

A. Title Page

1. Title and Type of Program: **Data Science Minor**
2. School/Department Offering Academic Program: **Department of Computer Science and Technology, The Dorothy and George Hennings College of Science, Mathematics and Technology**
3. Proposed Date of Implementation: **Fall 2026**
4. Date of Document: **November 1, 2025**
Last Updated: January 28, 2026

Submitted by:

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Department of Computer Science and Technology

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C. Description, Objectives, & Student Learning Outcomes (SLOs)

Description

The **Data Science Minor** introduces students to the essential principles and practical applications of data analysis, visualization, and interpretation. Open to all majors, the program emphasizes hands-on learning using accessible low-code and no-code analytics and visualization platforms. Students gain foundational skills in data collection, cleaning, visualization, and communication, preparing them to use data responsibly and effectively in their own disciplines.

Through applied projects and case studies, students explore real-world datasets and develop data literacy across fields such as business, communication, health, design, and the social sciences. The program also highlights data ethics, privacy, and responsible visualization practices, preparing students to make informed and ethical data-driven decisions.

Objectives

The increasing demand for data-literate professionals requires graduates who can transform data into actionable insights.

This minor prepares students to:

- 1) Develop a foundational understanding of data-science concepts, tools, and workflows.
- 2) Apply data-science methods to explore, visualize, and interpret data in their areas of study.
- 3) Recognize ethical, privacy, and societal implications of data use.
- 4) Communicate data-driven insights to technical and non-technical audiences.
- 5) Collaborate effectively on teams that use data to support innovation and decision making.

Student Learning Outcomes (SLOs)

Upon completing the Minor in Data Science, students will be able to:

- **SLO1:** Explain fundamental data science concepts and how data is collected, organized, and interpreted.
- **SLO2:** Apply basic data science methods to analyze and visualize data.
- **SLO3:** Communicate data-driven insights effectively to technical and non-technical audiences.
- **SLO4:** Evaluate ethical, privacy, and societal implications of data use.
- **SLO5:** Contribute effectively as a team member on data-focused projects.
- **SLO6:** Apply data science principles and reasoning to develop data-informed solutions.

Assessment of Student Learning Outcomes

The Minor in Data Science curriculum supports the development and evaluation of the program’s student learning outcomes (SLOs) through targeted coursework, applied projects, and presentations. Assessment focuses on demonstrated understanding of data-science concepts, application of analytic methods, ethical reasoning, and effective communication across disciplines. Table 1 summarizes the methods and criteria used to assess each learning outcome.

Table 1. Learning Outcomes and Assessment Plan

SLOs	Assessment Measure(s)	Assessment Criteria
SLO1: Foundations	Direct: Key assignments and quizzes in TECH 3740 / CPS 3740	Demonstrates understanding of basic data concepts, organization, and interpretation
SLO2: Application and Implementation	Direct: Projects in TECH 3721 / CPS 4721 or TECH 3745 / CPS 4745	Applies methods to analyze, visualize, and interpret data
SLO3: Communication	Direct: Presentations and reports in TECH 3721 / CPS 4721 or TECH 3745 / CPS 4745	Communicates data insights effectively to varied audiences
SLO4: Ethical and Responsible Data Use	Direct: Reflection or case study assignment in TECH 3740 / CPS 3740	Evaluates ethical, privacy, and societal implications of data use
SLO5: Communication and Collaboration	Direct: Group projects and presentations in TECH 3721 / CPS 4721 or TECH 3745 / CPS 4745	Communicates effectively and contributes to team outcomes
SLO6: Applied Integration	Direct: Applied projects or reports in electives	Integrates data science principles across domains

The Minor in Data Science prepares students to achieve the expected SLOs identified by the program. Table 2 shows how these outcomes are introduced and reinforced across the courses in the minor.

Table 2. Curriculum Map

Requirements	SLO1	SLO2	SLO3	SLO4	SLO5	SLO6
ID 1400 / CPS 1231 / CPS 2231	I					
CPS 2800 Fundamentals of AI	I	I	I	I		
TECH 3740 / CPS 3740 Database Systems	R	R	R	R	R	R
TECH 3721 / CPS 4721 or TECH 3745 / CPS 4745 or Data Science Electives (3/4xxx-level)	M	M	M	M	M	M

Key: I-Introduced, R-Reinforced, M-Mastery

D. Content of the Academic Program

The Minor in Data Science is a 15-credit program designed to provide students with core competencies in data management, visualization, and responsible application. The curriculum introduces students to essential tools and principles used to collect, organize, and interpret data, preparing them to apply data-driven approaches across academic and professional settings.

Students complete three foundation courses and select two upper-level courses that emphasize applied or domain-specific data use. Only courses with a grade of C (2.0) or better may be applied to the minor.

