University of Baghdad
جامعة بغداد

First Cycle – Bachelor's Degree (B.Sc.) – in Data Science

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1. Overview

This catalogue is about the courses (modules) given by the program of Data Science to gain a Bachelor of Data Science degree. The program delivers (47) Modules with (6000) total student workload hours and 240 total ECTS. The module delivery is based on the Bologna Process.

نظره عامه

يتناول هذا الدليل المواد الدراسية التي يقدمها برنامج علم البياناتللحصول على درجة بكالوريوس علم البيانات. يقدم البرنامج (47) مادة دراسية مع (6000) إجمالي ساعات حمل الطالب و240 إجمالي وحدات أوروبية. يعتمد تقديم المواد الدراسية على عملية بولونيا.

2. Undergraduate Courses 2025-2026

Module 1

Code	Course/Module Title	ECTS	Semester
GEN 101	Introduction to Programming	7	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	**4**	93	82
Description			
This course introduces the fundamental concepts of programming using a high-level programming language. It is designed for students with little or no prior programming experience. The course covers essential topics such as variables, data types, control structures (conditionals and loops), functions, arrays/lists, and basic input/output operations. Students will also be introduced to problem-solving techniques, algorithm development, and debugging strategies. **Through a combination of lectures and hands-on lab sessions, students will gain practical experience in writing, testing, and debugging code. By the end of the course, students will be able to design simple programs and understand the foundational principles that underpin modern software development.**			

Module 2

Code	Course/Module Title	ECTS	Semester
GEN 102	Mathematics 1	7	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
4	0	63	112
Description			
The aim of the module is to review and enhance aspects of pre-university mathematics in order to foster genuine confidence and fluency with the material. This will help provide a firm grasp of basic ideas thus allowing concentration on the many new and often abstract concepts that will be introduced in various modules throughout the academic programme. The topics are: Injective, subjective and bijective functions; trigonometric functions; hyperbolic functions; inverse functions; the logarithm and exponential functions; limits; differentiation from first principles; integration from first principles; series; Taylor's theorem and l'Hopital's rule. Surface sketching, partial derivatives, multiple integrals, geometry of curves, vector fields, geometry of surfaces, maxima and minima, generalized derivatives, Stokes' Theorem, the Divergence Theorem.			

Module 3

Code	Course/Module Title	ECTS	Semester
GEN 103	critical thinking	6	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	87
Description			
Critical Thinking focuses on developing the ability to analyze, evaluate, and construct arguments and ideas in a logical, clear, and systematic way. It involves learning how to question assumptions, identify biases, and apply rational reasoning to solve problems, make decisions, and form well-supported conclusions. The subject draws from philosophy, logic, and psychology, and emphasizes skills such as logical reasoning, evidence evaluation, problem-solving, and reflective thinking. It is studied to enhance intellectual independence, improve decision-making, and foster effective communication in academic, professional, and everyday contexts.			

Module 4

Code	Course/Module Title	ECTS	Semester
DS 101	Introduction of Data Science	6	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	4	93	57
Description			
New Headway Beginner Plus is a Beginner course in English intended to provide students with the fundamentals of the language and a foundation at First Year students / college of science, moving towards a higher level of proficiency at this stage. At the end of the course the student understands basic everyday expressions and short, simple texts, engage in simple oral and written communication in order to provide and obtain information, construct very basic and simple sentences, and demonstrate limited control of essential grammatical structures.			

