	INSTITUT TEKNOLOGI SEPULUH NOPEMBER **FAKULTAS SAINS DAN ANALITIKA DATA** **PROGRAM STUDI DOKTOR ILMU STATISTIK** **DEPARTEMEN STATISTIKA**	**Kode Dokumen**

RENCANA PEMBELAJARAN SEMESTER

MATA KULIAH (MK)	KODE	Rumpun MK	BOBOT (sks)		SEMESTER	Tgl Penyusunan
Analisis Multivariat Lanjut	SS236251	Statistika Lingkungan dan Kesehatan (LingKes)	**T=3**	**P=0**	2	29 Agustus 2023

OTORISASI	Pengembang RPS	Koordinator RMK	Ketua PRODI
		Prof. Dr. Bambang Widjanarko Otok., M.Si.	Dr.rer.pol. Dedy Dwi Prastyo, S.Si, M.Si

Capaian Pembelajaran (CP) *Learning Outcome (LO)*	**CPL-PRODI yang dibebankan pada MK**	
	CPL-1 *PLO-1*	Mampu menunjukkan sikap dan karakter yang mencerminkan: ketakwaan kepada Tuhan Yang Maha Esa, etika dan integritas, berbudi pekerti luhur, peka dan peduli terhadap masalah sosial dan lingkungan, menghargai perbedaan budaya dan kemajemukan, menjunjung tinggi penegakan hukum mendahulukan kepentingan bangsa dan masyarakat luas, melalui kreatifitas dan inovasi, ekselensi, kepemimpinan yang kuat, sinergi, dan potensi lain yang dimiliki untuk mencapai hasil yang maksimal. *Able to demonstrate attitudes and characters that reflect: being pious to God Almighty, having ethics and integrity, virtuous character, sensitive and concern with social and environmental issues, respecting cultural differences and pluralism, upholding law enforcement, prioritizing the interests of the nation and the wider community, through creativity and innovation, excellence, strong leadership, synergy, and other potentials to achieve maximum results.*
	CPL-2 *PLO-2*	Mampu mengembangkan teori / konsepsi / gagasan baru dan memecahkan permasalahan ilmu pengetahuan dan/ atau teknologi dalam bidang keilmuan nya melalui riset dengan pendekatan inter, multi dan transdisiplin hingga menghasilkan karya kreatif, original, dan teruji dalam bentuk disertasi dan makalah yang telah diterbitkan di jurnal internasional bereputasi. *Able to develop new theories/concepts/ideas and solve scientific and/or technological problems in their field through research with inter, multi, and transdisciplinary approaches to produce creative, original, and tested works in the form of dissertations and papers that have been approved published in reputable international journals.*
	CPL-3 *PLO-3*	Mampu mengelola pembelajaran diri sendiri, dan mengembangkan diri sebagai pribadi pembelajar sepanjang hayat untuk bersaing di tingkat nasional, maupun internasional, dalam rangka berkontribusi nyata untuk menyelesaikan masalah dengan mengimplementasikan teknologi informasi dan komunikasi dan memperhatikan prinsip keberlanjutan. *Able to manage their own learning and develop themselves as personal lifelong learners to compete at national and international levels, in order to make a real contribution to solving problems by implementing information and communication technology and paying attention to the principle of sustainability.*
	CPL-4	Mampu mengkaji dan menerapkan Statistika Matematika untuk menyelesaikan permasalahan Statistik.

	PLO-4	*Able to do in-depth study and apply Mathematical Statistics to solve statistical problems*
	CPL-5 *PLO-5*	Mampu menggunakan perangkat komputasi modern untuk menyelesaikan permasalahan statistik. *Able to use modern computing devices to solve statistical problems*
	CPL-6 *PLO-6*	Mampu menerapkan dan mengembangkan teknik komputasi untuk menyelesaikan permasalahan statistik. *Able to apply and develop computational techniques to solve statistical problems*
	CPL-7 *PLO-7*	Mampu menerapkan metode statistika dengan tepat serta mengevaluasi dan mengembangkannya untuk menganalisis permasalahan teoritis dan riil. *Able to apply statistical methods appropriately as well as evaluate and develop them to analyze theoretical and real problems*
	CPL-8 *PLO-8*	Mampu menerapkan metode Statistika Bisnis, Industri, Ekonomi Finansial, Sosial Kependudukan, Lingkungan atau Kesehatan yang berbasis Komputasi pada permasalahan riil *Able to apply Computing-based Business, Industrial, Financial Economics, Social-Population, Environmental, or Health Statistics methods to real problems*

