MODULE HANDBOOK

BUSINESS DECISION ANALYSIS

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

ENDORSEMENT PAGE

	MODULE HANDBOOK **BUSINESS DECISION ANALYSIS** **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. Drs. Agus Suharsono, MS	Dosen Lecturer		
Pemeriksa dan Pengendalian *Review and Control*	Dr. Drs. Agus Suharsono, MS; Dr. Hidayatul Khusna, S.Si.	Tim kurikulum Curriculum team		
Persetujuan *Approval*	Dr. Wibawati, S.Si., M.Si.	Koordinator RMK Course Cluster Coordinator		
Penetapan *Determination*	Dr. Kartika Fithriasari, M.Si	Kepala Departemen Head of Department		

MODULE HANDBOOK
BUSINESS DECISION ANALYSIS

Module name	BUSINESS DECISION ANALYSIS	
Module level	Undergraduate	
Code	SS234629	
Course (if applicable)	BUSINESS DECISION ANALYSIS	
Semester	6	
Person responsible for the module	Dr. Drs. Agus Suharsono, MS	
Lecturer	Dr. Drs. Agus Suharsono, MS; Dr. Hidayatul Khusna, S.Si.	
Language	Bahasa Indonesia and English	
Relation to curriculum	Undergradute degree program, mandatory, 6th semester.	
Type of teaching, contact hours	SCL Method (93.75%) Non-SCL Method (6.25%)	
Workload	1. Lectures [L] : 3 x 50 = 150 minutes per week. 2. Exercises and Assignments [EA] : 3 x 60 = 180 minutes (3 hours) per week. 3. Independent learning [IL]: 3 x 60 = 180 minutes (3 hours)perweek.	
Credit points	3 credit points (SKS) Equivalent to 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. Able to explain the concepts and principles of business decision analysis CLO 2. Able to solve decision-making problems using decision diagram CLO 3. Able to apply the stepwise analysis method for decision making CLO 4. Able to identify, formulate, and solve multi-criteria decision-making problems CLO 5. Able to apply the Analytical Hierarchy Process (AHP) method for multi-criteria decision making CLO 6. Able to use computational techniques and modern computer equipment needed to solve decision-making problems CLO 7. Able to understand the current and upcoming issues related to business decision analysis	PLO-7 PLO-9 PLO-10

	CLO 8. Able to communicate effectively and work together in interdisciplinary and multidisciplinary teams	
Content	Decision Analysis course is one of the courses that aimsto apply the concept of probability and expectations in multi-criteria decisionmaking problems both in the field of Industry, Business Economics, Social Governance and The Health Environment. Learning Strategy is to provide assignments and evaluations based on presentations/tests.	
Assessment and its weight	Assignment (20%) Midterm Test (25%) Team-based Project (30%) Final Test (25%)	
Media employed	LCD, whiteboard, websites (myITS Classroom), zoom	
Reading list	1. Kuntoro Mangkusubroto. Analisis Keputusan: Pendekatan Sistem Dalam Manajemen Usaha Dan Proyek. Penerbit Ganeca Exact Bandung, Cetakan ke-6, 1989. 2. Saaty. T. L. Decision Making for Leaders: The Analytic Hierarchy Process for Decisions In A Complex World, RWS Publications, USA, 1990. 3. Holloway. C. H., Decision Making Under Uncertainty : Models And Choices, Prentice-Hall, New Jersey, 1979. 4. Sixto, Rios. 1994. Decision Theory and Decision Analysis: Trends and Challenges. 5. Stine, Robert dan Foster, Dean. 2013. Statistics for Business: Decision Making and Analysis. 3rd edition. Kindle Edition.	

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

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*
ANALISIS KEPUTUSAN BISNIS / ***BUSINESS DECISION ANALYSIS***	SS234629	SBI	**T=3**	**P=0**	VI	17 Desember 2022

OTORISASI/ *AUTHORIZATION*	**Pengembang RPS/** *RPS Developer*	**Koordinator RMK/** *Course Group Coordinator*	**Ketua PRODI/** *Head of Department*
	Dr. Drs. Agus Suharsono, MS	Dr. Wibawati, S.Si., M.Si.	Dr. Kartika Fithriasari, M.Si.