Module 5

Code	Course/Module Title	ECTS	Semester
UOB101	Arabic Language I	2	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	**0**	33	17
Description			
A brief course on Arabic language might cover topics such as: **1. The Arabic alphabet, including pronunciation and writing systems.** **2. Basic Arabic grammar, including noun cases, verb conjugation, and sentence structure.** **3. Basic vocabulary and phrases used in everyday conversation, including greetings, introductions, and common expressions.** **4. Reading and writing in Arabic, including comprehension of written texts and basic writing skills.** **5. Cultural aspects of Arabic language, including customs, traditions, and social etiquette.** **6. Advanced topics in Arabic language, including regional dialects, classical Arabic, and media Arabic.** **Overall, a course on Arabic language would provide students with the technical skills and cultural understanding needed to communicate effectively in Arabic and to engage with Arabic-speaking communities. The course would be useful for professionals in fields such as international relations, business, and journalism, where knowledge of Arabic language and culture is critical for effective communication and cultural understanding.**			

Module 6

Code	Course/Module Title	ECTS	Semester
UOB104	Democracy and Human Rights	2	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0	33	17
Description			
This course deals with the basic concept of human rights and democracy , clarifying and training students on the most important principles of human rights and democracy, organizing discussions and presentations on the most vital and basic topics affecting community building, related to human rights and democracy, adopting teamwork with students to develop their cognitive abilities and create a spirit of cooperation, initiative, creativity and exchange of views in an effort to build the foundations of peaceful community coexistence, providing society with conscious youth aware of the importance			

of its role in building society, its unity and cohesion through spreading the culture of human rights and establishing the rules of correct democracy, Human rights guarantee the protection and respect of an individual's interests, even when he or she is not a majority. In a democratic climate, sustainable democratic power cannot be conceived without respecting, protecting and fulfilling human rights.

Module 7

Code	**Course/Module Title**	**ECTS**	**Semester**
GEN 113	Statistics	7	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	2	78	97
Description			
This course covers probability theory and various descriptive statistical techniques for collecting analyzing and interpreting data.			

Module 8

Code	**Course/Module Title**	**ECTS**	**Semester**
GEN 112	Writing skills	4	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	**0**	33	67
Description			
Research writing skills are the ability to write clear, specific, and reliable research reports. They include the ability to design research, collect data, analyze data, and present findings.			

Module 9

Code	**Course/Module Title**	**ECTS**	**Semester**
DS 111	Fundamentals of AI	6	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	87
Description			
introduction to Artificial Intelligence (AI), covering key concepts such as natural language processing, and computer vision. Students will explore AI applications and ethical considerations in various industries.			

Module 10

Code	Course/Module Title	ECTS	Semester
DS 112	Fundamentals of Database Management	7	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	112
Description			
This course covers the basics of database systems, including relational databases, SQL, data modeling, normalization, and database design principles. Students will gain hands-on experience in creating and managing databases.			

Module 11

Code	Course/Module Title	ECTS	Semester
UOB102	English Language I	3	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	**0**	33	42
Description			
New Headway Beginner Plus is a Beginner course in English intended to provide students with the fundamentals of the language and a foundation at First Year students / college of science, moving towards a higher level of proficiency at this stage. At the end of the course the student understands basic everyday expressions and short, simple texts, engage in simple oral and written communication in order to provide and obtain information, construct very basic and simple sentences, and demonstrate limited control of essential grammatical structures.			

Module 12

Code	Course/Module Title	ECTS	Semester
UOB103	Computer I	3	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
1	2	48	27

Description
A brief course on Computer I might cover topics such as: **1. Basic computer hardware and software components, including the central processing unit (CPU), memory, storage devices, and operating systems.** **2. Basic computer programming concepts, including variables, data types, operators, and control structures.** **3. Basic software applications, including word processing, spreadsheet, and presentation software.** **4. Basic internet and email usage, including web browsing, search engines, and email communication.** **5. Basic computer security principles, including password management, virus protection, and data backup.** **Overall, a course on Computer I would provide students with the foundational knowledge and skills needed to use computers effectively in their personal and professional lives. The course would be useful for students in various fields, as computer literacy is increasingly important in today's digital world. The course would also provide a foundation for further study in computer science, information technology, and related fields.**

Module 13

Code	Course/Module Title	ECTS	Semester
DS 201	Applied Statistics	7	3
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	4	93	82
Description			
This course introduces key concepts in data analysis, including data collection, cleaning, visualization, and basic statistical methods. Students will learn how to interpret and analyze datasets using software tools and statistical techniques.			