Capaian Pembelajaran Mata Kuliah (CPMK)

Matrik CPL – CPMK

CPMK	CPL-1		CPL-6	CPL-7	CPL-8
CPMK-1					V
CPMK-2					V
CPMK-3			V	V	
CPMK-4			V	V	
CPMK-5			V	V	
CPMK-6					

Deskripsi Singkat MK	
Bahan Kajian: Materi Pembelajaran	Matematika. Teori Statistika, Deskripsi dan Eksplorasi, Komputasi dan Data Prosessing, Pemodelan, Kesehatan dan Lingkungan *Mathematics. Statistical Theory, Description and Exploration, Computing and Data Processing, Modeling, Health and Environment*
Pustaka	**Utama :**

1. Johnson, R.A and Wichern, D.W, 2007. Applied Multivariate Statistical Analysis,6th Edition, Prentice Hall, New York.
2. Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E, 2010. Multivariate Data Analysis, 7th Edition, Prentice-Hall, UK
3. Rencher, A.C. Methods of Multivariate Analysis, 2nd Edition, John Wiley
4. Sarma, S. 1996. Applied Multivariate Techniques, John Wiley
5. Anderson, T.W, 2003, An Introduction to Multivariate Statistical Analysis, Wiley Interscience
6. Morison, D.F, 2005, Multivariate Statistical Method, McGraw-Hill Inc., Tokyo.

	7. Byrne, B.M, 2001, Structural Equation Modelling with AMOS: Basic Concept, Applications and Programming, Lawrence Erlbaun Associates Inc., New Jersey. 8. Mardia, K.V, Kent, J.T, Bibby, J.M, 2000. Multivariate Analysis, 7th Edition. Academic Press. **Pendukung :**
Dosen Pengampu	
Mata kuliah syarat	

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Mg Ke-	Kemampuan akhir tiap tahapan belajar (Sub-CPMK)	Penilaian		Bantuk Pembelajaran, Metode Pembelajaran, Penugasan Mahasiswa, [Estimasi Waktu]		Materi Pembelajaran [Pustaka]	Bobot Penilaian (%)
		Indikator	Kriteria & Bentuk	Luring (*offline*)	Daring (*online*)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	1. Mampu menjelaskan konsep dasar analisis multivariat. 2. Memahami konsep matriks yang sering dipakai dalam analisis multivariate 1. *Able to explain the basic concepts of multivariate analysis.* 2. *Understand the concept of matrices that are often used in multivariate analysis*	1.1. Mampu membedakan antara data univariat dan data multivariate serta pengelompokan metode univariat dan metode multivariate. 1.2. Memahami konsep matriks yang sering digunakan dalam analisis multivariate. *1.1 Able to distinguish*	Tes tulis Tugas 1 Observasi di kelas *Writing Test Task 1* *Observation in class*	Ceramah, diskusi dan latihan soal *Lectures, discussions and exercise* 150 menit *150 minutes*		• Konsep dasar analisis multivariate • Aljabar matriks dan vector random. • *The basic concepts of multivariate analysis* • *Matrix algebra and random vectors.*	5%/5%