Capaian Pembelajaran (CP)/ ***Learning Achievement***

CPL-PRODI yang dibebankan pada MK/ ***PLO***

CPL-7	Mampu menggunakan perangkat komputasi modern untuk menyelesaikan permasalahan statistik
CPL-9	Mampu menerapkan metode statistika untuk menganalisis permasalahan teoritis dan riil
CPL-10	Mampu menerapkan metode statistika Bisnis, Industri, Ekonomi, Sosial, Lingkungan atau Kesehatan pada permasalahan riil
PLO-7	Able to use modern computing devices to solve statistical problems
PLO-9	Able to apply statistical methods to analyze theoretical and real problems
PLO-10	Able to apply business, industrial, economic, social, environmental or health statistical methods to real problems

Capaian Pembelajaran Mata Kuliah (CPMK)/ ***CLO***

CPMK.1	Mampu menjelaskan konsep dan prinsip analisis keputusan bisnis
CPMK.2	Mampu menyelesaikan permasalahan pengambilan keputusan menggunakan diagram keputusan
CPMK.3	Mampu mengaplikasikan metode analisis bertahap untuk pengambilan keputusan
CPMK.4	Mampu mengindentifikasi, memformulasi, dan menyelesaikan permasalahan pengambilan keputusan secara multi kriteria
CPMK.5	Mampu mengaplikasikan metode *Analytical Hierarchy Process* (AHP) untuk pengambilan keputusan secara multi kriteria
CPMK.6	Mampu menggunakan teknik komputasi dan perangkat komputer modern yang diperlukan untuk menyelesaikan permasalahan

<table>
<tr><td></td><td>pengambilan keputusan
CPMK.7 Mampu memahami tentang isu terkini dan mendatang yang berkaitan dengan Analisis Keputusan Bisnis
CPMK.8 Mampu berkomunikasi secara efektif dan bekerjasama dalam tim yang interdisiplin dan multidisiplin
CLO 1. Able to explain the concepts and principles of business decision analysis
CLO 2. Able to solve decision-making problems using decision diagram
CLO 3. Able to apply the stepwise analysis method for decision making
CLO 4. Able to identify, formulate, and solve multi-criteria decision-making problems
CLO 5. Able to apply the Analytical Hierarchy Process (AHP) method for multi-criteria decision making
CLO 6. Able to use computational techniques and modern computer equipment needed to solve decision-making problems
CLO 7. Able to understand the current and upcoming issues related to business decision analysis
CLO 8. Able to communicate effectively and work together in interdisciplinary and multidisciplinary teams</td></tr>
<tr><td></td><td>Matrik CPL – CPMK
PLO-CLO Matrix

<table><tr><th>CPMK</th><th>CPL-7</th><th>CPL-9</th><th>CPL-10</th></tr><tr><td>CPMK-1</td><td></td><td>V</td><td></td></tr><tr><td>CPMK-2</td><td></td><td>V</td><td>V</td></tr><tr><td>CPMK-3</td><td>V</td><td>V</td><td>V</td></tr><tr><td>CPMK-4</td><td></td><td>V</td><td>V</td></tr><tr><td>CPMK-5</td><td>V</td><td>V</td><td>V</td></tr><tr><td>CPMK-6</td><td>V</td><td></td><td></td></tr><tr><td>CPMK-7</td><td></td><td>V</td><td>V</td></tr><tr><td>CPMK-8</td><td></td><td></td><td>V</td></tr></table></td></tr>
<tr><td>Deskripsi Singkat MK/
Course Description</td><td>Mata kuliah Analisis Keputusan Bisnis merupakan salah satu mata kuliah yang bertujuan untuk menerapkan konsep probabilitas dan ekspektasi dalam permasalahan pengambilan keputusan secara multi criteria baik di bidang Industri, Bisnis Ekonomi, Sosial Pemerintahan maupun Lingkungan Kesehatan. Strategi Pembelajaran adalah dengan memberikan penugasan dan evaluasi berdasarkan presentasi/ tes.
Decision Analysis course is one of the courses that aimsto apply the concept of probability and expectations in multi-criteria decisionmaking problems both in the field of Industry, Business Economics, Social Governance and The Health Environment. Learning Strategy is to provide assignments and evaluations based on presentations/tests.</td></tr>
<tr><td>Bahan Kajian: Materi Pembelajaran/
Course Material</td><td>1. Lingkup keputusan dan siklus analisis keputusan.
2. Diagram keputusan.
3. Penentuan pilihan.
4. Model dan nilai kemungkinan.</td></tr>
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	5. Preferensi atas resiko dan fungsi utility. 6. Analytical Hierarchi Process (AHP). *7. Benefit Cost Ratio.* *1. The scope of the decision and the decision analysis cycle.* *2. Decision diagram.* *3. Determination of choice.* *4. Model and probable value.* *5. Preference for risk and utility functions.* *6. Analytical Hierarchy Process (AHP).* *7. Benefit Cost Ratio*
Pustaka/ ***References***	**Utama/*Primary*:**
	Kuntoro Mangkusubroto. Analisis Keputusan: Pendekatan Sistem Dalam Manajemen Usaha Dan Proyek. Penerbit Ganeca Exact Bandung, Cetakan ke-6, 1989. Saaty. T. L. Decision Making for Leaders: The Analytic Hierarchy Process for Decisions In A Complex World, RWS Publications, USA, 1990.
	Pendukung/*Secondary*:
	Holloway. C. H., Decision Making Under Uncertainty : Models And Choices, Prentice-Hall, New Jersey, 1979. Sixto, Rios. 1994. Decision Theory and Decision Analysis: Trends and Challenges. Stine, Robert dan Foster, Dean. 2013. Statistics for Business: Decision Making and Analysis. 3rd edition. Kindle Edition.
Dosen Pengampu/ ***Lecturers***	Dr. Drs. Agus Suharsono, MS; Dr. Hidayatul Khusna, S.Si.
Matakuliah syarat/ ***Pre-requisite Course***	Pengantar Metode Statistika *Introduction to Statistical Methods*

