MODULE HANDBOOK

BUSINESS ANALYTICS

BACHELOR DEGREE PROGRAM

DEPARTMENT OF STATISTICS

FACULTY OF SCIENCE AND DATA ANALYTICS

INSTITUT TEKNOLOGI SEPULUH NOPEMBER

ENDORSEMENT PAGE

MODULE HANDBOOK
BUSINESS ANALYTICS
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.rer pol. Dedy Dwi Prastyo, S.Si, M.Si	Dosen *Lecturer*		**March 28, 2019**
Pemeriksa dan Pengendalian *Review and Control*	Dr.rer pol. Dedy Dwi Prastyo, S.Si, M.Si	Tim kurikulum *Curriculum team*		**April 15, 2019**
Persetujuan *Approval*	Dr. Ir. Setiawan, M.S	Koordinator RMK *Course Cluster Coordinator*		**July 17, 2019**
Penetapan *Determination*	Dr. Dra. Kartika Fithriasari, M.Si	Kepala Departemen *Head of Department*		**July 30, 2019**

MODULE HANDBOOK
BUSINESS ANALYTICS

Module name	**Business Analytics**
Module level	Undergraduate
Code	KS184751
Course (if applicable)	Business Analytics
Semester	Seventh Semester (Ganjil)
Person responsible for the module	Dr.rer pol. Dedy Dwi Prastyo, S.Si, M.Si
Lecturer	Dr.rer pol. Dedy Dwi Prastyo, S.Si, M.Si
Language	Bahasa Indonesia
Relation to curriculum	Undergraduate degree program, **elective**, 7th semester.
Type of teaching, contact hours	Lectures, <50 students
Workload	1. Lectures : 3 x 50 = 150 minutes per week. 2. Exercises and Assignments : 3 x 60 = 180 minutes (3hours) per week. 3. Private learning : 3 x 60 = 180 minutes (3 hours) per week.
Credit points	3 credit points (sks)
Requirements according to the examination regulations	A student must have attended at least 80% of the lectures to sit in the exams.
Mandatory prerequisites	Statistical Computation

Learning outcomes and their corresponding to PLOs	CLO.1. Produce data visualization with traditional and up-to-date methods CLO.2 Generate visualizations for time series, spatial, and spatial-temporal data	PLO.1
	CLO.3 Can collect data from the digital world and analyze it CLO.4. Can document data and generate reports	PLO.3
	CLO.5 Can make a dashboard as a decision support tool	PLO.5
	CLO.7 Able to communicate effectively and work together in interdisciplinary and multidisciplinary teams CLO.8 Have professional responsibilities and ethics CLO.9 Able to motivate yourself to think creatively and learn throughout life	PLO.4
Content	The Business Analytics course is expected to be able to answer the need for presenting information in a fast time in today's internet era. The current digital era makes data available in large volumes with various types of data, either free of charge (on the internet) or not. This makes the method of presenting data very important, especially when it is related to the speed (time required) in presenting the information. The material in the Business Analytics course will provide provisions for students to have the ability and skills in online data collection, data visualization, analysis and reports in the form of documents and dashboards. The results of the information obtained will be used as material for business decision making and other related matters.	
Study and examination requirements and forms of examination	● In-class exercises ● Mid-term examination ● Final examination	
Media employed	LCD, whiteboard, websites (myITS Classroom), zoom.	

Reading list	1. Beeley, Chris. 2013. *Web Application Development with R Using Shiny*. Birmingham: Packt Publishing. 2. Lamigueiro, Oscar Perpiñán. 2014. *Displaying Time Series, Spatial, and Space-Time Data with R*. Boca Raton: CRC Press. 3. Murrell, Paul. 2012. *R Graphics*. 2nd edition. Boca Raton: CRC Press. 4. Putler, Daniel S. and Krider, Robert E. 2012. *Customer and Business Analytics: Applied Data Mining for Business Decision Making Using R*. Boca Raton: CRC Press. 5. Wickham, Hadley and Grolemund, Garrett. 2016. *R for Data Science: Import, Tidy, Transform, Visualize, and Model Data*. CA: O'Reilly Media, Inc. 6. Wiliams, Graham J. 2017. *The Essentials of Data Science: Knowledengane Discovery Using R*. Boca Raton: CRC Press. 7. Xie, Yihui. 2015. *Dynamic Documents with R and knitr*. 2nd edition. Boca Raton: CRC Press.