Mg Ke-	Kemampuan akhir tiap tahapan belajar (Sub-CPMK)	Penilaian		Bantuk Pembelajaran, Metode Pembelajaran, Penugasan Mahasiswa, [Estimasi Waktu]		Materi Pembelajaran [Pustaka]	Bobot Penilaian (%)
		Indikator	Kriteria & Bentuk	Luring (*offline*)	Daring (*online*)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		between univariate data and multivariate data as well as grouping univariate and multivariate methods. *1.2 Understand the concept of matrices that are often used in multivariate analysis.*					
2	1. Preprocessing data 2. Memahami konsep distribusi normal multivariat. *1. Preprocessing data* *2. Understand the concept of multivariate normal distribution.*	2.1 Dapat mendeteksi dan mengatasi outlier dan missing value. 2.2 Dapat Menguji asumsi kenormalan data multivariate dan cara-cara mengatasinya jika asumsi dilanggar	Tes tulis Tugas 1 Observasi di kelas *Writing Test Task 1* *Observation in class*	Ceramah, diskusi dan latihan soal *Lectures, discussions and exercise* 150 menit *150 minutes*		• Missing value • Outlier • Distribusi normal multivariate • *Missing value* • *Outliers* • *Multivariate normal distribution*	5%/10%

Mg Ke-	Kemampuan akhir tiap tahapan belajar (Sub-CPMK)	Penilaian		Bantuk Pembelajaran, Metode Pembelajaran, Penugasan Mahasiswa, [Estimasi Waktu]		Materi Pembelajaran [Pustaka]	Bobot Penilaian (%)
		Indikator	Kriteria & Bentuk	Luring (*offline*)	Daring (*online*)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		2.1 Can detect and resolve outliers and missing values. *2.2 Can Test the assumption of normality of multivariate data and ways to overcome it if the assumption is violated*					
3	1. Memahami konsep daerah kepercayaan dan uji hipotesis vector rata-rata satu dan dua populasi normal multivariat 2. Memahami konsep daerah kepercayaan dan uji hipotesis vector rata-rata lebih dari dua populasi normal multivariate *1. Understand the concept of confidence area and test*	3.1 Dapat menentukan, menghitung dan menganalisis daerah kepercayaan dan uji hipotesis vector rata-rata satu dan dua populasi normal multivariat 3.2 Dapat menentukan,	Tes tulis Tugas 2 Observasi di kelas *Writing Test Task 2 Observation in class*	Ceramah, diskusi dan latihan soal *Lectures, discussions and exercise* 150 menit *150 minutes*		daerah kepercayaan dan uji hipotesis vector rata-rata satu dan dua populasi *manova, manacova* *confidence area and test the hypothesis of the vector mean of one and two populations* *manova, manacova*	5%/15%

Mg Ke-	Kemampuan akhir tiap tahapan belajar (Sub-CPMK)	Penilaian		Bantuk Pembelajaran, Metode Pembelajaran, Penugasan Mahasiswa, [Estimasi Waktu]		Materi Pembelajaran [Pustaka]	Bobot Penilaian (%)
		Indikator	Kriteria & Bentuk	Luring (*offline*)	Daring (*online*)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	the vector hypothesis of the mean of one and two multivariate normal populations *2. Understand the concept of confidence area and test the vector hypothesis of the mean of more than two multivariate normal populations*	menghitung dan menganalisis daerah kepercayaan dan uji hipotesis vector rata-rata lebih dari dua populasi normal multivariat baik yang ada peubah pengiring maupun tidak *3.1 Can determine, calculate and analyze confidence areas and test the average vector hypothesis of one and two multivariate normal populations* *3.2 Can determine, calculate and*					

Mg Ke-	Kemampuan akhir tiap tahapan belajar (Sub-CPMK)	Penilaian		Bantuk Pembelajaran, Metode Pembelajaran, Penugasan Mahasiswa, [Estimasi Waktu]		Materi Pembelajaran [Pustaka]	Bobot Penilaian (%)
		Indikator	Kriteria & Bentuk	Luring (*offline*)	Daring (*online*)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		analyze the confidence area and test the average vector hypothesis of more than two multivariate normal populations, whether there are accompanying variables or not					
4	1. Memahami konsep Analisis Komponen Utama 2. Memahami konsep Analisis Faktor *1. Understand the concept of Principal Component Analysis* *2. Understand the concept of Factor Analysis*	4.1. Dapat menentukan, menghitung dan menganalisis data serta penurunan secara toeri analisis komponen utama 4.2. Dapat menentukan, menghitung dan menganalisis data serta	Tes tulis Tugas 2 Observasi di kelas *Writing Test* *Task 2* *Observation in class*	Ceramah, diskusi dan latihan soal *Lectures, discussions and exercise* 150 menit *150 minutes*		Analisis Komponen Utama Analisis Faktor *Principal Component Analysis* *Factor Analysis*	5%/20%