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***	**Materi Pembelajaran [Pustaka]** ***Learning Material [References]***	**Bobot Penilaian (%)** ***Evaluation Weight (%)***

				[Estimated Time]			
		Indikator ***Indicator***	**Kriteria & Bentuk** ***Criteria and Format***	**Luring** ***Offline***	**Daring** ***Online***		
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
1	Dapat menjelaskan deskripsi, formalisasi dan siklus dalam analisis keputusan. *Can explain the description, formalization and cycles in decision analysis*	1. Dapat menjelaskan hubungan faktor lingkungan, kemampuan manusia, intuisi, keputusan dan hasil. 2. Dapat menjelaskan kodifikasi informasi, penetapan preferensi dan keputusan yang logis. 3. Dapat menjelaskan langkah-langkah dalam pengambilan keputusan pada tahapan deterministik maupun probabilistik. *1. Can explain the relationship between environmental factors, human abilities, intuition, decisions and results.* *2. Can explain the codification of information, setting preferences and logical decisions. 3.Can explain the steps in decision making at both deterministic and probabilistic stages.*	Tes Observasi Aktifitas di kelas (TOA) *Class Activity Observation Test (TOA)*	Ceramah interaktif Diskusi (CID) Interactive Lectures, Discussions TM: 1x3x50” LT: 1x3x60” BM: 1x3x60”		Lingkup keputusan dan siklus analisis keputusan. *The scope of the decision and the decision analysis cycle.*	5%
2-3	Dapat menerapkan	1. Dapat menggambarkan diagram keputusan.	Tes, Observasi, Aktifitas di kelas	Ceramah Interaktif, Diskusi,		Diagram keputusan dan Penentuan	15%

	diagram dan pemodelan dalam pengambilan keputusan bisnis. Can apply diagrams and modeling in business decision making	2. Dapat menetapkan nilai kemungkinan dan menentukan pilihan. 3. Dapat menentukan dominasi nilai, dominasi stokastik dan tingkat aspirasi. 4. Dapat membuat kurva dan ekspetasi utilitas. 1. Can describe the decision diagram. 2. Can set a possible value and make a choice. 3. Can determine the dominance of value, stochastic dominance and level of aspiration. 4. Can make utility curves and expectations.	Tugas 1 *Class Activity* *Observation* *Test (TOA)* *Task 1*	dan Latihan Soal *Interactive Lectures, Discussions, and Exercise* TM: 2x3x50” LT: 2x3x60” BM: 2x3x60”		Pilihan. *Decision and Choice Making diagrams.*	
4-5	Dapat menjelaskan kejadian majemuk dan nilai probabilitas. *Can explain compound events and probability values.*	1. Dapat menjelaskan probablitas bersyarat. 2. Dapat menentukan nilai prior dan posterior. 3. Dapat menyelesaikan kasus nilai probabilitas obyektif dan subyektif. 4. Dapat menjelaskan hubungan antara kejadian mutually exclusive dan kejadian independen. *1. Can explain conditional probability.* *2. Can determine prior and posterior values.*	Tes, Observasi, Aktifitas di kelas *Class Activity* *Observation* *Test (TOA)*	Ceramah Interaktif, Diskusi, dan Latihan Soal *Interactive Lectures, Discussions, and Exercise* TM: 2x3x50” LT: 2x3x60” BM: 2x3x60”		Model dan Nilai Probabilitas. *Models and Probability Values*	5%