RENCANA PEMBELAJARAN SEMESTER (RPS)
SEMESTER LEARNING PLAN

	Program Studi	Sarjana, Departemen Statistika, FSAD-ITS
	Mata Kuliah	Bisnis Analitik
	Kode Mata Kuliah	KS184751
	Semester/SKS	VII/3
	MK Prasyarat	-
RP-S1	Dosen Pengampu	Dr.rer pol. Dedy Dwi Prastyo, S.Si, M.Si

Bahan Kajian *Study Materials*	Pengumpulan Data, Deskripsi dan Eksplorasi, Industri dan Bisnis, Ekonomi dan Manajemen *Collecting Data, Description and Exploration, Industrial and Business, Economic and Management*
CPL yang dibebankan MK *PLO*	CPL-1 Mampu menerapkan pengetahuan teori statistika, matematika, dan komputasi CPL-3 Mampu menganalisis data dengan metode statistika yang tepat dan mengintepretasikannya CPL-4 Mampu mengindentifikasi,memformulasi, dan menyelesaikan masalah statistika di berbagai bidang terapan CPL-5 Mampu menggunakan teknik komputasi dan perangkat komputer modern yang diperlukan dalam bidang statistika dan sains data *PLO.1 Able to apply knowledge of statistical theory, mathematics, and computation* *PLO.3 Able to analyze data with appropriate statistical methods and interpret them* *PLO.4 Able to identify, formulate, and solve statistical problems in various applied fields* *PLO.5. Able to use modern computational techniques and computer equipment required in the fields of statistics and data science*

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CP-MK *CLO*	CPMK.1 Menghasilkan visualisasi data dengan metode tradisional dan metode terkini CPMK.2 Menghasilkan visualisasi untuk data *time series*, spasial, dan spasio-temporal CPMK.3 Dapat mengumpulkan data dari *digital world* dan menganalisisnya CPMK.4 Dapat mendokumentasikan data dan membuat laporan CPMK.5 Dapat membuat *dashboard* sebagai alat pendukung keputusan CPMK.7 Mampu berkomunikasi secara efektif dan bekerjasama dalam tim yang interdisiplin dan multidisiplin CPMK.8 Memiliki tanggung jawab dan etika profesi CPMK.9 Mampu memotivasi diri untuk berpikir kreatif dan belajar sepanjang hayat *CLO.1. Produce data visualization with traditional and up-to-date methods* *CLO.2 Generate visualizations for time series, spatial, and spatial-temporal data* *CLO.3 Can collect data from the digital world and analyze it* *CLO.4. Can document data and generate reports* *CLO.5 Can make a dashboard as a decision support tool* *CLO.7 Able to communicate effectively and work together in interdisciplinary and multidisciplinary teams* *CLO.8 Have professional responsibilities and ethics* *CLO.9 Able to motivate yourself to think creatively and learn throughout life*

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Pertemuan *Meeting*	**Kemampuan Akhir Sub CP-MK** *Final Ability*	**Keluasan (materi pembelajaran)** *Extent (learning material)*	**Metode Pembelajaran** *Learning methods*	**Estimasi Waktu** *Duration*	**Bentuk Evaluasi** *Evaluation Type*	**Kriteria dan Indikator Penilaian** *Assessment Criteria and Indicators*	**Bobot Penilaian** *Scoring*
1-2	1. Menghasilkan visualisasi data dengan metode tradisional *1. Generate data visualizations with traditional methods*	Penyajian data (terutama data bisnis , ekonomi, dan finansial) dalam grafik dengan metode tradisional: a. Plot untuk variabel tunggal b. Plot untuk dua variabel c. Plot untuk banyak variabel *Presentation of data (especially business, economic, and financial data) in charts using traditional methods:* *a. Plot for a single variable* *b. Plot for two variables* *c. Plots for many variables*	Problem based learning (PBL). Sumber materi: [1] Bab 2 dan 3 *Problem based learning (PBL).* *Source of material:*	200 menit *200 Minutes*	Tes, Observasi, dan Aktifitas (TOA) di kelas *Tests, Observations, and Activities (TOA) in class*	Dapat menyajikan data untuk variabel tunggal, ganda, dan banyak *Can present data for single, multiple, and multiple variables*	5% / 5%