Mg Ke-	Kemampuan akhir tiap tahapan belajar (Sub-CPMK)	Penilaian		Bantuk Pembelajaran, Metode Pembelajaran, Penugasan Mahasiswa, [Estimasi Waktu]		Materi Pembelajaran [Pustaka]	Bobot Penilaian (%)
		Indikator	Kriteria & Bentuk	Luring (*offline*)	Daring (*online*)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		penurunan secara toeri analisis faktor *4.1. Can determine, calculate and analyze data and theoretically decrease the main component analysis* *4.2. Can determine, calculate and analyze data and decrease in factor analysis theory*					
5	1. Memahami konsep Analisis Kelompok 2. Memahami konsep Analisis Diskriminan *1. Understand the concept of Group Analysis*	5.1. Dapat menentukan, menghitung dan menganalisis data serta penurunan secara toeri analisis kelompok	Tes tulis Tugas 2 Observasi di kelas *Writing Test* *Task 2* *Observation in class*	Ceramah, diskusi dan latihan soal *Lectures, discussions and exercise* 150 menit		Analisis Kelompok Analisis Diskriminan *Group Analysis* *Discriminant Analysis*	5%/25%

Mg Ke-	Kemampuan akhir tiap tahapan belajar (Sub-CPMK)	Penilaian		Bantuk Pembelajaran, Metode Pembelajaran, Penugasan Mahasiswa, [Estimasi Waktu]		Materi Pembelajaran [Pustaka]	Bobot Penilaian (%)
		Indikator	Kriteria & Bentuk	Luring (*offline*)	Daring (*online*)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	2. Understand the concept of Discriminant Analysis	5.2. Dapat menentukan, menghitung dan menganalisis data serta penurunan secara toeri analisis diskriminan *5.1. Can determine, calculate and analyze data and decrease in theoretical group analysis* *5.2. Can determine, calculate and analyze data and decrease in discriminant analysis theory*		*150 minutes*			
6	1. Memahami konsep model pengukuran based kovarians first order 2. Memahami konsep model pengukuran	6.1. Mampu menjelaskan pengertian konsep model pengukuran first order	Tes tulis Tugas 3 Observasi di kelas	Ceramah, diskusi dan latihan soal *Lectures, discussions and exercise*		Pengujianasumsi normal multivariate pada indicator di variable laten AnalisisFaktorKonfirmatori	5%/30%

Mg Ke-	Kemampuan akhir tiap tahapan belajar (Sub-CPMK)	Penilaian		Bantuk Pembelajaran, Metode Pembelajaran, Penugasan Mahasiswa, [Estimasi Waktu]		Materi Pembelajaran [Pustaka]	Bobot Penilaian (%)
		Indikator	Kriteria & Bentuk	Luring (*offline*)	Daring (*online*)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	based kovarians second order *1. Understand the concept of the first order covariance based measurement model* *2. Understand the concept of the second order covariance based measurement model*	6.2.Mampu menjelaskan pengertian konsep model pengukuran second order *6.1. Able to explain the concept of the first order measurement model* *6.2. Able to explain the concept of second order measurement model*	*Writing Test Task 3* *Observation in class*	150 menit *150 minutes*		*Testing multivariate normal assumptions on indicators in latent variables* *Confirmatory Factor Analysis*	
7	7. Mampu menjelaskan konsep dan teoritis analisis jalur based kovarians *7. Able to explain the concept and theory of path analysis based on covariance*	7.1. Mampu menjelaskan tentang analisis jalur dengan 1 variabel intervening. 7.2. Mampu menentukan pengaruh tidak langsung antar variable laten.	Tes tulis Tugas 4 Observasi di kelas *Writing Test Task 4* *Observation in class*	Ceramah, diskusi dan latihan soal *Lectures, discussions and exercise* 150 menit *150 minutes*		Analisis jalur based kovariansdengan 1 variabel intervening *Path analysis based on covariance with 1 intervening variable*	5%/35%