		3. Can solve cases of objective and subjective probability values. *4. Can explain the relationship between mutually exclusive events and independent events.*					
6-7	Dapat menjelaskan preferensi atas resiko dan fungsi utilitas. *Can explain preferences for risk and utility functions.*	1. Dapat menjelaskan aksioma perilaku rasional. 2. Dapat menentukan sikap dalam menghadapi resiko. 3. Dapat menentukan persamaan utilitas. *1. Can explain the axioms of rational behavior.* *2. Can determine attitudes in the face of risk.* *3. Can determine the utility equation.*	Tes, Observasi, Aktifitas di kelas Tugas 2 *Class Activity Observation Test (TOA) Task 2*	Ceramah Interaktif, Diskusi, dan Latihan Soal *Interactive Lectures, Discussions, and Exercise* TM: 2x3x50” LT: 2x3x60” BM: 2x3x60”		Preferensi atas resiko dan fungsi utility. *Preference for risk and function utility.*	25%
8	**ETS/*Midterm***						
9	Dapat menjelaskan Kriteria majemuk dalam kepastian dan ketidakpastian. *Can explain multiple criteria in certainty and uncertainty.*	1. Dapat menjelaskan leksikographi dan tingkat aspirasi. 2. Dapat menjelaskan prosedur trade-off. 3. Dapat menjelaskan fungsi nilai. *1. Can explain lexicography and level of aspiration.* *2. Can explain trade-off procedures.* *3. Can explain the value function.*	Tes, Observasi, Aktifitas di kelas *Class Activity Observation Test (TOA)*	Ceramah Interaksi, Diskusi, Latihan, Seminar *Interactive Lectures, Discussions, and Exercise* TM: 1x3x50” LT: 1x3x60” BM: 1x3x60”		Kriteria majemuk dalam ketidak pastian. *Multiple criteria in uncertainty.*	5%
10	Dapat menentukan	1. Dapat menjelaskan asumsi perilaku.	Tes, Observasi, Aktifitas di kelas	Ceramah Interaksi, Diskusi, Latihan,		Asumsi perilaku dan keterbatasan	10%

	asumsi perilaku dan batasan dari analisis keputusan. *Can determine behavioral assumptions and limitations of decision analysis.*	2. Dapat menjelaskan batasan dari model keputusan. 3. Dapat menentukan kemungkinan keluaran dari model keputusan. *1. Be able to explain behavioral assumptions.* *2. Can explain the limitations of the decision model.* *3. Can determine the possible output of the decision model.*	Tugas 3 *Class Activity* *Observation* *Test (TOA)* *Task 3*	Seminar *Interactive Lectures, Discussions, and Exercise* TM: 1x3x50” LT: 1x3x60” BM: 1x3x60”		keputusan. *Behavioral assumptions and decision limitations.*	
11-13	Dapat menjelaskan tentang *Analytic Hierarchy Process* (AHP). *Can explain about Analytic Hierarchy Process (AHP).*	1. Dapat Menjelaskan prinsip-prinsip berfikir analisis. 2. Dapat mengklasifikasi dan mengkontruksi hirarki. 3. Dapat menentukan estimasi dan prediksi. 4. Dapat mengukur faktor-faktor yang berpengaruh. *1. Can explain the principles of analytical thinking.* *2. Can classify and construct hierarchies.* *3. Can determine estimates and predictions.* *4. Can measure the influencing factors.*	Tes, Observasi, Aktifitas di kelas *Team-based Project* *Class Activity* *Observation* *Test (TOA)* *Team-based Project*	Ceramah Interaksi, Diskusi, Latihan, Seminar *Interactive Lectures, Discussions, and Exercise* TM: 3x3x50” LT: 3x3x60” BM: 3x3x60”		Analytic Hierarchy Process (AHP). *Analytic Hierarchy Process (AHP).*	25%

14-15	Dapat menjelaskan *Benefit Cost Ratio* *Can explain Benefit Cost Ratio*	1. Dapat menjelaskan permasalahan analisis keuntungan dan biaya. 2. Dapat membuat struktur hirarki keuntungan dan biaya. *1. Can explain the problem of profit and cost analysis.* *2. Can create a hierarchical structure of benefits and costs.*	Tes, Observasi, Aktifitas di kelas *Class Activity Observation Test (TOA)*	Ceramah Interaksi, Diskusi, Latihan, Seminar *Interactive Lectures, Discussions, and Exercise* TM: 2x3x50” LT: 2x3x60” BM: 2x3x60”		Keputusan analisis keuntungan dan biaya. *Benefit and cost analysis decisions.*	10%
16	**Evaluasi Akhir Semester / Ujian Akhir Semester/*Final Exam***						