MODULE HANDBOOK

Calculus II

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

ENDORSEMENT PAGE

	MODULE HANDBOOK **CALCULUS II** **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. Tahiyatul Asfihani, S.Si, M.Si	Dosen *Lecturer*		
Pemeriksa dan Pengendalian *Review and Control*	Mathematics Team	Tim kurikulum *Curriculum team*		
Persetujuan *Approval*		Koordinator RMK *Course Cluster Coordinator*		
Penetapan *Determination*	Dr. Kartika Fithriasari, M.Si	Kepala Departemen *Head of Department*		

MODULE HANDBOOK

CALCULUS II

Module name	**Calculus II**	
Module level	Undergraduate	
Code	SM 234201	
Course (if applicable)	Calculus II	
Semester	2st semester	
Person responsible for the module	Dr. Tahiyatul Asfihani, S.Si, M.Si	
Lecturer	Mathematics Team	
Language	Bahasa Indonesia and English	
Relation to curriculum	Undergraduate degree program, **mandatory**, 1st semester.	
Type of teaching, contact hours	Case Method (25%) Other SCL Methods (18.75%) Non-SCL Methods (56.25%)	
Workload	1. Lectures[L]: 3 x 50 = 150 minutes per week. 2. Exercises and Assignments[EA]: 3 x 60 = 180 minutes (3 hours) perweek. 3. Independent Learning[IL]: 3 x 60 = 180 minutes (3 hours) per week.	
Credit points	3 credit points (sks), Equivalent 4.8 ECTS	
Requirements according to the examination regulations	A student must have attended at least 80% of the lectures to sit in the exams.	
Mandatory prerequisites	-	
Learning outcomes and their corresponding PLOs	CLO_1 Students are able to apply basic mathematical concepts related to transcendent functions. CLO_2 Students are able to apply integration techniques. CLO_3 Students are able to apply integration techniques well in the forms of cartesian coordinate functions, polar coordinate, and parametric equations. CLO_4 Students are able to determine the convergence of infinity sequences and series.	PLO.1 PLO.2

Content	*In this course, students will learn the following subjects:* *1. Trancendents functions, differential and integral.* *2. Integration technique and improper integral.* *3. Applicating certain integral to a plane area, the volume of area revolution, arc length and the area of a surface of revolution., centroids and application of Guldin's theorem.* *4. Polar coordinate system and parametric equation, the polar coordinate's graph, and its application.* *Convergence of sequences and infinite series, sums of infinite series, Taylor and Maclaurin series.*
Assessment and its weight	Cognitive Assignment (20%) Cognitive Quiz 1 (15%) Cognitive Quiz 2 (15%) Cognitive Midterm Exam (25%) Cognitive Final Exam (25%)
Media employed	LCD, whiteboard, websites (myITS Classroom), zoom.
Reading list	1. Tim Dosen Departemen Matematika ITS, Buku Ajar Matematika 2 , Edisi ke-2 (Revisi 2022) Departemen Matematika ITS, 2022 2. Anton, H. dkk, Calculus, 10-th edition, John Wiley & Sons, New York, 2012 3. Kreyzig, E, Advanced Engineering Mathematics, 10-th edition, John Wiley & Sons, Singapore, 2011 4. Purcell, J, E, Rigdon, S., E., Calculus, 9-th edition, Prentice-Hall, New Jersey, 2006 5. James Stewart , Calculus, ed.7, Brooks/cole-Cengage Learning, Canada,2012

Rencana Pembelajaran Semester

	INSTITUT TEKNOLOGI SEPULUH NOPEMBER **FAKULTAS SAINS DAN ANALITIKA DATA** **STATISTIKA** **S1 STATISTIKA**	**Kode Dokumen**

RENCANA PEMBELAJARAN SEMESTER

MATA KULIAH (MK)	KODE	Rumpun MK	BOBOT (sks)		SEMESTER	Tgl Penyusunan
Kalkulus 2 / Calculus 2	SM 234201	Tuliskan Rumpun MK	3	0	2	26 Agustus 2022
OTORISASI / PENGESAHAN	**Dosen Pengembang RPS**		**Koordinator RMK**		**Ka Prodi**	
	Dr. Tahiyatul Asfihani, S.Si, M.Si				Dr. Kartika Fithriasari, M.Si	

