

DATA ENGINEERING (DE)

Data Engineering (DE) Courses

DE 5103. Introduction to Data Engineering. (3-0) 3 Credit Hours.

This course offers a comprehensive introduction to data engineering principles, methodologies, and contemporary practices. Students will delve into fundamental concepts essential for managing and processing data effectively within engineering contexts. Topics include data ingestion techniques, principles of data storage, fundamentals of data transformation, and the architecture of Extract, Transform, and Load (ETL) processes. Additionally, students will explore the design and implementation of data pipelines, emphasizing efficient and scalable data flow. Through theoretical exploration and practical exercises, students will gain the skills necessary to handle and manipulate data efficiently in engineering and environmental systems.

DE 5443. Database Management. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. This course provides a deep understanding of database systems, including relational and NoSQL databases, and their role in data storage, retrieval, and management. It also covers the concepts of Data Lake, Data Warehouse, and Data Lakehouse. Course Fee: LRMS \$37.5.

DE 6123. Advanced Topics in Data Engineering. (3-0) 3 Credit Hours.

Prerequisite: DE 5103. This course explores specialized topics in data engineering, building on foundational knowledge. Students will cover advanced concepts, including code management, version control, security, governance (data quality, stewardship, protection), data lineage, CI/CD, orchestration, monitoring, Docker, Kubernetes, and collaboration methodologies like Agile and Scrum. Through theoretical exploration and practical exercises, students will gain expertise in efficiently managing complex data engineering projects.

DE 6973. Special Topics in Data Engineering. (3-0) 3 Credit Hours.

An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. May be repeated for credit when topics vary, but no more than 6 hours, regardless of discipline, will apply to the degree.