Wharton County Junior College

Administrative Master Syllabus

Course Information

Course Title	Advanced Data Science and Analytics
Course Prefix, Num. and Title	DSAI 2375 - Advanced Data Science and Analytics
Division	Technology and Business
Department	Computer Science
Course Type	WECM Course
Course Catalog Description	Fundamental concepts of data science and analytics, including advanced data visualization, statistical inference, and modern tools for empowering data-driven decision making. Focus on project-based learning using real-world data, along with the ethical implications of data science and analytics projects.
Pre-Requisites	DSAI 1371
Co-Requisites	None

Semester Credit Hours

Total Semester Credit Hours (SCH): Lecture Hours: Lab/Other Hours	3:2:2
Equated Pay Hours	3
Lab/Other Hours Breakdown: Lab Hours	2
Lab/Other Hours Breakdown: Clinical Hours	0
Lab/Other Hours Breakdown: Practicum Hours	0
Other Hours Breakdown	0

Approval Signatures

Title	Signature	Date
Department Head:	Muna Saqer, Comp Sci and IT&N Program Director	11/20/2025
Division Chair:	David Kucera, Technology & Business Division	11/20/2025
VPI:	Leigh Ann Collins Digitally signed by Leigh Ann Collins Date: 2026.05.01 13:08:47 -05'00'	

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Additional Course Information

Topical Outline: Each offering of this course must include the following topics (be sure to include information regarding lab, practicum, and clinical or other non-lecture instruction).

- Recognize Fundamental concepts of data science and artificial intelligence (AI)
- Data preparation
- Understand foundational concepts of machine learning
- Use Big Data analysis and all its components
- Understand Artificial Neural Networks

Course Learning Outcomes:

Learning Outcomes – Upon successful completion of this course, students will:

- Understand big data analytics and foundational knowledge of concepts related to big data analysis
- Developing critical thinking skills for data-driven decision-making
- Learn to use predictive and prescriptive modeling techniques for business decision-making
- Ability to translate raw data into clear and meaningful insights
- Learn to communicate the results of data analysis effectively through presentations and reports

Methods of Assessment:

- Individual Projects
- Group Projects
- Lab Assignments
- Tests and Quizzes
- Final Exam

Required text(s), optional text(s) and/or materials to be supplied by the student:

- Fundamentals of Data Science: Theory and Practice, 1st Edition by Jugal K. Kalita, Dhruba K. Bhattacharyya, and Swarup Roy, Publisher: O'Reilly, ISBN: 9780323917780, or a similar title

Suggested Course Maximum:

20

List any specific or physical requirements beyond a typical classroom required to teach the course.

- Computer (64-bit CPU) equipped with 16 GB RAM, and one TB or better hard drive for each student, and the same for the instructor.
- The instructor's machine needs two network interface cards (one to connect to the WCJC network and one to connect to student PCs).
- Data projector
- Microsoft Windows, the current version (64-bit) operating system software for each PC (students and instructors)
- Microsoft Office suite for each PC (students and instructors)
- Antivirus software for each PC

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Course Requirements/Grading System: Describe any course specific requirements such as research papers or reading assignments and the generalized grading format for the course.

Assignments.....20-30%
Labs.....20-30%
Tests and Final Exam.....30-50%

Grade System:
90-100% ..... =A
80-89% ..... =B
70-79% ..... =C
60-69% ..... =D
Below 60%.... =F

Curriculum Checklist:

☐**Administrative General Education Course** (from ACGM, but not in WCJC Core) – No additional documents needed.

☐**Administrative WCJC Core Course**. Attach the Core Curriculum Review Forms

- ☐Critical Thinking
- ☐Communication
- ☐Empirical & Quantitative Skills
- ☐Teamwork
- ☐Social Responsibility
- ☐Personal Responsibility

☒**WECM Course** -If needed, revise the Program SCANS Matrix and Competencies Checklist