Capaian Pembelajaran MK	**PRODI yang dibebankan pada MK**	
	CPL_1 *LO_1*	[C2] Mahasiswa mampu mengidentifikasi dan menjelaskan pondasi matematika yang meliputi murni, terapan dan dasar-dasar komputasi *[C2] Students are able to identify and explain foundations of mathematics that include pure, applied, and the basic of computing*
	CPL_2 *LO_2*	[C3] Mahasiswa mampu menyelesaikan permasalahan sederhana dan praktis dengan mengaplikasikan pernyataan matematika dasar, metode dan komputasi *[C3] Students are able to solve simple and practical problems by applying basic mathematical statements, methods and computations*
	Mata Kuliah	
	CP MK_1 *CLO_1*	Mahasiswa mampu menerapkan konsep-konsep dasar matematika yang terkait dengan fungsi transenden. *Students are able to apply basic mathematical concepts related to transcendent functions*.
	CP MK_2 *CLO_2*	Mahasiswa mampu menerapkan teknik integrasi. *Students are able to apply integration techniques*.
	CP MK_3	Mahasiswa mampu mengaplikasikan integral pada bentuk fungsi koordinat kartesius, koordinat kutub dan persamaan parametrik.

<table>
<tr><td></td><td>CLO_3</td><td>Students are able to apply integration techniques well in the forms of cartesian coordinate functions, polar coordinate, and parametric equations.</td></tr>
<tr><td></td><td>CP MK_4
CLO_4</td><td>Mahasiswa mampu menentukan kekonvergenan barisan dan deret tak hingga.
Students are able to determine the convergence of infinity sequences and series.</td></tr>
<tr><td>Peta CPL – CP MK</td><td colspan="2">Peta matriks antara CPL dengan CPMK (Sub CP MK)
<table>
<tr><th></th><th>CPL1
LO1</th><th>CPL2
LO2</th></tr>
<tr><td>CPMK 1
CLO 1</td><td>√</td><td>√</td></tr>
<tr><td>CPMK 2
CLO 2</td><td>√</td><td>√</td></tr>
<tr><td>CPMK 3
CLO 3</td><td>√</td><td>√</td></tr>
<tr><td>CPMK 4
CLO 4</td><td>√</td><td>√</td></tr>
</table></td></tr>
<tr><td>Diskripsi Singkat MK dan Pokok Bahasan</td><td colspan="2">Bahan Kajian
Fungsi transenden, diferensial dan integralnya
Teknik Integrasi, Integral tak wajar
Aplikasi Integral
Bentuk Kutub, fungsi Parametrik, diferensial dan integralnya
Barisan dan Deret

Pokok Bahasan:
Dalam Mata Kuliah ini mahasiswa akan mempelajari Pokok bahasan pokok bahasan sebagai berikut:
1. Fungsi Transenden, diferensial dan integralnya.
2. Teknik integrasi dan Integral tak wajar.
3. Aplikasikan integral tertentu pada luas bidang datar, volume benda, Panjang busur dan luas kulit benda putar, pusat massa, penerapan teorema Guldin.
4. Sistem koordinat kutub dan persamaan parametrik, sketsa grafiknya, dan aplikasinya.
5. Kekonvergenan barisan dan deret tak hingga, dan menghitung jumlah deret tak hingga yang konvergen, deret Taylor dan deret Maclaurin.</td></tr>
<tr><td>Brief Description MK and Main Discussion</td><td colspan="2">Study Material
Trancendent functions, differential, and integral
Integration technique, Improper integral</td></tr>
</table>

	Integral application *Polar coordinates, parametric functions, differential and its integral.* *Sequence and series*
	Main Discussion
	In this course, students will learn the following subjects: 5. *Trancendents functions, differential and integral.* 6. *Integration technique and improper integral.* 7. *Applicating certain integral to a plane area, the volume of area revolution, arc length and the area of a surface of revolution., centroids and application of Guldin's theorem.* 8. *Polar coordinate system and parametric equation, the polar coordinate's graph, and its application.* 9. *Convergence of sequences and infinite series, sums of infinite series, Taylor and Maclaurin series.*
Pustaka **References**	**Utama / *Main*:**
	1. Tim Dosen Departemen Matematika ITS, *Buku Ajar Matematika 2* , Edisi ke-2 (Revisi 2022) Departemen Matematika ITS, 2022 2. Anton, H. dkk, *Calculus*, 10-th edition, John Wiley & Sons, New York, 2012
	Pendukung / *Supporting*:
	3. Kreyzig, E, *Advanced Engineering Mathematics*, 10-th edition, John Wiley & Sons, Singapore, 2011 4. Purcell, J, E, Rigdon, S., E., *Calculus*, 9-th edition, Prentice-Hall, New Jersey, 2006 5. James Stewart , *Calculus*, ed.7, Brooks/cole-Cengage Learning, Canada,2012
Dosen Pengampu ***Lecturers***	Tim Dosen Matematika Dasar *Basic Mathematic Lecturers Team*
Assessment	Tugas Mandiri, Ujian Tulis (Quiz, ETS, EAS). *Exercises, Assignments and Written Test.*
Matakuliah syarat ***Prerequisite***	-

