2023 - 2024 Major Map

Data Science, BS

School/College: The College of Liberal Arts and Sciences
LADATSCIBS

Term 1 - A 0 - 7 Credit Hours Critical course signified by ⬥	Hours	Minimum Grade	Notes
⬥ ASU 101-LA: The ASU Experience	1		• ASU 101 or college-specific equivalent First-Year Seminar required of all first-year students.
⬥ MAT 265: Calculus for Engineers I (MA)	3	C	
ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107 or ENG 108: First-Year Composition	3	C	• Select your Career Interest Communities and play me3@ASU.
Term hours subtotal:	7		

Term 1 - B 7 - 14 Credit Hours Critical course signified by ⬥	Hours	Minimum Grade	Notes
⬥ CSE 110: Principles of Programming (CS)	3	C	• View ASU Online first-year student registration information here.
Natural Science - Quantitative (SQ)	4		
Term hours subtotal:	7		

Term 2 - A 14 - 20 Credit Hours Critical course signified by ⬥	Hours	Minimum Grade	Notes
⬥ MAT 266: Calculus for Engineers II (MA)	3	C	• Meet with your academic advisor to reflect on your first year of classes and map your coursework towards a timely graduation.
ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107 or ENG 108: First-Year Composition	3	C	• Join a student club or professional organization.
Term hours subtotal:	6		

Term 2 - B 20 - 29 Credit Hours Critical course signified by ⬥	Hours	Minimum Grade	Notes
⬥ CSE 205: Object-Oriented Programming and Data Structures (CS)	3	C	• Some upper-division track courses require prerequisites. It is recommended that students consult with their advisors and use electives to complete appropriate course prerequisites.
Humanities, Arts and Design (HU) AND Historical Awareness (H)	3		
Elective	3		
⬥ Complete ENG 101 OR ENG 105 OR ENG 107 course(s).			
Term hours subtotal:	9		

Term 3 - A 29 - 38 Credit Hours Critical course signified by ⬥	Hours	Minimum Grade	Notes
⬥ DAT 250: Data Science and Society	3	C	• Minimum grade of C required in all required classes in the major; grade of B or better strongly correlated with timely graduation.
⬥ MAT 343: Applied Linear Algebra	3	C	
Elective	3		• Meet with your academic advisor to discuss summer internship and/or Research Opportunities for Undergraduates (REU).
Term hours subtotal:	9		

Term 3 - B 38 - 45 Credit Hours Critical course signified by ⚠	Hours	Minimum Grade	Notes
Natural Science - Quantitative (SQ) OR Natural Science - General (SG)	4		
Elective	3		
⚠ Complete First-Year Composition requirement.			
Complete Mathematics (MA) requirement.			
Term hours subtotal:	7		

Term 4 - A 45 - 51 Credit Hours Critical course signified by ⚠	Hours	Minimum Grade	Notes
⚠ DAT 300: Mathematical Tools for Data Science	3	C	• Meet with your academic advisor to discuss options for adding a minor, certificate, or concurrent major to your degree program.
Required Track Courses	3	C	• Students must choose and complete a minimum of 21 credit hours in their selected track. Track options are Behavioral Sciences, Biosciences, Business Analytics, Social Sciences, or Spatial Sciences.
Term hours subtotal:	6		• Some track courses may require additional prerequisites, so students will work with an assigned academic advisor in their track as well as the School of Mathematical and Statistical Sciences to select electives to satisfy necessary prerequisites.

Term 4 - B 51 - 57 Credit Hours	Hours	Minimum Grade	Notes
Complete 2 courses: Elective	6		
Term hours subtotal:	6		

Term 5 - A 57 - 64 Credit Hours Necessary course signified by ⭐	Hours	Minimum Grade	Notes
⭐ DAT 301: Exploring Data in R and Python	4	C	• Minimum grade of C required in all MAT and STP classes; grade of B or better strongly correlated with timely graduation.
Upper Division Required Track Courses	3	C	
Term hours subtotal:	7		

Term 5 - B 64 - 73 Credit Hours	Hours	Minimum Grade	Notes
Required Track Courses	3	C	
Humanities, Arts and Design (HU) AND Cultural Diversity in the U.S. (C)	3		
Upper Division Elective	3		
Term hours subtotal:	9		

Term 6 - A 73 - 82 Credit Hours Necessary course signified by ⭐	Hours	Minimum Grade	Notes
⭐ DAT 401: Statistical Modeling and Inference for Data Science	3	C	• Minimum grade of C required in all required classes in the major; grade of B or better strongly correlated with timely graduation.
Upper Division Required Track Courses	3	C	
Social-Behavioral Sciences (SB) AND Global Awareness (G)	3		• Develop your professional online presence .
Term hours subtotal:	9		

