CATALOG TERM: 2024-2027 **TOTAL UNITS REQUIRED = 18-26**

DATA SCIENCE MINOR

- This worksheet is intended for supplemental use only. The University will use your Academic Requirements Report (ARR) to track your graduation requirements, including those for your minor. Please continue to check your ARR for accuracy. If your ARR requires a correction, please submit an ARR Correction Form.
- Your Degree Planner will display the following requirements in the University's recommended sequence.
- All courses used for the minor, including preparation for the major must be completed with a grade of C (2.0) or better.
- All non-articulated courses MUST be reviewed and approved in advanced by a faculty advisor.
- At least 6 units counted toward the minor cannot be double counted toward the student's major.
- The minor must contain at least 6 units beyond those used for major requirements and other minors (APC 265-03).

DATA SCIENCE CORE COURSEWORK (12-14 UNITS)

Select one of the following:

CS 110: Foundations of Data Science (*MATH 101, 105 or MATH Category 1 or 2)
CS 320: Introduction to Data Science (*MATH 125, 126, 132 or 160)

✓	Course	Units
☐		3

Select one of the following:

CS 322: Data Science in Practice (*CS 110 or 320 and CS 111 or 321)
CS 410: Principles and Techniques of Data Science (*CS 311; ^MATH 242, 440 or 442)

✓	Course	Units
☐		3

Programming Course (3-4 units)

Select one of the following:

CS 111: Computer Science 1 (*MATH 125, 126, or 160)
CS 321: Programming for Data Science (*GE Area 2)

✓	Course	Units
☐		3-4

Probability/Statistics Course (3-4 units)

Select one of the following:

MATH 142: Basic Statistics (*MATH 101, 105 or MATH Category 1 or 2)
MATH 242: Introduction to Statistics (*MATH 105 or more advanced MATH course or MATH Category 1 or 2)
MATH/EE 342: Probability and Statistics for Engineers and Scientists (*CS 111 and MATH 260 or 260A)
MATH 441: Introduction to Probability (*MATH 260)
BIOL 215: Experimental Design and Statistical Analysis

✓	Course	Units
☐		3-4

ELECTIVE COURSEWORK (6-10 UNITS)

Students may choose any two courses from the following list, totaling a minimum of 6 Elective units. Suggested Course Pathways can be found at www.csusm.edu/cs/. Courses used in the Core Coursework may not also be used for the Elective Coursework. Other courses may be approved with the consent of the CIS faculty advisor.

AMD 411 (3)
BIOL 365 (3) (*BIOL 210, 211, 215)
BIOL 420 (4) (*BIOL 215, 354)
BIOL 480 (5) (*BIOL 351, 352 or BIOT 355)
BIOL 481 (4) (*PHYS 205)
CS 511 (3) (*CS 311)
CS 512 (3) (*CS 443)
CS 575 (3) (*CS 311)
ECON 471 (4) (*MATH 242, ECON 301, 303)
EE 404 (3) (*EE/PHYS 303)

**prerequisite, ^pre/co-requisite*

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BIOL 502 (5) (*BIOL 352)
BIOL 503A or 503B (3/5) (*BIOL 351 or BIOT 355)
BIOL 531 (3) (*BIOL 215 w/ B or instructor consent)
BIOL 532 (3) (*BIOL 215 w/ B or instructor consent)
BIOL 533 (4) (*BIOL 354)
BIOL 540 (3) (*BIOL 352)
CHEM 501 (3) (*CHEM 401, 402)
CS 302 (3)
CS 410 (3) (*CS 311; ^MATH 242, 440 or 442)
CS 443 (3) (*CS 311)
CS 446 (3) (*CS 443)
CS 471 (3) (*CS 311 and MATH 242, 342, 441 or 442)
AI/CS 478 (3) (*AI 330 or CS 311 and MATH 264, 364 or 374)
GEOG 335 (3) (*GEOG 120)
GEOG 430 (3) (*GEOG 120)
GEOG 432 (3) (*MATH 242)
MATH 264 (3) (*MATH 162)
MATH 442 (3) (*MATH 441)
MATH 443 (3) (*CS 111; MATH 264 or 364; MATH 342 or 441)
MATH 444 (3) (*MATH 441; MATH 264 or 374)
MATH/CS 464 (3) (*CS 111, MATH 162)
MATH 465 (3) (*CS 111; MATH 264 or 374)
MATH/CS 480 (3) (*MATH 264 or 374)
PHYS 270 (3) (*PHYS 201, MATH 160, CS 111)
PSYC 424 (3) (*PSYC 220)

✓	Course	Units

SUGGESTED COURSE PATHWAYS:

Computer Science/Computer Information Systems/Software Engineering Majors:
Core Courses: CS 111, MATH 242, CS 320, CS 410
Electives: Any 2 courses given in the Computer Science Courses list.

Mathematics Majors:
Core Courses: CS 111, MATH 441, CS 320, CS 322
Electives: Any 2 courses given in the Mathematics Courses list.

Biological Sciences/Biotechnology Majors:
Core Courses: BIOL 215, CS 320, CS 321, CS 322
Electives: Any 2 courses given in the Biological Sciences Courses list.

Chemistry/Biochemistry Majors:
Core Courses: MATH 242, CS 320, CS 321, CS 322
Electives: CHEM 501, MATH 264

Electrical Engineering Majors:
Core Courses: CS 111, MATH/EE 342, CS 320, CS 322
Electives: EE 404, MATH 264

Physics Majors:
Core Courses: CS 111, MATH 242, CS 320, CS 322
Electives: PHYS 270, MATH 264

**prerequisite, ^pre/co-requisite*