	Kemampuan akhir tiap tahapan belajar (Sub-	**Assessment**	**Bantuk Pembelajaran; Metode Pembelajaran;**	**Materi Pembelajaran**	**Bobot Penilai**

Minggu Ke- / *Week*	**CPMK) / *Final Ability of Each Learning Stage (LLO)***	**Indikator / *Indicator***	**Kriteria & Teknik / *Criterias & Techniques***	**Penugasan Mahasiswa; [Estimasi Waktu] / *Form of Learning; Learning Method; Student Assignment; [Estimated Time]***		**[Pustaka] / *Learning Material [Reference]***	**an (%) / *Assessment Load (%)***
(1)	**(2)**	**(3)**	**(4)**	**Tatap Muka / *In-class* (5)**	**Daring / *Online* (6)**	**(7)**	**(8)**
1	Pengantar Kuliah *Introduction of Learning*	**Motivasi belajar, menyampaikan RPS, aturan perkuliahan, macam evaluasi, prosentase masing masing evaluasi (RAE/RT) dan sumber pustaka** ***Learning motivation, delivering learning plan, lecture rules, agreement in evaluations, the percentage in each evaluation and book references.***					
	Mampu menjelaskan sifat dasar, turunan dan integral dan sketsa grafik yang melibatkan fungsi logaritma dan eksponensial. *Student are able to explain basic properties, derivatives and integrals and sketch graphs involving logarithmic and exponential functions.*	Ketepatan menjelaskan sifat, turunan dan integral dan mensketsa grafik fungsi logaritma dan eksponensial. *The accuracy in explaining properties, derivatives and integrals and sketching graphs of logarithmic and exponential functions.*	Tugas (1) : Menyelesaikan soal latihan 1.1 *Task (1) : Solve practice questions 1.1*	Kuliah, latihan soal-soal serta memberikan soal tugas [TM : 2x2x 50"] [BM : 2x2 x 60"] [PT : 2x2x 60"] *Tutorial activities, exercises and provide assignment .* *[FF : 2 x2x 50"]* *[SA : 2 x 2x60"]* *[SS : 2 x 2x 60"]*	Kuliah, diskusi, latihan soal-soal melalui: MyITS Classroom [TM : 2x2x 50"] [BM : 2x2 x 60"] [PT : 2x2x 60"] *Lectures, discussions, practice questions at myITS classroom* *[FF : 2 x2x 50"]* *[SA : 2 x 2x60"]* *[SS : 2 x 2x 60"]*	Fungsi logaritma & eksponensial. [1] **Subbab 1.1** (hal 1-29) *Logarithmic & exponential functions.* [1] Section 1.1 (p: 1-29)	
2	Mampu menjelaskan fungsi invers trigonometri serta turunan dan integralnya	Ketepatan memperoleh turunan dan integral fungsi invers trigonometri	Tugas (2) : Menyelesaikan soal latihan 1.2	Kuliah, latihan soal-soal serta memberikan soal tugas [TM : 1x2x 50"] [BM : 1x2 x 60"]	Kuliah, diskusi, latihan soal-soal melalui: MyITS Classroom [TM : 1x2x 50"] [BM : 1x2 x 60"]	Fungsi Invers Trigonometri [1] **Subbab 1.2** (hal 33-49)	