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			[1] Chapters 2 and 3				
3-4	2. Menghasilkan visualisasi data dengan metode terkini *2. Generate data visualizations with the latest methods*	Penyajian data (terutama data bisnis , ekonomi, dan finansial) dalam grafik dengan system grid: d. Plot untuk variabel tunggal e. Plot untuk dua variabel f. Plot untuk banyak variabel *Presentation of data (especially business, economic, and financial data) in a graph with a grid system:* *d. Plot for a single variable* *e. Plot for two variables* *f. Plots for many variables*	Problem based learning (PBL). Sumber materi: [1] Bab 4 s.d. 8 [2] Bab 1 s.d. 6 Problem based learning (PBL). *Source of material:*	200 menit *200 Minutes*	Tes, Observasi, dan Aktifitas (TOA) di kelas *Tests, Observations, and Activities (TOA) in class*	Dapat menyajikan data untuk variabel tunggal, ganda, dan banyak *Can present data for single, multiple, and multiple variables*	5% / 10%

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			[1] Chapters to 8 *[2] Chapters 1 to 6*				
5-6		Penyajian data menggunakan *Graphic Engine* *Presentation of data using the Graphic Engine*	Problem based learning (PBL). Sumber materi: [1] Bab 9 s.d. 10 *Problem based learning (PBL).* *Source of material:*	200 menit *200 Minutes*	Tes, Observasi, dan Aktifitas (TOA) di kelas *Tests, Observations, and Activities (TOA) in class*	Dapat menyajikan data secara visual *Can present data visually*	5% / 15%

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			[1] Chapters 9 to 10				
7-8		Penyajian data menggunakan *Graphic Engine* *Presentation of data using the Graphic Engine*	Problem based learning (PBL). Sumber materi: [1] Bab 11 s.d. 19 *Problem based learning (PBL).* *Source of material:* *[1] Chapters 11to 19*	200 menit *200 Minutes*	Tes, Observasi, dan Aktifitas (TOA) di kelas *Tests, Observations, and Activities (TOA) in class*	Dapat menyajikan data secara visual *Can present data visually*	5% / 20%

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9-10	3. Menghasilkan visualisasi untuk data *time series* *3. Generate visualizations for time series data*	Visualisasi Data *Time Series* *visualizations of time series data*	Problem based learning (PBL). Sumber materi: [4] Bab 2 s.d. 6 *Problem based learning (PBL).* *Source of material:* *[4] Chapters 2 to 6*	200 menit *200 Minutes*	Tes, Observasi, dan Aktifitas (TOA) di kelas *Tests, Observations, and Activities (TOA) in class*	Dapat menyajikan data *time series* *Can present time series data*	10% / 30%

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11-12	4. Menghasilkan visualisasi untuk data spasial *4. Generate visualizations for spatial data*	Visualisasi Data Spasial *visualizations of spatial data*	Problem based learning (PBL). Sumber materi: [4] Bab 7 s.d. 10 *Problem based learning (PBL). Source of material: [4] Chapters 7 to 10*	200 menit *200 Minutes*	Tes, Observasi, dan Aktifitas (TOA) di kelas *Tests, Observations, and Activities (TOA) in class*	Dapat menyajikan data spasial *Can present spatial data*	10% / 40%