Mg Ke-	Kemampuan akhir tiap tahapan belajar (Sub-CPMK)	Penilaian		Bantuk Pembelajaran, Metode Pembelajaran, Penugasan Mahasiswa, [Estimasi Waktu]		Materi Pembelajaran [Pustaka]	Bobot Penilaian (%)
		Indikator	Kriteria & Bentuk	Luring (*offline*)	Daring (*online*)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		7.3. Mampu menentukan goodness of fit model. 7.4. Mampu menentukan modifikasi model analisis jalur *7.1. Able to explain path analysis with 1 intervening variable.* *7.2. Able to determine the indirect effect between latent variables.* *7.3. Able to determine the goodness of fit model.* *7.4. Able to determine the modification of the path analysis model*					
8	8. Mampu menjelaskan konsep dan teoritis analisis jalur based	8.1. Mampu menjelaskan tentang analisis	Tes tulis Tugas 4 Observasi di	Ceramah, diskusi dan latihan soal		Analisis jalur based kovariansdengan 2 variabel intervening	5%/40%

Mg Ke-	Kemampuan akhir tiap tahapan belajar (Sub-CPMK)	Penilaian		Bantuk Pembelajaran, Metode Pembelajaran, Penugasan Mahasiswa, [Estimasi Waktu]		Materi Pembelajaran [Pustaka]	Bobot Penilaian (%)
		Indikator	Kriteria & Bentuk	Luring (*offline*)	Daring (*online*)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	kovarians dengan 2 variabel intervening *8. Able to explain the concept and theory of path analysis based on covariance with 2 intervening variables*	jalur dengan 2 variabel intervening. 8.2. Mampu menentukan pengaruh tidak langsung antar variable laten. 8.3. Mampu menentukan goodness of fit model. 8.4. Mampu menentukan modifikasi model analisis jalur *8.1. Able to explain path analysis with 2 intervening variables.* *8.2. Able to determine the indirect effect between latent variables.* *8.3. Able to determine the goodness of fit model.* *8.4. Able to determine*	kelas *Writing Test Task 4 Observation in class*	*Lectures, discussions and exercise* 150 menit *150 minutes*		*Path analysis based on covariance with 2 intervening variables*	

Mg Ke-	Kemampuan akhir tiap tahapan belajar (Sub-CPMK)	Penilaian		Bantuk Pembelajaran, Metode Pembelajaran, Penugasan Mahasiswa, [Estimasi Waktu]		Materi Pembelajaran [Pustaka]	Bobot Penilaian (%)
		Indikator	Kriteria & Bentuk	Luring (*offline*)	Daring (*online*)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		modification of path analysis model					
9	9. Mampu menjelaskan konsep dan teoritis model persamaan structural based kovarians tanpa variabel intervening *9. Be able to explain the concepts and theoretical models of structural equations based on covariance without intervening variables*	9.1. Mampu menjelaskan tentang model persamaan structural based kovarians tanpa variabel intervening. 9.2. Mampu menentukan goodness of fit model persamaan struktural 9.3. Mampu menentukan modifikasi model persamaan structural *9.1. Able to explain the structural equation model based on covariance without intervening variables.*	Tes tulis Tugas 4 Observasi di kelas *Writing Test Task 4 Observation in class*	Ceramah, diskusi dan latihan soal *Lectures, discussions and exercise* 150 menit *150 minutes*		Model persamaan strukturaltanpa variable intervening *Structural equation model without intervening variables*	5%/45%