	Students are able to determine the derivatives of inverse trigonometry	*The accuracy of obtaining the derivatives and imtegral of inverse trigonometry*	*Task (2) : Solve practice questions* 1.2	[PT : 1x2x 60"] *Tutorial activities, exercises and provide assignment . [FF : 1 x2x 50"] [SA : 1 x 2x60"] [SS : 1 x 2x 60"]*	[PT : 1x2x 60"] *Lectures, discussions, practice questions at myITS classroom [FF : 1 x2x 50"] [SA : 1 x 2x60"] [SS : 1 x 2x 60"]*	*Inverse Trigonometric Functions [1]* ***Section 1.2*** *(p. 33-49)*	
	Asistensi 1 / *1th Assistence* Latihan soal-soal [TM : 2 x 50'] *Practice- Exercises* [FF : 2 x 50']						
3	Mampu menjelaskan fungsi hiperbolik, invers hiperbolik serta turunan dan integralnya *Students are able to explain hyperbolic functions, hyperbolic inverses and their derivatives and integrals*	Ketepatan memperoleh turunan dan integral fungsi invers hiperbolik *The precision of obtaining the derivative and integral of the hyperbolic inverse function*	Tugas (3) : Menyelesaikan soal latihan 1.3 Kuis 1 *Task (3) : Solve practice questions 1.3* *QUIZ 1*	Kuliah, latihan soal-soal serta memberikan soal tugas [TM : 2x2x 50"] [BM : 2x2 x 60"] [PT : 2x2x 60"] *Tutorial activities, exercises and provide assignment . [FF : 2 x2x 50"] [SA : 2 x 2x60"] [SS : 2 x 2x 60"]*	Kuliah, diskusi, latihan soal-soal melalui: MyITS Classroom [TM : 2x2x 50"] [BM : 2x2 x 60"] [PT : 2x2x 60"] *Lectures, discussions, practice questions at myITS classroom [FF : 2 x2x 50"] [SA : 2 x 2x60"] [SS : 2 x 2x 60"]*	Fungsi Hiperbolik [1] **Subbab 1.3** (hal 54-63) *Hyperbolic Functions [1]* ***Section 1.3*** *(p. 54-63)*	
4	Mampu menyelesaikan integral parsial dan integral fungsi trigonometri	Ketepatan menyelesaikan integral parsial dan fungsi trigonometri	Tugas (4) : Menyelesaikan soal latihan 2.1	Kuliah, latihan soal-soal serta memberikan soal tugas [TM : 1x2x 50"]	Kuliah, diskusi, latihan soal-soal melalui: MyITS Classroom [TM : 1x2x 50"]	Teknik Integrasi [1] **Subbab 2.1** hal: 69-86	

	Students are able to solve partial integral and integral of trigonometry function.	*The accuracy of solving partial integrals and trigonometric functions*	*Task (4) : Solve practice questions* 2.1	[BM : 1x2 x 60"] [PT : 1x2x 60"] *Tutorial activities, exercises and provide assignment .* *[FF : 1 x2x 50"]* *[SA : 1 x 2x60"]* *[SS : 1 x 2x 60"]*	[BM : 1x2 x 60"] [PT : 1x2x 60"] *Lectures, discussions, practice questions at myITS classroom* *[FF : 1 x2x 50"]* *[SA : 1 x 2x60"]* *[SS : 1 x 2x 60"]*	*Integration Technique* *[1]* ***Sections 2.1 and 2.2*** *(p: 69-95)*	
	Asistensi 2 / ***2nd Assistence*** Latihan soal-soal [TM : 2 x 50'] *Practice- Exercises* [FF : 2 x 50']						
5	• Mampu menyelesaikan Integral fungsi rasional. • Mampu pengaplikasikan teknik-teknik integral yang lain • *Students are able to solve the integral of rational functions* • *Students are able to apply other integral techniques*	• Ketepatan menyelesaikan integral fungsi rasional. • Ketepatan menyelesaikan integral dengan teknik integral lain • *The precision of solving the integral of a rational function.* • *The precision of solving the integral using integration technique*	Tugas (5) : Menyelesaikan soal latihan 2.2 dan 2.3 *Task (5) : Solve practice questions* 2.2 and 2.3	Kuliah, latihan soal-soal serta memberikan soal tugas [TM : 2x2x 50"] [BM : 2x2 x 60"] [PT : 2x2x 60"] *Tutorial activities, exercises and provide assignment .* *[FF : 2 x2x 50"]* *[SA : 2 x 2x60"]* *[SS : 2 x 2x 60"]*	Kuliah, diskusi, latihan soal-soal melalui: MyITS Classroom [TM : 2x2x 50"] [BM : 2x2 x 60"] [PT : 2x2x 60"] *Lectures, discussions, practice questions at myITS classroom* *[FF : 2 x2x 50"]* *[SA : 2 x 2x60"]* *[SS : 2 x 2x 60"]*	Teknik Integrasi [1] **Subbab 2.2-2.3** hal: 86-104 *Integration Technique* *[1]* ***Section 2.2-2.3*** *(p: 86-104)*	

