

DEREE COLLEGE SYLLABUS FOR: BAN 1023 Introduction to Data Science								
(New course: Fall 2025)		UK Level: 4 UK Credits: 15 US Credits: 3/2/3						
PREREQUISITES:	None							
CATALOG DESCRIPTION:	An introduction to Data Science theory, methodology, models, and processes. An overview of coding, data visualization, mathematics, and statistics, covering material from data loading to basic machine learning techniques.							
RATIONALE:	The course equips students with essential skills in Data Science, integrating Python, Data Visualization, Mathematics, and Statistics. It offers a structured exploration of data methodologies, models, and processes, establishing a strong foundation for aspiring and marketable data analysts and scientists. Students gain hands-on experience and insights into real-world applications. The course aims to cultivate a deep understanding of data manipulation and interpretation, fostering critical thinking for informed decision-making in the business analytics landscape. Through practical applications, students develop the proficiency needed to extract actionable insights, enhancing their analytical prowess for impactful contributions to data-driven business strategies.							
LEARNING OUTCOMES:	As a result of taking this course, the student should be able to: 1. Describe all phases of a Data Science Project 2. Apply Data Science techniques in real-life scenarios.							
METHOD OF TEACHING AND LEARNING:	In congruence with the teaching and learning strategy of the college, the following tools are used: ➤ Lectures, class discussions on case studies, flipped classroom, simulation and best teaching and learning practices. ➤ Laboratory hands-on sessions on business process design, business process mining and business process automation tools. ➤ Office hours held by the instructor to provide further assistance to students. ➤ Use of the Blackboard Learning platform to further support communication, by posting lecture notes, assignment instruction, timely announcements, and online submission of assignments.							
ASSESSMENT:	<div>Summative:<table><tr><td>First assessment - Midterm Examination: Submission of a presentation describing a proposal for a real-life Data Science Project followed by a Q&A session</td><td>40%</td></tr><tr><td>Final assessment - Research Project: Submission of a short essay describing a real-life Data Science Project end-to-end accompanied by Jupiter Notebook Python code</td><td>60%</td></tr></table></div> <div>Formative:<table><tr><td>Coursework: Case Problems</td><td>0%</td></tr></table></div>		First assessment - Midterm Examination: Submission of a presentation describing a proposal for a real-life Data Science Project followed by a Q&A session	40%	Final assessment - Research Project: Submission of a short essay describing a real-life Data Science Project end-to-end accompanied by Jupiter Notebook Python code	60%	Coursework: Case Problems	0%
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Coursework: Case Problems	0%							

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READING LIST:	<p>REQUIRED READING:</p> <ul style="list-style-type: none"> Joel Grus "Data Science from Scratch". O'Reilly Media, latest edition, ISBN: 9781492041139. <p>RECOMMENDED READING:</p> <ul style="list-style-type: none"> Foster Provost and Tom Fawcett. "Data Science for Business: What you need to know about data mining and data-analytic thinking". O'Reilly Media, latest edition, ISBN-13: 978-1449361327. Hadley Wickham, Garrett Grolemund. "R for Data Science: Import, Tidy, Transform, Visualize, and Model Data", Publisher: "O'Reilly Media, Inc.", 2016, ISBN 1491910364, 9781491910368 Cathy O'Neil, Rachel Schutt. "Doing Data Science: Straight Talk from the Frontline", Publisher: "O'Reilly Media, Inc.", 2013, ISBN 144936389X, 9781449363895. 		
COMMUNICATION REQUIREMENTS:	Daily access to the course's site on the College's Blackboard CMS. Effective presentation skills using proper written and oral English.		
SOFTWARE REQUIREMENTS:	MS Office, Blackboard CMS, and latest version of Python 3		
WWW RESOURCES:	https://www.tandfonline.com/doi/full/10.1080/10618600.2017.1384734 https://towardsdatascience.com/ https://www.python.org/		
INDICATIVE CONTENT:	<ol style="list-style-type: none"> 1. Introduction 2. Crash Course in Python 3. Visualizing Data 4. Linear Algebra 5. Statistics 6. Probability 7. Hypothesis Testing and Inference 8. Gradient Descent 9. Getting Data 10. Working with Data 11. Machine Learning 12. k-Nearest Neighbors 13. Native Bayes 14. Simple Linear Regression 		