. Mampu menjelaskan tentang konsep distribusi order statistic. 5.2. Mampu menentukan distribusi dari median, maks, min, range dari sampel variabel random 5.3. Mampu menentukan distribusi dari median, maks, min, range dari sampel variabel random *Able to explain the*	Tes Tulis, Tugas, Observasi di kelas *written tests, assignments, Observation in the classroom*	Ceramah Interaktif, Diskusi, Latihan Soal *Interactive Lectures, Discusssion, Exercise* Pertemuan - 1 **TM: 1x3x50"** **LT: 1x3x60"** **BM: 1x3x60"** Pertemuan - 2 **TM: 1x2x50"** **LT: 1x2x60"** **BM: 1x2x60"**		Distribusi orde statistik *Distribution of statistical orders* *[1] Bab 4 dan Bab 5*	10%

		concept of statistical order distribution. *Able to determine the distribution of the median, max, min, range of the random variable sample* *Able to determine the distribution of the median, max, min, range of the random variable sample*					
4	Mampu menentukan distribusi limit *Able to determine the distribution of limits*	1. Mampu menjelaskan tentang konsep distribusi limit 2. Mampu menentukan distribusi dari Rata2 sampel baik Variabel random diskrit dan kontinyu *Able to explain the concept of limit distribution* *Able to determine the distribution of the Average2 samples of both discrete and continuous random Variables*	Tes Tulis, Tugas, Observasi di kelas *written tests, assignments, Observation in the classroom*	Ceramah Interaktif, Diskusi, Latihan Soal *Interactive Lectures, Discusssion, Exercise* Pertemuan - 1 **TM: 1x2x50"** **LT: 1x2x60"** **BM: 1x2x60"** Pertemuan - 2 **TM: 1x3x50"** **LT: 1x3x60"** **BM: 1x3x60"**		Distribusi Limit *Limit Distribution* *[1] Bab 5*	10%
5	Mampu menentukan Distribusi khi kuadrat, student-t, beta, dan F *Able to determine the distribution of khi squared, student-t,*	1. Mampu menentukan distribusi Khi kuadrat dan F 2. Mampu menentukan distribusi student-t dan beta	Tes Tulis, Tugas, Observasi di kelas *written tests, assignments, Observation in the classroom*	Ceramah Interaktif, Diskusi, Latihan Soal *Interactive Lectures, Discusssion, Exercise*		Distribusi khi kuadrat, student-t, beta, dan F *Distribution of khi squared, student-t, beta, and F*	7%

				Pertemuan - 1 **TM: 1x3x50"** **LT: 1x3x60"** **BM: 1x3x60"** Pertemuan - 2 **TM: 1x2x50"** **LT: 1x2x60"** **BM: 1x2x60"**		*[1] Bab 4*	
6-7	Mampu menerapkan konsep teorema limit pusat dan hukum bilangan besar *Able to apply the concepts of the central limit theorem and the law of large numbers*	1. Dapat memahami tipe-tipe konvergensi: konvergensi dalam peluang, konvergensi dalam distribusi, konvergensi almost surely 2. Dapat menerangkan tentang konsep teorema limit pusat dan hukum bilangan besar 3. Mampu menerapkan konsep teorema limit pusat dan hukum bilangan besar pada berbagai distribusi *Can understand the types of convergence: convergence in chance, convergence in distribution, convergence almost surely* *Can explain the concept of the central limit theorem and the law of large numbers* *Able to apply the concepts of the central limit theorem and the law of large*	Tes Tulis, Tugas, Observasi di kelas *written tests, assignments, Observation in the classroom*	Ceramah Interaktif, Diskusi, Latihan Soal *Interactive Lectures, Discusssion, Exercise* Pertemuan – 1 dan 3 **TM: 2x3x50"** **LT: 2x3x60"** **BM: 2x3x60"** Pertemuan – 2 dan 4 **TM: 2x2x50"** **LT: 2x2x60"** **BM: 2x2x60"**		Hukum bilangan besar dan teorema limit pusat *The law of large numbers and the central limit theorem* *[1] Bab 5*	8%

		numbers to various distributions				
8	ETS/*Midterm*					
9-10	Mampu menjelaskan definisi penaksiran titik, penaksiran interval *Able to explain the definition of point estimation, interval estimation*	1. Mampu menerangkan, memberi contoh ukuran kualitas penaksiran, penaksiran titik, penaksiran interval. 2. Mampu menerapkan metode penentuan penaksiran pada berbagai distribusi 3. Mampu mengetahui kelebihan dari masing-masing 4. metode penentuan penaksiran tersebut. 1. *Able to explain, give examples of measures of estimation quality, point estimation, interval estimation* 2. *Able to apply the method of determining estimation to various distributions* 3. *Able to know the advantages of each* 4. *Method of determining such estimation.*	Tes Tulis, Tugas, Observasi di kelas *written tests, assignments, Observation in the classroom*	Ceramah Interaktif, Diskusi, Latihan Soal *Interactive Lectures, Discusssion, Exercise* Pertemuan – 1 dan 3 **TM: 2x3x50"** **LT: 2x3x60"** **BM: 2x3x60"** Pertemuan – 2 dan 4 **TM: 2x2x50"** **LT: 2x2x60"** **BM: 2x2x60"**	Penaksiran, penaksiran titik, penaksiran interval metode penentuan penaksir *Estimation, point estimation, interval estimation method of estimator determination* *[1] Bab 6*	10%
11	Mampu menjelaskan sifat-sifat penaksir, fungsi kerugian dan resiko *Able to explain the properties of estimators, functions of losses and risks*	1. Dapat menerangkan dan menghubungkan sifat-sifat penaksiran, fungsi resiko, penaksiran admissible, minimax 2. Mampu menentukan sifat- sifat penaksir	Tes Tulis, Tugas, Observasi di kelas *written tests, assignments, Observation in the classroom*	Ceramah Interaktif, Diskusi, Latihan Soal *Interactive Lectures, Discusssion, Exercise* Pertemuan - 1 **TM: 1x3x50"**	Sifat-sifat penaksir, fungsi kerugian dan resiko *Properties of estimators, functions of losses and risks* *[1] Bab 6*	10%