6	Mampu menghitung integral dengan hampiran/ integrasi numerik. *Students are able to calculate integrals with approximation / numerical integration.*	Ketepatan menghitung integrasi numerik. *The accuracy of calculating numerical integration.*	Tugas (6) : Menyelesaikan soal latihan 3.1 Kuis 2 *Task (6) : Solve practice questions* 3.1 Quiz 2	Kuliah, latihan soal-soal serta memberikan soal tugas [TM : 1x2x 50"] [BM : 1x2 x 60"] [PT : 1x2x 60"] *Tutorial activities, exercises and provide assignment .* *[FF : 1 x2x 50"]* *[SA : 1 x 2x60"]* *[SS : 1 x 2x 60"]*	Kuliah, diskusi, latihan soal-soal melalui: MyITS Classroom [TM : 1x2x 50"] [BM : 1x2 x 60"] [PT : 1x2x 60"] *Lectures, discussions, practice questions at myITS classroom* *[FF : 1 x2x 50"]* *[SA : 1 x 2x60"]* *[SS : 1 x 2x 60"]*	Integrasi Numerik [1] **Subbab 3.1** (hal. 107-121) *Numerical Integration [1]* ***Sections 3.1*** *(p. 107-121)*	
	Asistensi 3 / *3rd Assistence* Latihan soal-soal [TM : 2 x 50'] *Practice- Exercises* [FF : 2 x 50']						
7	• Mampu menghitung Integral tak wajar • Mampu menyelesaikan limit bentuk tak tentu. • *Students are able to solve improper integral,* • *Students are able to solve indeterminate form*	• Ketepatan menghitung Integral tak wajar • Ketepatan menyelesaikan limit bentuk tak tentu • *The accuracy of calculating the improper integral* • *The accuracy of solving indeterminate shape limits*	Tugas (7) : Menyelesaikan soal latihan 3.2-3.3 *Task (7) : Solve practice questions* 3.2-3.3	Kuliah, latihan soal-soal serta memberikan soal tugas [TM : 2x2x 50"] [BM : 2x2 x 60"] [PT : 2x2x 60"] *Tutorial activities, exercises and provide assignment .* *[FF : 2 x2x 50"]* *[SA : 2 x 2x60"]* *[SS : 2 x 2x 60"]*	Kuliah, diskusi, latihan soal-soal melalui: MyITS Classroom [TM : 2x2x 50"] [BM : 2x2 x 60"] [PT : 2x2x 60"] *Lectures, discussions, practice questions at myITS classroom* *[FF : 2 x2x 50"]* *[SA : 2 x 2x60"]*	Integrasi Tak Wajar dan Limit Bentuk Tak tentu [1] **Subbab 3.2-3.3** (hal. 121-144) *Improper integration and indeterminate limit [1]* ***Sections 3.2-3.3*** *(p. 121-144)*	

					[SS : 2 x 2x 60”]		
8	**EVALUASI TENGAH SEMESTER** ***MID TERM EXAM***	Ketepatan menyelesaikan soal soal yang terkait dengan fungsi trensenden, teknik integrasi, integrasi numerik dan integrasi tak wajar *The accuracy of solving transcendent function, integration technique and numerical integration and improper integral.*	Tes tulis : ETS *Written Test : Mid Term Exam*	ETS : Menyelesaikan soal CPMK-1, CPMK-2 Waktu: 100’ *Mid Term Exam :* *Solve CLO-1, CLO-2* *Time: 100’*	ETS : Menyelesaikan soal CPMK-1, CPMK-2 melalui myITS classroom Waktu: 100’ *Mid Term Exam :* *Solve CLO-1, CLO-2 via myITS classroom* *Time: 100’*		
9	• Mampu menghitung Luas bidang datar • Mampu menghitung volume benda putar • *Students are able to calculate the area* between curves. • *Students are able to calculate the volume of rotating objects*	• Ketepatan menghitung Luas bidang datar • Ketepatan menghitung volume benda putar dengan metode cakram dan metode cincin silinder. • *The accuracy of calculating the area between curves.* • *The accuracy of calculating the volume of a*	Tugas (8) : Menyelesaikan soal latihan 4.1-4.2 *Task (8) : Solve practice questions* 4.1-4.2	Kuliah, latihan soal-soal serta memberikan soal tugas [TM : 2x2x 50”] [BM : 2x2 x 60”] [PT : 2x2x 60”] *Tutorial activities, exercises and provide assignment .* *[FF : 2 x2x 50”]* *[SA : 2 x 2x60”]* *[SS : 2 x 2x 60”]*	Kuliah, diskusi, latihan soal-soal melalui: MyITS Classroom [TM : 2x2x 50”] [BM : 2x2 x 60”] [PT : 2x2x 60”] *Lectures, discussions, practice questions at myITS classroom* *[FF : 2 x2x 50”]* *[SA : 2 x 2x60”]*	Luas antara Dua Kurva [1] **Subbab 4.1** (hal. 145-151) Menghitung Volume Benda Putar [1] **Subbab 4.2** (hal. 153-165) *Area between two curves [1]* ***Section 4.1*** *(p. 145-151)*	