Mg Ke-	Kemampuan akhir tiap tahapan belajar (Sub-CPMK)	Penilaian		Bantuk Pembelajaran, Metode Pembelajaran, Penugasan Mahasiswa, [Estimasi Waktu]		Materi Pembelajaran [Pustaka]	Bobot Penilaian (%)
		Indikator	Kriteria & Bentuk	Luring (*offline*)	Daring (*online*)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		9.2. Able to determine the goodness of fit structural equation model *9.3. Able to determine modification of structural equation model*					
10	10. Mampu menjelaskan konsep dan teoritis model persamaan structural based kovarians dengan variabel intervening *10. Able to explain the concepts and theoretical models of structural equations based on covariance with intervening variables*	10.1. Mampu menjelaskan tentang model persamaan structural based kovarians dengan variabel intervening. 10.2. Mampu menentukan goodness of fit model persamaan struktural 10.3. Mampu menentukan modifikasi model persamaan structural	Tes tulis Tugas 1 Observasi di kelas *Writing Test Task 1 Observation in class*	Ceramah, diskusi dan latihan soal *Lectures, discussions and exercise* 150 menit *150 minutes*		Model persamaan strukturaldengan variable intervening *Structural equation model with intervening variable*	5%/50%

Mg Ke-	Kemampuan akhir tiap tahapan belajar (Sub-CPMK)	Penilaian		Bantuk Pembelajaran, Metode Pembelajaran, Penugasan Mahasiswa, [Estimasi Waktu]		Materi Pembelajaran [Pustaka]	Bobot Penilaian (%)
		Indikator	Kriteria & Bentuk	Luring (*offline*)	Daring (*online*)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		10.1. Able to explain the structural equation model based on covariance with intervening variables. *10.2. Able to determine the goodness of fit structural equation model* *10.3. Able to determine modification of structural equation model*					
11	11. Mampu menjelaskan konsep dan teoritis model analisis jalur based kovarians dengan variabel moderating *11. Able to explain the concepts and theoretical models of path analysis based on covariance with moderating variables*	11.1. Mampu menjelaskan tentang analisis jalur based kovarians dengan variabel moderating. 11.2. Mampu menentukan goodness of fit modelanalisis jalur 11.3. Mampu	Tes tulis Tugas 1 Observasi di kelas *Writing Test Task 1 Observation in class*	Ceramah, diskusi dan latihan soal *Lectures, discussions and exercise* 150 menit *150 minutes*		Model analisis jalurdengan variable moderating *Path analysis model with moderating variable*	5%/55%

Mg Ke-	Kemampuan akhir tiap tahapan belajar (Sub-CPMK)	Penilaian		Bantuk Pembelajaran, Metode Pembelajaran, Penugasan Mahasiswa, [Estimasi Waktu]		Materi Pembelajaran [Pustaka]	Bobot Penilaian (%)
		Indikator	Kriteria & Bentuk	Luring (*offline*)	Daring (*online*)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		menentukan modifikasi model analisis jalur *11.1. Able to explain about path analysis based on covariance with moderating variables.* *11.2. Able to determine the goodness of fit path analysis model* *11.3. Able to determine modification of path analysis model*					
12	12. Mampu menjelaskan konsep dan teoritis model persamaan structural based kovarians dengan variabel moderating *12. Able to explain the concepts and theoretical models of structural equations based on*	12.1. Mampu menjelaskan tentang model persamaan structural based kovarians dengan variabel moderating. 12.2. Mampu menentukan goodness of fit	Tes tulis Tugas 2 Observasi di kelas *Writing Test Task 2 Observation in class*	Ceramah, diskusi dan latihan soal *Lectures, discussions and exercise* 150 menit *150 minutes*		Model persamaan strukturaldengan variable moderating *Structural equation model with moderating variable*	10%/65%