Module 14

Code	Course/Module Title	ECTS	Semester
DS 202	Programming Methodology	7	3
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	4	93	82
Description			
This course focuses on best practices in software development, emphasizing structured			

programming, modular design, debugging, and testing. Students will learn how to write efficiently, maintainable, and well-documented code.

Module 15

Code	**Course/Module Title**	**ECTS**	**Semester**
GEN 205	Entrepreneurship	5	3
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	**0**	33	92
Description			
This course aims to introduce students to the concepts of entrepreneurship and how to transform creative ideas into successful projects. The focus is on developing the skills needed to identify opportunities, analyze markets, and manage entrepreneurial ventures.			

Module 16

Code	**Course/Module Title**	**ECTS**	**Semester**
E-DS 203	Elective201	5	3
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	1	48	77
Description			

Module 17

Code	**Course/Module Title**	**ECTS**	**Semester**
UOB105	Baath Regime Crimes in Iraq	3	3
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0	33	42
Description			
This course explores the grave crimes and human rights violations committed by the Baath regime in Iraq. Through documented evidence, survivor testimonies, and official legal records, students will examine the historical, political, and humanitarian impact of these atrocities. The course aims to raise awareness of Iraq's contemporary history, promote the values of justice, accountability, and human rights, and highlight the			

importance of transitional justice in rebuilding a society based on the rule of law. Students will gain insight into how collective memory and legal documentation contribute to preventing the recurrence of authoritarianism and state violence.

Module 18

Code	**Course/Module Title**	**ECTS**	**Semester**
UOB203	Computer II	3	3
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
1	2	48	27
Description			
A brief course on Computer II might cover topics such as: 1. Advanced computer hardware components, including graphics processing units (GPUs), sound cards, and networking devices. 2. Advanced computer programming concepts, including object-oriented programming, data structures, and algorithms. 3. Advanced software applications, including database management systems, computer-aided design (CAD) software, and video editing software. 4. Advanced internet and web development concepts, including web programming languages, server-side scripting, and web application development. 5. Advanced computer security concepts, including network security, encryption, and intrusion detection. Overall, a course on Computer II would provide students with the technical skills and knowledge needed to use computers in a more advanced and specialized way. The course would be useful for students in fields such as computer science, information technology, and engineering, where advanced computer skills are essential for effective problem-solving and innovation. The course would also provide a foundation for further study in specialized areas of computer science, such as artificial intelligence, computer graphics, and computer networking.			

Module 19

Code	**Course/Module Title**	**ECTS**	**Semester**
DS 211	Introduction to Optimization: Data Science	7	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	4	93	82
Description			

This course introduces optimization techniques used in data science and analytics. Topics include linear and nonlinear optimization, constrained and unconstrained problems, and applications in machine learning and business decision-making.

Module 20

Code	**Course/Module Title**	**ECTS**	**Semester**
DS 212	Data Structures and Algorithms	7	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	4	93	82
Description			
This course introduces fundamental data structures such as arrays, linked lists, stacks, queues, trees, and graphs. It also covers algorithm design, searching, sorting, and complexity analysis, helping students develop efficient problem-solving skills.			

Module 21

Code	**Course/Module Title**	**ECTS**	**Semester**
DS 213	Linear algebra	5	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	1	63	62
Description			
This course explores essential linear algebra concepts, including vectors, matrices, determinants, eigenvalues, eigenvectors, and linear transformations. Applications in engineering, computer science, and data analysis are also covered.			