		rotating object using the disc method and the cylinder ring method.			*[SS : 2 x 2x 60”]*	*Calculating the Volume of Rotating Objects [1]* ***Section 4.2*** *(p. 153-165)*	
10	Mampu menghitung panjang kurva dan luas permukaan benda putar. *Students are able to calculate the arc length and extend on the concept the area of a surface of revolution.*	Ketepatan menghitung panjang kurva dan luas permukaan benda putar. *The accuracy of calculating the arc length of a curve and the area of a surface of revolution.*	Tugas (9) : Menyelesaikan soal latihan 4.3 dan 4.4 *Tasks (9): Solve practice questions 4.3 and 4.4*	Kuliah, latihan soal-soal serta memberikan soal tugas [TM : 1x2x 50”] [BM : 1x2 x 60”] [PT : 1x2x 60”] *Tutorial activities, exercises and provide assignment .* *[FF : 1 x2x 50”]* *[SA : 1 x 2x60”]* *[SS : 1 x 2x 60”]*	Kuliah, diskusi, latihan soal-soal melalui: MyITS Classroom [TM : 1x2x 50”] [BM : 1x2 x 60”] [PT : 1x2x 60”] *Lectures, discussions, practice questions at myITS classroom* *[FF : 1 x2x 50”]* *[SA : 1 x 2x60”]* *[SS : 1 x 2x 60”]*	Panjang kurva dan luas permukaan [1] **Subbab 4.3-4.4** (hal: 168-175) *Arc length of a curve and surface of the area* *[1]* ***Sections 4.3-4.4*** *(p. 168-175)*	
	Asistensi 4 / ***4th Assistence*** Latihan soal-soal [TM : 2 x 50’] *Practice- Exercises* [FF : 2 x 50’]						

11	Mampu menentukan titik berat dan menerapkan dalil Guldin. *Students are able to determine centres of gravity, centroids and apply Guldin's theorem.*	Ketepatan menerapkan teorema, dalil Guldin untuk menghitung titik berat: luas, Volume,panjang busur dan luas kulit. *The accuracy of applying Guldin's theorem to calculate the centres of gravity, the centroids: area, volume, length of arc, and area of surface.*	Tugas (10) : Menyelesaikan soal latihan 4.5 Kuis 3 *Tasks (10): Solve practice questions 4.5* *Quiz 3*	Kuliah, latihan soal-soal serta memberikan soal tugas [TM : 2x2x 50"] [BM : 2x2 x 60"] [PT : 2x2x 60"] *Tutorial activities, exercises and provide assignment .* *[FF : 2 x2x 50"]* *[SA : 2 x 2x60"]* *[SS : 2 x 2x 60"]*	Kuliah, diskusi, latihan soal-soal melalui: MyITS Classroom [TM : 2x2x 50"] [BM : 2x2 x 60"] [PT : 2x2x 60"] *Lectures, discussions, practice questions at myITS classroom* *[FF : 2 x2x 50"]* *[SA : 2 x 2x60"]* *[SS : 2 x 2x 60"]*	Titik Berat [1] **Subbab 4.5** (hal. 176-189) *Center of gravity [1] **Section 4.5** (p. 176-189)*	

12	• Mampu menjelaskan fungsi parametrik, garis singgung dan panjang busur secara parametrik. • Mampu menggambar grafik dalam koordinat kutub • *Students are able to explain parametric functions, tangents and arc lengths parametrically.* • *Students are able to sketch graph in polar coordinate*	• Ketepatan menghitung garis singgung dan panjang busur dalam bentuk parametrik. • Ketepatan menggambar grafik fungsi bentuk kutub. • *The precision of calculating tangents and arc lengths in parametric form.* • *The accuracy of sketching out graph fuctions in polar coordinate.*	Tugas (11) : Menyelesaikan soal latihan 5.1-5.3 *Tasks (11): Solve practice questions 5.1-5.3*	Kuliah, latihan soal-soal serta memberikan soal tugas [TM : 1x2x 50"] [BM : 1x2 x 60"] [PT : 1x2x 60"] *Tutorial activities, exercises and provide assignment .* *[FF : 1 x2x 50"]* *[SA : 1 x 2x60"]* *[SS : 1 x 2x 60"]*	Kuliah, diskusi, latihan soal-soal melalui: MyITS Classroom [TM : 1x2x 50"] [BM : 1x2 x 60"] [PT : 1x2x 60"] *Lectures, discussions, practice questions at myITS classroom* *[FF : 1 x2x 50"]* *[SA : 1 x 2x60"]* *[SS : 1 x 2x 60"]*	Persamaan Parametrik [1] **Subbab 5.1** (hal. 191-200) Grafik dalam Koordinat kutub [1] **Subbab 5.2-5.3** (hal: 204 - 220) *Parametric Equation [1] **Section 5.1** (p. 191-200)* *Graphs in Polar Coordinates [1] **Sections 5.2-5.3** (p: 204-220)*	
	Asistensi 5 / *5th Assistence* Latihan soal-soal [TM : 2 x 50'] *Practice- Exercises* [FF : 2 x 50']						

