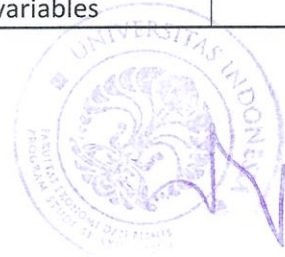UNIVERSITAS INDONESIA
FACULTY OF ECONOMICS AND BUSINESS
DEPARTMENT OF ACCOUNTING
UNDERGRADUATE PROGRAM

SYLLABUS
ANALITIK BISNIS (BUSINESS ANALYTICS)
ECAU609105
SEMESTER I 2020/2021

No.	Lecturers	E-mail
Regular Class		
1	**Teguh Iman Maulana**	teguh.im@ui.ac.id
2	Feri Priatna	feripriatna@ui.ac.id
3	Siti Czafrani	siticzafrani@ui.ac.id
4	Nurul Husnah	nurulhusnah78@gmail.com
5	Nur Aulia Rahmah	rahmah.naulia@gmail.com
6	Rini Yulius / Vitria Indriani	riniyulius2000@gmail.com / vitria.indirani@gmail.com
International Class		
1	Teguh Iman Maulana	teguh.im@ui.ac.id
Extension Class		
	NA	

Subject Code	ECAU609103
Subject Title	Business Analytics
Credit Value	3
Year	1
Pre-requisite/ Co-requisite/ Exclusion	Mathematics for Economics and Business (ECEU601200) Statistics for Economics and Business (ECEU601200)
Role and Purposes	The learning goal of this course is to apply technical competence in accounting-related fields with the learning outcome to apply technical competence in Information Technology. After completion this subject, the students are expected to be able to apply basic quantitative techniques, using appropriate software tools, and to solve a variety of business problems.
Subject Learning Outcomes	Upon completion of the subject, student will be able to: Apply basic quantitative techniques, using appropriate software tools, to solve a variety of business problems (technical competence in information technology) a. Describe the use of business analytics to support decision making process

	b. Apply techniques for data analytics (descriptive analytics, predictive analytics, prescriptive analytics)			

Subject Synopsis/ Indicative Syllabus	Week #	Topic	LO	References
	1	Course Introduction (syllabus explanation) Introduction to Business Analytics • What is business analytics? • Data for business analytics • Model in business analytics • Problem solving with analytics	a	JRE: Ch 1 DVP LVL
	2	Analytics on Spreadsheets • Basic excel skills • Basic excel functions • Insert function • Logical function • Using lookup function for database queries		JRE: Ch 2 DVP LVL
	3	Visualizing and Exploring Data • Data Visualization • Tools and software for data visualization • Geographic data • Data bars, color scales, and icon sets • Data queries: table, sorting and filtering • Statistical methods for summarizing data	B	JRE: Ch 3 DVH
	4	Spreadsheet Modeling Analysis • Strategies for prediction decision making • Spreadsheet design • Spreadsheet quality • Spreadsheet applications in business analytics • Data validation • Model analysis using analytics solver platform	B	JRE: Ch 11 Quiz (session 2 – 4 topics)
	5	Trendlines and regression analysis • Modeling relationships and trends in data • Simple linear regression • Multiple linear regression	B	JRE: Ch 8; LSS: Ch 13, 14
	6	Forecasting Techniques • Qualitative and judgmental forecasting • Statistical forecasting models • Moving average models • Exponential smoothing models • Regression time series with seasonality • Regression forecasting with causal variables	B	JRE: Ch 9; BWT: Ch. 15; LSS: Ch. 16

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	7	Game Theory • Definition • Type of game situation • A pure strategy • A mixed strategy	b	Quiz (session 5 – 7 topics)
	8	Mid Exam		
	9	Linear optimization • Building linear optimization models • Characteristics of linear optimization models • How solver works • Solver outcomes and solution messages • Solver sensitivity analysis	B	JRE: Ch 13; BWT: Ch. 2, 3
	10	Integer optimization • Solving models with general integer variables • Integer optimization models with binary variables • Mixed integer optimization models Application of linear optimization • Types of constraints in optimization models • (max 3 models for example and case study)	B	JRE: Ch 14, 15; BWT: Ch. 4, 5
	11	Multicriteria Decision Making • Goal Programming • Analytical Hierarchy Process • Scoring model	B	BWT: Ch. 9 Quiz (Session 9 -11 topics)
	12	Monte Carlo Simulation and Risk Analysis • Spreadsheet models with random variables • Monte Carlo simulation • Running a simulation • Simulation reports	B	JRE: Ch 12; BWT: Ch. 14
	13	Waiting Line Model • Elements of waiting line models • Single server waiting line system • Finite queue length • Multiple-server waiting line	B	BWT Ch. 13
	14	Decision analysis • Formulating decision problems • Decision strategies without probabilities • Decision strategies with outcome probabilities • Decision tree • The value of information	B	JRE: Ch 16; BWT: Ch. 12
	15	Network Flow Model • The shortest route problem	B	BWT: Ch. 7

		• The minimal spanning tree problem • The maximal flow problem	Quiz (Session 12 – 15 topics)
	16	Final Exam	

Teaching/Learning Methodology	Teaching method uses active lecturing and class discussions, in which students achieve the study objectives by discussing and completing related problems or cases under the guidance of lecturer. The problems and cases are taken from the textbook or other sources. The policy related to plagiarism, cheating, and attendance must refer to faculty regulation.

Assessment Method in Alignment with Intended Learning Outcomes	Specific Assessment Methods/Tasks	% Weighting	Intended Learning Outcomes to be Assessed	
			a	b
	Continuous Assessment	100		
	GROUP	15%		
	Group Assignment (15%)		√	√
	INDIVIDUAL	85%		
	Mid Term Exam, include computer test (30%)		√	√
	Final Exam (30%)			√
	Quizzes (20%)		√	√
	Tutorial (5%)		√	√

Student Study Effort Expected	Class Contacts	
	Lectures	35 Hours
	Other student study effort	
	Preparation for discussion	35 Hours
	Preparation for project/assignment/tests	35 Hours

Reading List and References	Required Reading: 1. Evans, James R. 2016. Business Analytics, 2nd Edition. Prentice Hall. (JRE) 2. Taylor III, Bernard W. 2016. *Introduction to Management Science*, 12th edition. Prentice Hall. (BWT) Supplementary Readings: 1. Levine, David M., Stephan, David M., Sabat, Kathryn A. 2017. Statistics for Managers using Microsoft Excel, 8th edition. Prentice Hall (LSS) 2. Davenport, T.H. (2006). Competing on analytics. *Harvard Business Review* (DVP) 3. LaValle, et al. (2010). Analytics: The new path of value. *MIT Sloan Management Review*. (LVL) 4. Davenport, T.H, Harris, J.G. (2007). The dark side of customer analytics. *Harvard Business Review* (DVH)

Technology Requirements	Students are expected to have a Microsoft Windows operating system and the Microsoft Excel software (Excel 2010 or above). Otherwise, you cannot implement some business analytics models for the assignments. For an Apple Mac user, please ensure you can access to Windows PC as Apple Macs cannot run the advanced data analysis functions in Excel at this moment.

Student Conduct	All students have to follow the acceptable behavior conducive to learning environment according to Code of conduct of Faculty of Economics and Business, Universitas Indonesia. Students are expected to prepare themselves before attending the class. There are no make-up quizzes for being absent or being late for class.