

COURSE PROFILE

Course Name	Code	Semester	Term	Theory+PS+Lab (hour/week)	Local Credits	ECTS
Business Data Analysis	IT431	Fall	7	3 + 0 + 0	3	6

Prerequisites	None
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Course Language	English
Course Type	Departmental Elective
Course Lecturer	Assist. Prof. Dr. Fatih Özyayın
Course Assistant	Murat Kaya
Course Objectives	<p>The following modules and lessons included in this course are designed to support the course objectives:</p> <ul style="list-style-type: none"> • State of the Practice in Analytics • The Data Scientist • Big Data Analytics in Industry Verticals • Discovery • Data Preparation • Using R to Look at Data – Introduction to R • Analyzing and Exploring the Data • Statistics for Model Building and Evaluation • K Means Clustering • Association Rules • Linear Regression • Logistic Regression • Naïve Bayesian Classifier • Decision Trees • Time Series Analysis • Text Analysis • Analytics for Unstructured Data • The Hadoop Ecosystem ,The Endgame, or Putting it All Together • Operationalizing an Analytics Project • Creating the Final Deliverables • Data Visualization Techniques

<p>Course Learning Outcomes</p>	<p>Upon successful completion of this course, participants should be able to:</p> <ul style="list-style-type: none"> • Immediately participate and contribute as a Data Science Team Member on big data and other analytics projects by: <ul style="list-style-type: none"> ○ Deploying the Data Analytics Lifecycle to address big data analytics projects ○ Reframing a business challenge as an analytics challenge ○ Applying appropriate analytic techniques and tools to analyze big data, create statistical models, and identify insights that can lead to actionable results ○ Selecting appropriate data visualizations to clearly communicate analytic insights to business sponsors and analytic audiences ○ Using tools such as: R and RStudio, MapReduce/Hadoop, in-database analytics, Window and MADlib functions • Explain how advanced analytics can be leveraged to create competitive advantage and how the data scientist role and skills differ from those of a traditional business intelligence analyst.
<p>Course Content</p>	<p>This course provides practical foundation level training that enables immediate and effective participation in big data and other analytics projects. It includes an introduction to big data and the Data Analytics Lifecycle to address business challenges that leverage big data. The course provides grounding in basic and advanced analytic methods and an introduction to big data analytics technology and tools, including MapReduce and Hadoop.</p>

COURSE CONTENT

Week	Subjects	Related
1	Introduction and Course Agenda	
2	Introduction to Big Data Analytics	
3	Big Data Overview	
4	Data Analytics Lifecycle	
5	Model Planning	
6	Model Building	
7	Communicating Results	
8	Operationalizing	
9	Review of Basic Data Analytic Methods Using R	
10	Advanced Analytics – Theory And Methods	
11	Advanced Analytics - Technologies and Tools	
12	In-database Analytics – SQL Essentials	
13	Advanced SQL and MADlib for In-database Analytics	
14	Final Lab Exercise on Big Data Analytics	

Course Textbook	Turning Big Data into Big Money (Wiley and SAS Business Series), Frank J. Ohlhorst
Recommended References	

Semester Requirements	Number	Percentage of Grade
Attendance/Participation		
Laboratory		
Application		
Special Course Internship (Work Placement)		
Quizzes/Studio Critics		
Homework Assignments		
Presentation		
Project		50
Seminar/Workshop		
Midterms/Oral Exams		20
Final/Resit Exam		30
Total		100

PERCENTAGE OF SEMESTER WORK		70
PERCENTAGE OF FINAL WORK		30
Total		100

Course Category	Core Courses	
	Major Area Courses	X
	Supportive Courses	
	Media and Management Skills Courses	
	Transferable Skill Courses	

COURSE'S CONTRIBUTION TO PROGRAM

#	Program Qualifications / Outcomes	* Level of Contribution				
		1	2	3	4	5
1	A foundation in mathematics and basic sciences and ability to apply acquired knowledge as they relate to the study and practice of information technology					X
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution, to understand, select and use appropriate technology, tools, standards, protocols, building blocks, and components to solve the problem					X
3	An ability to propose, analyze, design, develop, test and maintain an information technology system including software solutions, security model, computer and network infrastructure, information systems etc. to solve information technology problems			X		
4	An ability to analyze local and global impact of computing on individuals, organizations and society; and the ability to apply information technology techniques, skills, and tools for regular computing practices as well as to improve effectiveness of current methodologies	X				
5	An ability to effectively communicate in oral and written media with all kinds of related audiences; and prepare documentation for this purpose as required	X				
6	An understanding of professional, ethical, legal, and social issues and responsibilities of information technology profession		X			
7	A taste and breadth of knowledge across several social topics outside the immediate requirements of the information technology profession, and the ability to work within heterogeneous teams to accomplish a common goal including people from the information technology area as well as other disciplines		X			
8	An ability to engage in life-long learning and professional development for personal improvement to follow contemporary information technology issues					

*1 Lowest, 2 Low, 3 Average, 4 High, 5 Highest

ECTS ALLOCATED BASED ON STUDENT WORKLOAD BY THE COURSE DESCRIPTION

Activities	Number	Duration (Hours)	Total Workload
Course Hours (Including Exams)	14	3	42
Tutorials			
Laboratory			
Application			
Special Course Internship (Work Placement)			
Field Work			
Study Hours Out of Class	14	4	56
Presentations / Seminar			
Project			
Preparatory reading	14	3	42
Homework Assignments	4	1	4
Quizzes	4	1	4
Midterm Exams	1	2	2
Final / Resit Exam	1	2	2
		Total Workload	152

COURSE CATEGORY

ISCED GENERAL AREA CODES	GENERAL AREAS	ISCED BASIC AREA CODES	BASIC EDUCATIONAL AREAS	
1	Education	14	Teacher Training and Educational Sciences	
2	Humanities and Art	21	Art	
2	Humanities and Art	22	Humanities	
3	Social Sciences, Management and Law	31	Social and Behavioural Sciences	20
3	Social Sciences, Management and Law	32	Journalism and Informatics	
3	Social Sciences, Management and Law	38	Law	
4	Science	42	Life Sciences	
4	Science	44	Natural Sciences	
4	Science	46	Mathematics and Statistics	45
4	Science	48	Computer	20
5	Engineering, Manufacturing and Civil	52	Engineering	15
5	Engineering, Manufacturing and Civil	54	Manufacturing and Processing	
5	Engineering, Manufacturing and Civil	58	Architecture and Structure	
6	Agriculture	62	Agriculture, Forestry, Livestock, Fishery	
6	Agriculture	64	Veterinary	
7	Medicine and Welfare	72	Medical	
7	Medicine and Welfare	76	Social Services	
8	Service	81	Personal Services	
8	Service	84	Transport Services	
8	Service	85	Environment Protection	
8	Service	86	Security Services	