13	• Mampu menghitung luas dan volume dalam sistem koordinat Kutub. • Mampu menjelaskan garis singgung dan panjang busur dalam koordinat kutub • Mampu menjelaskan barisan takhingga dan kekonvergenannya • *Students are able to explain tangents and arc lengths in polar coordinates* • *Students are able to explain infinite sequences and their convergence* • *Students are able to calculate the area in Polar coordinate system.*	• Ketepatan menghitung luas dan volume dalam koordinat kutub. • *The accuracy of calculating the area in Polar coordinate system.*	Tugas (12) : Menyelesaikan soal latihan 5.4-5.5 dan 6.1 *Tasks (12): Solve practice questions 5.4-5.5 dan 6.1*	Kuliah, latihan soal-soal serta memberikan soal tugas [TM : 2x2x 50”] [BM : 2x2 x 60”] [PT : 2x2x 60”] *Tutorial activities, exercises and provide assignment .* *[FF : 2 x2x 50”]* *[SA : 2 x 2x60”]* *[SS : 2 x 2x 60”]*	Kuliah, diskusi, latihan soal-soal melalui: MyITS Classroom [TM : 2x2x 50”] [BM : 2x2 x 60”] [PT : 2x2x 60”] *Lectures, discussions, practice questions at myITS classroom* *[FF : 2 x2x 50”]* *[SA : 2 x 2x60”]* *[SS : 2 x 2x 60”]*	Luas dan Volume dalam Koordinat Kutub [1] **Subbab 5.4** (hal. 222-229) Garis Singgung dan Panjang Busur di Koordinat Kutub [1] **Subbab 5.5** (hal. 231-235) Barisan Tak Hingga [1] **Subbab 6.1** (hal. 237-245) *Area and Volume in Polar Coordinates [1] **Section 5.4** (p. 222-229)* *Tangents and Arc Lengths at Polar Coordinates [1] **Section 5.5** (p. 231-235)* *Infinite Sequences [1] **Section 6.1** (p. 237-245)*	
14	Mampu menjelaskan kekonvergenan deret tak	Ketepatan menentukan kekonvergenan deret takhingga	Tugas (13) : Menyelesaikan soal latihan 6.2-6.3	Kuliah, latihan	Kuliah, diskusi, latihan soal-soal	Deret Takhingga dan Uji Konvergensi [1]	

	hingga dengan Uji konvergenan Deret. *Students are able to explain convergence of infinite series using convergence tests*	*The precision determines the convergence of an infinite series*	*Tasks (13):* *Solve practice questions 6.2-6.3*	soal-soal serta memberikan soal tugas [TM : 1x2x 50"] [BM : 1x2 x 60"] [PT : 1x2x 60"] *Tutorial activities, exercises and provide assignment .* *[FF : 1 x2x 50"]* *[SA : 1 x 2x60"]* *[SS : 1 x 2x 60"]*	melalui: MyITS Classroom [TM : 1x2x 50"] [BM : 1x2 x 60"] [PT : 1x2x 60"] *Lectures, discussions, practice questions at myITS classroom* *[FF : 1 x2x 50"]* *[SA : 1 x 2x60"]* *[SS : 1 x 2x 60"]*	**Subbab 6.2-6.3** (hal. 247-265) *Infinite Series and Convergence Test [1]* ***Sections 6.2-6.3*** *(p. 247-265)*	
	Asistensi 6 / ***6th Assistence*** Latihan soal-soal [TM : 2 x 50'] *Practice- Exercises* [FF : 2 x 50']						
15	• Mampu mentransformasikan fungsi ke dalam bentuk deret Taylor dan deret *Maclaurin.* • Mampu menerapkan diferensiasi dan integrasi deret pangkat • *Students are able to transform functions into Taylor series and Maclaurin series.*	• Ketepatan mendapatkan deret Taylor dan Maclaurin. • Ketepatan mendapatkan deferensiasi dan integrasi deret pangkat • *The accuracy of obtaining the Taylor and Maclaurin series.* *The accuracy in obtaining*	Tugas (14) : Menyelesaikan soal latihan 6.4-6.5 *Tasks (14):* *Solve practice questions 6.4-6.5*	Kuliah, latihan soal-soal serta memberikan soal tugas [TM : 2x2x 50"] [BM : 2x2 x 60"] [PT : 2x2x 60"] *Tutorial activities, exercises and provide assignment .* *[FF : 2 x2x 50"]* *[SA : 2 x 2x60"]* *[SS : 2 x 2x 60"]*	Kuliah, diskusi, latihan soal-soal melalui: MyITS Classroom [TM : 2x2x 50"] [BM : 2x2 x 60"] [PT : 2x2x 60"] *Lectures, discussions, practice questions at myITS classroom* *[FF : 2 x2x 50"]* *[SA :2 x 2x60"]* *[SS : 2 x 2x 60"]*	Deret Pangkat; Deret Taylor dan Maclaurin [1] **Subbab 6.4** (hal. 268-279) Differensiasi dan Integrasi Deret Pangkat [1] **Subbab 6.5** (hal. 281-288) *Power Series; Taylor and Maclaurin series [1]* ***Section 6.4*** *(p. 268-279)*	