		parameter dari distribusi diskrit dan kontinyu 1. *Can describe and link the properties of estimation, risk function, admissible estimation, minimax* 2. *Able to determine the parameter estimator properties of discrete and continuous distributions*		LT: 1x3x60" BM: 1x3x60" Pertemuan - 2 TM: 1x2x50" LT: 1x2x60" BM: 1x2x60"			
12	Mampu menjelaskan konsep Keluarga Eksponensial , statistik kecukupan, kriteria faktorisasi statistik kecukupan minimal, Equivariance *Able to explain the concept of Exponential Family, adequacy statistics, minimal adequacy statistical factorization criteria, Equivariance*	1. Dapat menerangkan, memberi contoh Keluarga Eksponensial, statistik kecukupan, kriteria faktorisasi statistik kecukupan minimal dari distribusi diskrit dan kontinyu baik untuk satu dan beberapa parameter, Equivariance 1. *Can explain, exemplify the Exponential Family, adequacy statistics, statistical factorization criteria of minimal adequacy of discrete and continuous distributions for both one and several parameters, Equivariance*	Tes Tulis, Tugas, Observasi di kelas *written tests, assignments, Observation in the classroom*	Ceramah Interaktif, Diskusi, Latihan Soal *Interactive Lectures, Discusssion, Exercise* Pertemuan - 1 TM: 1x3x50" LT: 1x3x60" BM: 1x3x60" Pertemuan - 2 TM: 1x2x50" LT: 1x2x60" BM: 1x2x60"		Keluarga Eksponensial , statistik kecukupan, kriteria faktorisasi statistik kecukupan minimal, Equivariance *Exponential Family , adequacy statistics, minimal adequacy statistical factorization criteria, Equivariance* *[1] Bab 6 dan Bab 10*	10%
13	Mampu menjelaskan konsep Pengujian Hipotesis, penentuan statistik uji	1. Mampu menjelaskan tentang konsep pengujian hipotesis 2. Mampu menentukan	Tes Tulis, Tugas, Observasi di kelas *written tests, assignments,*	Ceramah Interaktif, Diskusi, Latihan Soal *Interactive Lectures,*		Pengujian Hipotesis *Hypothesis Testing [1] Bab 7*	10%

		statistik uji untuk berbagai hipotesis dengan menggunakan metoda teorema N-P, UMPT, GLRT, baik Variabel random diskrit dan kontinyu.	*Observation in the classroom*	*Discusssion, Exercise*		
	Able to explain the concept of Hypothesis Testing, determination of test statistics			Pertemuan - 1 **TM: 1x3x50"** **LT: 1x3x60"** **BM: 1x3x60"** Pertemuan - 2 **TM: 1x2x50"** **LT: 1x2x60"** **BM: 1x2x60"**		
		1. *Able to explain the concept of hypothesis testing* 2. *Able to determine test statistics for various hypotheses using the methods of the N-P, UMPT, GLRT theorems, both Discrete random variables and continuous.*				
14-15	Mampu menjelaskan konsep pengujian Hipotesis untuk proporsi, dua proporsi, uji selisih dua mean, Uji beda dua variasi *Able to explain the concept of hypothesis testing for proportions, two proportions, test the difference of two mean, Test the difference of two variations*	Dapat menerangkan, dan menerapkan , UMPT, GLRT pada uji proporsi, dua proporsi, Uji selisih dua mean, Uji beda dua variasi *Can explain, and apply, UMPT, GLRT on proportion test, two proportions, Test difference two mean, Test difference two variations*	Tes Tulis, Tugas, Observasi di kelas *written tests, assignments, Observation in the classroom*	Ceramah Interaktif, Diskusi, Latihan Soal *Interactive Lectures, Discusssion, Exercise* Pertemuan – 1 dan 3 **TM: 2x3x50"** **LT: 2x3x60"** **BM: 2x3x60"** Pertemuan – 2 dan 4 **TM: 2x2x50"** **LT: 2x2x60"** **BM: 2x2x60"**	Pengujian Hipotesis proporsi, dua proporsi, Uji selisih dua mean, Uji beda dua variasi *Proportions Hypothesis Testing, two proportions, Test difference two mean, Test difference two variations* [1] Bab 7 dan Bab 8	10%
16	**Evaluasi Akhir Semester / Ujian Akhir Semester/*Final Exam***					

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