Curriculum Plan (15-16 credits total)

Required Courses (9-10 credits)

- ID 1400, CPS 1231, or CPS 2231, or an approved equivalent course* (3/4 credits)
- CPS 2800 – Fundamentals of Artificial Intelligence (3 credits)
- TECH 3740 or CPS 3740 – Database Management Systems (3 credits)

Electives (6 credits) – Select two:

- A course applying data science concepts within the student's discipline and career goals*
- TECH 3721 or CPS 4721 – Applied Data Science / Data Mining Principles (3 credits)
- TECH 3745 or CPS 4745 – Applied Data Visualization / Visualization Design and Development (3 credits)

*Students should consult the department advisor to confirm eligibility for approved equivalent or discipline-specific Data science courses.

Admission Requirements

The Minor in Data Science is open to all students in good standing

Program Requirements

- Total Credits: 15-16
- Minimum Grade: C or better in all courses applied to the minor
- At least 50% of coursework must be completed at Kean University

E. Administrative Structure

The Minor in Data Science is administered by the Department of Computer Science and Technology within the Dorothy and George Hennings College of Science, Mathematics, and Technology.

The Department is responsible for curriculum oversight, course scheduling, faculty assignments, and assessment of student learning outcomes. Advising and eligibility approvals for equivalent or discipline-specific Data Science courses are managed by the program faculty and curriculum committee.

No cooperating departments are required for program delivery.

F. Impact Statement

Faculty and Resources

Courses in the Minor in Data Science will be taught by existing full-time and adjunct faculty in the Department of Computer Science and Technology. Current faculty expertise in data science, artificial intelligence, database systems, and data visualization provides complete coverage for all required and elective courses. No additional faculty or resources are required for implementation.

Enrollment Impact

The program is expected to attract students from a wide range of majors seeking to strengthen their data literacy and applied data skills. Steady enrollment growth is anticipated from disciplines such as business, communication, health sciences, mathematical sciences, and the social sciences.

Facilities and Equipment

All courses will utilize existing computing laboratories, software, and infrastructure maintained by the Department of Computer Science and Technology. No new facilities or specialized equipment are required.

References

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Appendix A: Minor Form

KEAN UNIVERSITY – DEPARTMENT OF COMPUTER SCIENCE AND TECHNOLOGY

Data Science Minor

Total Credits: 15-16

REQUIRED COURSES (9-10)	
ID 1400 Computing in Modern Society or CPS 1231 Fundamental of Computer Science or CPS 2231 Computer Programming or Equivalent Course*	3-4
CPS 2800 Fundamentals of Artificial Intelligence (<i>corequisite: ID 1400 or CPS 1231 or CPS 2231 for non-majors; prerequisite: CPS 2231 for CS, IT, AI majors</i>)	3
TECH 3740 IT Database Management Systems (<i>prerequisite: CPS 2800 for non-majors; CPS 2240 for IT majors</i>) or CPS 3740 Database Management Systems (<i>prerequisite: CPS 2232 for CS, AI majors</i>)	3
ELECTIVES (6) – Select two:	
Approved discipline-specific data course*	3
TECH 3721 Applied Data Science (<i>prerequisite: CPS 2800 for non-majors; CPS 2240 for IT Majors</i>) or CPS 4721 Data Mining Principles (<i>prerequisite: CPS 3740 and MATH 2526 for CS, AI majors</i>)	3
TECH 3745 Applied Data Visualization (<i>prerequisite: CPS 2800 for non-majors; CPS 2240 for IT Majors</i>) or CPS 4745 Visualization Design and Development (<i>prerequisite: CPS 3740 and MATH 2526 for CS, AI majors</i>)	3

- *Students should consult the department advisor to confirm eligibility for approved equivalent or discipline-specific data courses that align with their career goals.
- Open to all students in good standing. Non-majors should take TECH course options when available.
- Grade of C (2.0) or better is required in all courses applied to the minor.
- At least 50 percent of minor coursework must be completed at Kean University.
- Students must submit the Major/Minor Status Change Form signed by the Department Chair to the Office of the Registrar, and at the time of graduation must submit the Minor Form to verify completion of all minor requirements for submission to the Office of the Registrar.
- Approved minors are officially recorded on the student's transcript.

Recommended Course Sequence

(The Data Science Minor can be completed in three semesters, regardless of fall or spring start for non-majors.)

Semester	Courses
Year 1 – Fall or Spring	ID 1400 / CPS 1231 / CPS 2231 and CPS 2800
Year 1 – Spring or Fall	TECH 3740 / CPS 3740
Year 2 – Fall	TECH 3745 / CPS 4745
Year 2 – Spring (optional)	TECH 3721 / CPS 4721

KEAN UNIVERSITY – DEPARTMENT OF COMPUTER SCIENCE AND TECHNOLOGY
Data Science Minor
Total Credits: 15-16

Name: _____ Kean ID: _____

Email: _____ Major(s): _____

Start Term: _____ Estimated Graduation Term: _____

Courses	Credits	Semester/Year	Grade
REQUIRED COURSES	9-10		
ID 1400 / CPS 1231 / CPS 2231 or Equivalent course			
CPS 2800			
TECH 3740 or CPS 3740			
ELECTIVES	6		
Discipline-specific data course or TECH/CPS 3/4xxx elective			
TECH/CPS 3/4xxx elective			

 Student Signature

 Date

 Department Chairperson Signature

 Date

This signed evaluation confirming completion of all required courses is required to certify the minor.

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