Module 22

Code	**Course/Module Title**	**ECTS**	**Semester**
E-DS 214	Elective211	5	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	**1**	48	77
Description			

Module 23

Code	Course/Module Title	ECTS	Semester
UOB201	Arabic Language II	3	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0	33	42

Description

A brief course on Arabic language might cover topics such as:

1. The Arabic alphabet, including pronunciation and writing systems.
2. Basic Arabic grammar, including noun cases, verb conjugation, and sentence structure.
3. Basic vocabulary and phrases used in everyday conversation, including greetings, introductions, and common expressions.
4. Reading and writing in Arabic, including comprehension of written texts and basic writing skills.
5. Cultural aspects of Arabic language, including customs, traditions, and social etiquette.
6. Advanced topics in Arabic language, including regional dialects, classical Arabic, and media Arabic.

Overall, a course on Arabic language would provide students with the technical skills and cultural understanding needed to communicate effectively in Arabic and to engage with Arabic-speaking communities. The course would be useful for professionals in fields such as international relations, business, and journalism, where knowledge of Arabic language and culture is critical for effective communication and cultural understanding.

Module 24

Code	Course/Module Title	ECTS	Semester
UOB202	English Language II	3	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0	33	42

Description

This course builds upon the foundations established in English Language I, aiming to develop students' academic and technical English skills relevant to their field of study. Emphasis is placed on reading comprehension, scientific vocabulary, paragraph structure, and technical writing. Students will also engage in oral presentations and discussions to enhance their communication skills in biomedical and technological

contexts. The course supports students in reading and producing English texts related to artificial intelligence, medical applications, and research literature, enabling them to effectively interact in international academic and professional environments.

Module 25

Code	**Course/Module Title**	**ECTS**	**Semester**
DS 301	Machine Learning	6	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	**4**	93	57
Description			
Covers fundamental and advanced machine learning techniques, including supervised, unsupervised, and reinforcement learning, with applications in various domains.			

Module 26

Code	**Course/Module Title**	**ECTS**	**Semester**
DS 302	Data Mining	6	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	4	93	57
Description			
Focuses on extracting patterns, trends, and useful information from large datasets using classification, clustering, and association rule mining techniques.			

Module 27

Code	**Course/Module Title**	**ECTS**	**Semester**
DS 303	Big Data Analytics	6	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	**4**	93	57
Description			

Introduces tools and frameworks for processing and analyzing massive datasets, including Hadoop, Spark, and real-time data processing.

Module 28

Code	**Course/Module Title**	**ECTS**	**Semester**
DS 304	Decision Making and Data Science	5	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	**2**	63	62
Description			
Explores data-driven decision-making strategies, optimization techniques, and predictive modeling to support business and scientific applications.			

Module 29

Code	**Course/Module Title**	**ECTS**	**Semester**
DS 305	Data Privacy and Ethics	2	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	1	48	2
Description			
This course examines ethical and legal considerations related to data collection, storage, and usage. Topics include privacy laws, cybersecurity, ethical AI, and responsible data management practices in both corporate and research environments.			

Module 30

Code	**Course/Module Title**	**ECTS**	**Semester**
E-DS 305	Elective301	5	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	**1**	48	77

Description

Module 31

Code	Course/Module Title	ECTS	Semester
DS 311	Digital Project Management	6	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	**4**	93	57
Description			
Covers principles of project management in the digital era, including agile methodologies, risk assessment, and team collaboration in data science projects.			

Module 32

Code	Course/Module Title	ECTS	Semester
DS 312	Climate Models and Data	6	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	87
Description			
Examines of climate modeling techniques, data sources, and analytical methods used to study climate change and environmental patterns.			

Module 33

Code	Course/Module Title	ECTS	Semester
DS 313	Biostatistics	6	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	87
Description			
Introduces statistical methods applied to biological and medical data, including hypothesis testing, regression analysis, and survival applications using R.			

Module 34

Code	Course/Module Title	ECTS	Semester
DS 314	Data Science Practicum I	6	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
0	6	93	57
Description			
Provides hands-on experience through real-world projects, applying data science techniques to solve industry and research problems.			