Term 6 - B 82 - 91 Credit Hours Necessary course signified by ⭐	Hours	Minimum Grade	Notes

	Hours	Minimum Grade	Notes
Upper Division Required Track Courses	3	C	
Upper Division Science and Society Elective	3	C	
Social-Behavioral Sciences (SB)	3		
⭐ Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s).			
Term hours subtotal:	9		

Term 7 - A 91 - 96 Credit Hours Necessary course signified by ⭐	Hours	Minimum Grade	Notes
⭐ DAT 402: Machine Learning for Data Science	3	C	• Minimum grade of C required in all required courses; grade of B or better strongly correlated with timely graduation. • Complete an in person or virtual practice interview.
Upper Division Elective	2		
Term hours subtotal:	5		

Term 7 - B 96 - 105 Credit Hours	Hours	Minimum Grade	Notes
Upper Division Required Track Courses	3	C	
Literacy and Critical Inquiry (L)	3		
Elective	3		
Term hours subtotal:	9		

Term 8 - A 105 - 111 Credit Hours	Hours	Minimum Grade	Notes
Upper Division Elective OR DAT 484: Internship	3		• Students pursuing the Spatial Sciences track will complete a two credit hour capstone course; all other tracks require three credits of capstone coursework.
Upper Division Literacy and Critical Inquiry (L)	3		
Term hours subtotal:	6		

Term 8 - B 111 - 120 Credit Hours Necessary course signified by ⭐	Hours	Minimum Grade	Notes
⭐ DAT 490: Data Science Capstone (L) OR Disciplinary Capstone from selected track	3-2	C	
Upper Division Humanities, Arts and Design (HU) OR Upper Division Social-Behavioral Sciences (SB)	3		
Elective	3		
Term hours subtotal:	9-8		

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  - All students pursuing a BS or BSP degree in The College of Liberal Arts and Sciences must complete two courses from the Science and Society list found at https://thecollege.asu.edu/resources/science-society. At least one of the two courses must be upper-division and students must earn a C or better in the courses. Both Science and Society courses (i.e., all six credits) may count towards any major, minor, related fields, and ASU General Studies requirements.
  - Behavioral Sciences Track: In cooperation with an assigned academic advisor, students must complete five required courses from the initial group of courses displayed in the track and one additional required course from the remaining list. Students must also complete three credit hours of DAT 490 or a 400-level disciplinary capstone course drawn from the CDE, FAS, or PSY subject areas.
  - Biosciences Track: Students are required to complete BIO 439, BIO 440, a Bioethics related course from the provided list and three credit hours of DAT 490 Data Science Capstone. An additional three courses (minimum of 9 credit hours) are chosen from the remaining track electives.

- Business Analytics Track: Students are to complete all courses in the track plus three credit hours of DAT 490 Data Science Capstone.
- Social Sciences Track: In consultation with an assigned academic advisor, students will select six courses for a minimum of 18 credit hours from the track list below, at least 12 credit hours of which must be upper division. In addition, students must complete three credit hours of DAT 490 Data Science Capstone or a disciplinary-specific capstone course.
- Spatial Sciences Track: Students must complete six courses listed in the track. In addition, they will complete two credit hours of DAT 490 Data Science Capstone or a 400-level GIS capstone course chosen in consultation with an assigned academic advisor.

Hide Course List(s)/Track Group(s)

Behavioral Sciences Track

Complete five courses from list below:

CDE 232: Human Development (SB) or FAS 101: Personal Growth and Relationships (SB) or PSY 101: Introduction to Psychology (SB)

PSY 290: Research Methods (L or SG) or FAS 361: Applied Research Methods (L or SB)

PSY 330: Statistical Methods (CS)

PSY 498: Data Mining in the Behavioral Sciences

SOC 390: Social Statistics I (CS)

Choose one elective course from list below:

CDE 312: Adolescence (SB)

CDE 418: Aging and the Life Course (SB & H)

CDE 430: Infant and Toddler Development in the Family (SB)

CDE 450: Childhood Disorders and Family Functioning (L)

FAS 301: Introduction to Parenting

FAS 331: Modern Family Relationships (SB)

FAS 332: Human Sexuality (SB)

PSY 315: Personality Theory and Research (SB)

PSY 320: Learning and Motivation

PSY 324: Memory and Cognition

PSY 341: Developmental Psychology (SB)

PSY 350: Social Psychology (SB)

Biosciences Track

Complete three courses from list below:

BIO 312: Bioethics (HU) or PHI 320: Bioethics (HU) or BIO 316: History of Biology: Conflicts and Controversies (H) or HPS 330: History of Biology: Conflicts and Controversies (H) or BIO 317: History of Science II (HU & H) or HPS 323: History of Science II (HU & H) or BIO 318: History of Medicine (HU & H) or HPS 331: History of Medicine (HU & H) or BIO 416: Biomedical Research Ethics (L) or HPS 410: Biomedical Research Ethics (L)

BIO 439: Computing for Research

BIO 440: Functional Genomics or MBB 440: Functional Genomics

Choose three elective courses from list below:

BIO 355: Introduction to Computational Molecular Biology (CS)

BIO 411: Quantitative Methods in Conservation and Ecology

BIO 415: Statistical Models for Biology (CS)

BIO 494: Data Analysis in Neuroscience

BIO 498: Genomics Research Experience

Business Analytics Track

Complete all courses below:

CIS 235: Introduction to Information Systems

CIS 407: Business Database Systems Development

CIS 409: Business Data Warehouses and Dimensional Modeling

CIS 412: Business Data Mining

CIS 415: Big Data Analytics in Business

WPC 300: Problem Solving and Actionable Analytics

Social Sciences Track

Complete one course from list below:

POS 401: Political Statistics (CS) or SGS 401: Political Statistics (CS)

Spatial Sciences Track

Complete all four courses below:

GIS 205: Geographic Information Science I (CS)

Choose five elective courses from list below:

ACO 100: All About Data: Design, Query, and Visualization (CS)

ASM 201: Epidemics and Outbreaks

COM 308: Advanced Research Methods in Communication (L)

COM 407: Advanced Critical Methods in Communication

CRJ 303: Statistical Analysis (CS)

ECN 410: Applied Regression Analysis and Forecasting

ECN 441: Public Economics (SB)

FAS 361: Applied Research Methods (L or SB)

GCU 325: Geography of Europe (SB & G)

GCU 426: Geography of Russia and Surroundings (SB & G)

MKT 352: Marketing Research (L)

PUP 424: Planning Methods

SGS 305: Empirical Political Inquiry (SB) or POS 301: Empirical Political Inquiry (SB)

SOS 212: Systems, Dynamics and Sustainability

TWC 411: Principles of Visual Communication (L)

GIS 211: Geographic Information Science II (CS)

GIS 311: Geographic Information Science III (CS)

GIS 322: Programming Principles in GIS II

Complete one course below:

GIS 469: Multivariate Statistics for Social Sciences

GIS 470: Advanced Statistics for Geography and Planning (CS)

GIS 471: Spatial Statistics for Geography and Planning

Complete one course below:

GIS 202: Drones to Satellites: Observing Earth from Above (CS)

GIS 451: Geodesign and Urban Planning

GIS 494: GIS and Public Health

GIS 494: GIS for Climate Change Science

GIS 494: Landscape Analysis Using GIS

Notes:

- First-Year Composition: All students are placed in ENG 101 unless submission of SAT, ACT, Accuplacer, IELTS, or TOEFL score, or college-level transfer credit or test credit equivalent to ASU's first-year composition course(s), determine otherwise. Students on Polytechnic, Downtown Phoenix and West Campuses are encouraged to complete the Directed Self-Placement survey to choose the first-year composition option they believe best suits their needs. Visit: https://cisa.asu.edu/DSP
- Mathematics Placement Assessment score determines placement in first mathematics course.

Please keep in mind that the applicability of a specific transfer course toward an ASU degree program depends on the requirements of the department, division, college or school in which you are enrolled at ASU. Transfer agreements that guarantee the completion of university level requirements do not necessarily meet college and major requirements. Please consult with an advisor for more information.

Total Hours: 120
Upper Division Hours: 45 minimum
Major GPA: 2.00 minimum
Cumulative GPA: 2.00 minimum
Total hrs at ASU: 30 minimum
Hrs Resident Credit for
Academic Recognition: 56 minimum
Total Community College Hrs: 64 maximum
Total College Residency Hrs: 12 minimum

General University Requirements Legend

General Studies Core Requirements:

- Literacy and Critical Inquiry (L)
- Mathematical Studies (MA)
- Computer/Statistics/Quantitative Applications (CS)
- Humanities, Arts and Design (HU)
- Social-Behavioral Sciences (SB)
- Natural Science - Quantitative (SQ)
- Natural Science - General (SG)

General Studies Awareness Requirements:

- Cultural Diversity in the U.S. (C)
- Global Awareness (G)
- Historical Awareness (H)

First-Year Composition

General Studies designations listed next to courses on the major map were valid for the 2023 - 2024 academic year. Please refer to the course catalog for current General Studies designations at time of class registration. General Studies credit is applied according to the designation the course carries at the time the class is taken.