	Students are able to apply differentiation and integration of power series	*differentiation and integration of power series*				*Differentiation and Integral of Power Series [1]* ***Section 6.5*** *(p. 281-288)*	
16	**EVALUASI AKHIR SEMESTER** ***FINAL EXAM***	Ketepatan menyelesaikan soal soal panjang kurva dan luas permukaan benda putar, koordinat kutub dan deret tak hingga. *The accuracy of solving the test related to arc length, surface of area, polar coordinate and Infinite series.*	Tes tulis : **EAS** *Written Test:* ***Final Exam***	**EAS :** Menyelesaikan soal CPMK-3, CPMK-4 dan CPMK-5 Waktu: 100' ***Final Exam*** *:* *Solve CPMK-3, CPMK-4 and CPMK-5 questions* *Time: 100'*	**EAS** : Menyelesaikan soal CPMK-3, CPMK-4 dan CPMK-5 melalui myITS classroom Waktu: 100' ***Final Exam*** *:* *Solve CPMK-3, CPMK-4 and CPMK-5 questions via myITS classroom* *Time: 100'*		

Catatan sesuai dengan SN Dikti Permendikbud No 3/2020:

1. Capaian Pembelajaran Lulusan PRODI (CPL-PRODI) adalah kemampuan yang dimiliki oleh setiap lulusan PRODI yang merupakan internalisasi dari sikap, penguasaan pengetahuan dan ketrampilan sesuai dengan jenjang prodinya yang diperoleh melalui proses pembelajaran.
2. CPL yang dibebankan pada mata kuliah adalah beberapa capaian pembelajaran lulusan program studi (CPL-PRODI) yang digunakan untuk pembentukan/pengembangan sebuah mata kuliah yang terdiri dari aspek sikap, ketrampulan umum, ketrampilan khusus dan pengetahuan.
3. CP Mata kuliah (CPMK) adalah kemampuan yang dijabarkan secara spesifik dari CPL yang dibebankan pada mata kuliah, dan bersifat spesifik terhadap bahan kajian atau materi pembelajaran mata kuliah tersebut.
4. Sub-CP Mata kuliah (Sub-CPMK) adalah kemampuan yang dijabarkan secara spesifik dari CPMK yang dapat diukur atau diamati dan merupakan kemampuan akhir yang direncanakan pada tiap tahap pembelajaran, dan bersifat spesifik terhadap materi pembelajaran mata kuliah tersebut.
5. Indikator penilaian kemampuan dalam proses maupun hasil belajar mahasiswa adalah pernyataan spesifik dan terukur yang mengidentifikasi kemampuan atau kinerja hasil belajar mahasiswa yang disertai bukti-bukti.
6. Kreteria Penilaian adalah patokan yang digunakan sebagai ukuran atau tolok ukur ketercapaian pembelajaran dalam penilaian berdasarkan indikator-indikator yang telah ditetapkan. Kreteria penilaian merupakan pedoman bagi penilai agar penilaian konsisten dan tidak bias. Kreteria dapat berupa kuantitatif ataupun kualitatif.
7. Teknik penilaian: tes dan non-tes.

8. Bentuk pembelajaran: Kuliah, Responsi, Tutorial, Seminar atau yang setara, Praktikum, Praktik Studio, Praktik Bengkel, Praktik Lapangan, Penelitian, Pengabdian Kepada Masyarakat dan/atau bentuk pembelajaran lain yang setara.
9. Metode Pembelajaran: Small Group Discussion, Role-Play & Simulation, Discovery Learning, Self-Directed Learning, Cooperative Learning, Collaborative Learning, Contextual Learning, Project Based Learning, dan metode lainnya yg setara.
10. Materi Pembelajaran adalah rincian atau uraian dari bahan kajian yg dapat disajikan dalam bentuk beberapa pokok dan sub-pokok bahasan.
11. Bobot penilaian adalah prosentasi penilaian terhadap setiap pencapaian sub-CPMK yang besarnya proposional dengan tingkat kesulitan pencapaian sub-CPMK tsb., dan totalnya 100%.
12. **TM**=Tatap Muka, **PT**=Penugasan Terstuktur, **BM**=Belajar Mandiri.