Module 35

Code	Course/Module Title	ECTS	Semester
E-DS 315	Elective311	5	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	**1**	48	77
Description			

Module 36

Code	Course/Module Title	ECTS	Semester
UOB309	Scientific Research Methodology	1	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
1	**0**	18	7
Description			

Module 37

Code	Course/Module Title	ECTS	Semester
DS 401	Artificial Intelligence and Its Applications	6	7

Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	**2**	63	87
Description			
Covers AI, including neural networks, deep learning, and real-world applications in healthcare, finance, and automation.			

Module 38

Code	Course/Module Title	ECTS	Semester
DS 402	From Languages to Machine Learning	5	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	**2**	63	62
Description			
Explores the connection between programming languages and machine learning, focusing on NLP, algorithms, and model implementation.			

Module 39

Code	Course/Module Title	ECTS	Semester
DS 403	Cloud Computing for Data	6	7
2	2	63	87
Description			
Introduces cloud computing concepts, including distributed storage, computing resources, and big data processing using platforms like AWS and Google Cloud.			

Module 40

Code	Course/Module Title	ECTS	Semester
DS 404	Text Data Analysis	5	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**

2	**2**	63	62
Description			
Focuses on techniques for processing, analyzing, and extracting insights from text data using Natural language processing (NLP), sentiment analysis, and topic modeling.			

Module 41

Code	**Course/Module Title**	**ECTS**	**Semester**
E-DS 404	Elective401	5	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	**1**	48	77
Description			

Module 42

Code	**Course/Module Title**	**ECTS**	**Semester**
DS 405	Research Project I	3	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
0	**2**	32	43
Description			
This foundational module prepares students for their final capstone project by guiding them through the essential planning and design stages of independent research or development in their specialization (e.g., AI in Healthcare, Biomedical Engineering, Genomic Data Science). Students will formulate a viable project proposaland establish methodologies under faculty supervision. The module emphasizes critical thinking, research design, and project scoping to ensure successful execution in Research Project II. Through workshops and mentorship, students will develop professional-grade project plans that address real-world challenges while adhering to ethical and technical standards in their field. The course culminates in a formal proposal defense, equipping students with the skills to initiate substantial academic or industry-aligned work.			

Module 43

Code	**Course/Module Title**	**ECTS**	**Semester**
DS 411	Forecasting Methed	8	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**

2	4	93	107
Description			
Covers time series analysis, statistical forecasting techniques, and machine learning approaches for predicting future trends and patterns.			

Module 44

Code	**Course/Module Title**	**ECTS**	**Semester**
DS 412	Cyber Security	7	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	4	93	82
Description			
This course provides an in-depth exploration of cybersecurity principles, practices, and applications. It covers the fundamental aspects of securing data, networks, and systems while emphasizing the unique security challenges in data science and machine learning.			

Module 45

Code	**Course/Module Title**	**ECTS**	**Semester**
DS 413	AI Safety	7	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	**2**	63	112
Description			
Examines ethical considerations and risk management in AI systems, including bias mitigation, fairness, and responsible AI development.			

Module 46

Code	**Course/Module Title**	**ECTS**	**Semester**
E-DS 414	Elective411	5	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	1	48	77
Description			

Module 47

Code	Course/Module Title	ECTS	Semester
DS 415	Research Project II	3	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
0	**2**	32	43
Description			
This capstone module represents the culmination of students' academic journey, providing an opportunity to integrate and apply their knowledge through an independent research or development project in their chosen specialization (e.g., AI in Healthcare, Genomic Data Science, Biomedical Engineering). Under faculty supervision, students will design and execute an original project that addresses a real-world challenge in their field, demonstrating technical proficiency, critical thinking, and professional research skills. The project emphasizes end-to-end development—from problem identification and literature review to methodology design, implementation, and validation. Students will produce a scholarly report and deliver both oral and poster presentations of their work, preparing them for industry careers or advanced academic research.			