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13-14	5. Menghasilkan visualisasi untuk data spasio-temporal *5. Generate visualizations for spatio-temporal data*	Visualisasi Data Spatio-Temporal *Visualizations of spatio-temporal data*	Problem based learning (PBL). Sumber materi: [4] Bab 11 s.d. 13 *Problem based learning (PBL). Source of material: [4] Chapters 11 to 13*	200 menit *200 Minutes*	Tes, Observasi, dan Aktifitas (TOA) di kelas *Tests, Observations, and Activities (TOA) in class*	Dapat menyajikan data spasio-temporal *Can present spatio-temporal data*	10% / 50%
15-16	ETS						

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17-18	6. Dapat mengumpulkan data dari *digital world* dan menganalisisnya *6. Can collect data from the digital world and analyze it*	*Wrangling* dan Visualisasi data *Wrangling and Data Visualization*	Problem based learning (PBL). Sumber materi: [2] Bab 7 s.d. 13 [3] Bab 3 dan 4 *Problem based learning (PBL). Source of material: [2] Chapters 7 to 13 [3] Chapters 3 and 4*	200 menit *200 Minutes*	Tes, Observasi, dan Aktifitas (TOA) di kelas *Tests, Observations, and Activities (TOA) in class*	Dapat melakukan pengumpulan data digital dari internet *Can collect digital data from the internet*	5% / 55%

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19-20		*Web Analytics* *Web Analytics*	Problem based learning (PBL). Sumber materi: [3] Bab 6 *Problem based learning (PBL). Source of material: [3] Chapter 6*	200 menit *200 Minutes*	Tes, Observasi, dan Aktifitas (TOA) di kelas *Tests, Observations, and Activities (TOA) in class*	Dapat melakukan pengumpulan data digital dari internet, mengolahnya, dan menganalisisnya *Can collect digital data from the internet, process it, and analyze it*	5% / 60%

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17-18	7. Dapat mendokumentasikan data dan membuat laporan *7. Can document data and create reports*	Membuat dokumentasi menggunakan R Markdown dan knitr *Create documentation using R Markdown and knitr*	Problem based learning (PBL). Sumber materi: [2] Bab 21 s.d. 24, dan [6] Problem based learning (PBL). *Source of material: [2] Chapters 21 to 24, and [6]*	200 menit *200 Minutes*	Tes, Observasi, dan Aktifitas (TOA) di kelas *Tests, Observations, and Activities (TOA) in class*	Dapat melakukan dokumentasi data dan membuat laporan menggunakan R *Can document data and create reports using R*	5% / 65%

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19-22	8. Dapat membuat *dashboard* menggunakan R *8. Can make a dashboard using R*	Membuat aplikasi Website menggunakan R Shiny *Create a Website application using R Shiny*	Problem based learning (PBL). Sumber materi: [7] *Problem based learning (PBL). Source of material: [7]*	400 menit *400 Minutes*	Tes, Observasi, dan Aktifitas (TOA) di kelas *Tests, Observations, and Activities (TOA) in class*	Dapat membuat dashboard *Can create a dashboard*	5% / 70%
23-26		Membuat *dashboard* secara umum *Make a general dashboard*	Penugasan projek dan praktikum *Project and practicum assignments*	400 menit *400 Minutes*	Tes, Observasi, dan Aktifitas (TOA) di kelas *Tests, Observations, and*	Dapat membuat dashboard *Can create a dashboard*	10% / 80%

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					Activities (TOA) in class		
27-28		Membuat *dashboard* dengan tambahan metode Statistika *Creating a dashboard with additional statistical methods*	Penugasan projek dan praktikum *Project and practicum assignments*	200 menit *200 Minutes*	Tes, Observasi, dan Aktifitas (TOA) di kelas *Tests, Observations, and Activities (TOA) in class*	Dapat membuat dashboard *Can create a dashboard*	10% / 90%

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29-30		Mendemonstrasikan hasil karya berupa dashbord *Demonstrating the work of a dashbord*	Presentasi *Presentation*	200 menit *200 Minutes*	Tes, Observasi, dan Aktifitas (TOA) di kelas *Tests, Observations, and Activities (TOA) in class*	Dapat menjelaskan dashboard yang dibuat secara lisan *Can explain the dashboard that is made orally*	10%/100 %
31-32	EAS						