Mg Ke-	Kemampuan akhir tiap tahapan belajar (Sub-CPMK)	Penilaian		Bantuk Pembelajaran, Metode Pembelajaran, Penugasan Mahasiswa, [Estimasi Waktu]		Materi Pembelajaran [Pustaka]	Bobot Penilaian (%)
		Indikator	Kriteria & Bentuk	Luring (*offline*)	Daring (*online*)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	covariance with moderating variables	model persamaan struktural 12.3. Mampu menentukan modifikasi model persamaan structural *12.1. Able to explain about structural equation model based on covariance with moderating variable.* *12.2. Able to determine the goodness of fit structural equation model* *12.3. Able to determine modification of structural equation model*					
13	13. Mampu menjelaskan konsep dan teoritis analisis jalur based varians	13.1. Mampu menjelaskan tentang analisis jalur based	Tes tulis Tugas 2 Observasi di kelas	Ceramah, diskusi dan latihan soal *Lectures,*		Analisis jalur based variansdengan 1 variabel intervening	10%/75%

Mg Ke-	Kemampuan akhir tiap tahapan belajar (Sub-CPMK)	Penilaian		Bantuk Pembelajaran, Metode Pembelajaran, Penugasan Mahasiswa, [Estimasi Waktu]		Materi Pembelajaran [Pustaka]	Bobot Penilaian (%)
		Indikator	Kriteria & Bentuk	Luring (*offline*)	Daring (*online*)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	13. Able to explain the concept and theory of path analysis based on variance	variansdengan 1 variabel intervening. 13.2. Mampu menentukan pengaruh tidak langsung antar variable laten.(Sobel Test) 13.3. Mampu menentukan goodness of fit model. *13.1. Able to explain about path analysis based on variance with 1 intervening variable.* *13.2. Able to determine the indirect effect between latent variables. (Sobel Test)* *13.3. Able to determine the goodness of fit model.*	*Writing Test Task 2 Observation in class*	*discussions and exercise* 150 menit *150 minutes*		*Path analysis based on variance with 1 intervening variable*	

Mg Ke-	Kemampuan akhir tiap tahapan belajar (Sub-CPMK)	Penilaian		Bantuk Pembelajaran, Metode Pembelajaran, Penugasan Mahasiswa, [Estimasi Waktu]		Materi Pembelajaran [Pustaka]	Bobot Penilaian (%)
		Indikator	Kriteria & Bentuk	Luring (*offline*)	Daring (*online*)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
14	14. Mampu menjelaskan konsep dan teoritis model persamaan structural based varians dengan variabel moderating *14. Able to explain the concepts and theoretical models of structural equations based on variance with moderating variables*	14.1. Mampu menjelaskan tentang model persamaan structural based varians dengan variabel moderating. 14.2. Mampu menentukan goodness of fit model persamaan struktural *14.1. Able to explain about structural equation model based on variance with moderating variable.* *14.2. Able to determine the goodness of fit structural equation model*	Tes tulis Tugas 4 Observasi di kelas *Writing Test Task 4 Observation in class*	Ceramah, diskusi dan latihan soal *Lectures, discussions and exercise* 150 menit *150 minutes*		Model persamaan strukturalbased variansdengan variable moderating *Structural equation model based on variance with moderating variable*	10%/85%
15	14. Mampu menjelaskan konsep dan teoritis model persamaan structural based	14.1. Mampu menjelaskan tentang model persamaan	Tes tulis Tugas 4 Observasi di kelas	Ceramah, diskusi dan latihan soal *Lectures,*		Model persamaan struktural based distribusi(SEM Bayesian)	15%/100%

Mg Ke-	Kemampuan akhir tiap tahapan belajar (Sub-CPMK)	Penilaian		Bantuk Pembelajaran, Metode Pembelajaran, Penugasan Mahasiswa, [Estimasi Waktu]		Materi Pembelajaran [Pustaka]	Bobot Penilaian (%)
		Indikator	Kriteria & Bentuk	Luring (*offline*)	Daring (*online*)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	distribusi *14. Able to explain the concept and theory of structural equation model based on distribution*	structural based distribusi(SEM Bayesian) 14.2. Mampu menentukan goodness of fit model persamaan struktural Bayesian *14.1. Able to explain about structural equation model based on distribution (Bayesian SEM)* *14.2. Able to determine goodness of fit Bayesian structural equation model*	*Writing Test Task 4* *Observation in class*	*discussions and exercise* 150 menit *150 minutes*		*Distribution based structural equation model (Bayesian SEM)*	