INFORMATION SCIENCE - BACHELOR OF SCIENCE (BS)

Undergraduate students majoring in information science will explore the intersection of human values and the information technologies that influence everyday life. Students will synthesize knowledge and skills integrating design, computation and data analysis. Students will investigate, understand and engage contemporary issues around our increasingly digitized life. Topics include communicating with data, design, quantitative and qualitative data collection and analysis, how culture and history shape technology, ethics and technology for social good. This project-centered major prepares students with a professional portfolio and project experience for in-demand careers.

Requirements

Program Requirements

The BS in information science requires 51 credit hours within the major. Students will also complete the CMCI Core as part of their general education. A secondary area of study, which is also part of the CMCI Core, will be used to synthesize knowledge of information science with an application domain.

Foundations

Code	Title	Credit Hours
INFO 1111	Introduction to Information Science: Understanding the World Through Data	4
INFO 1121	Designing Interactions	4
INFO 1301	Statistics for Information Science	3
INFO 1701	Programming for Information Science 1	4
INFO 2131	Information Ecosystems	3
INFO 2201	Programming for Information Science 2	4
INFO 2301	Quantitative Reasoning for Information Science	3
Total Credit Hours		**25**

Information Exploration & Exposition Series

Information science students will take both Information Exploration and Information Exposition.

Code	Title	Credit Hours
INFO 3401	Information Exploration	3
INFO 3402	Information Exposition	3
Total Credit Hours		**6**

Portfolio & Professional Development and Capstone Series

The Department of Information Science values project-based learning, team-based learning, the development of good professional practice and the development of specializations at the undergraduate level. The Portfolio & Professional Development as well as the Capstone courses are a critical part of cohort-building in the major, and are designed to create a community of learners who are prepared to tackle ambitious projects together, individually and in preparation for internship and post-baccalaureate opportunities.

Code	Title	Credit Hours
INFO 2001	Information Science Portfolio and Professional Development	1
INFO 4001	Information Science Portfolio and Professional Development	1
Total Credit Hours		**2**

Facilitates development of careers in Information Science through the disciplined reflection about and presentation of one's work using a variety of modalities across a variety of media. Students will be introduced to individuals and organizations representing a diversity of career paths in Information Science.

Senior Capstone

The Senior Capstone (INFO 4700) provides senior-level information science students an opportunity to demonstrate the culmination of their learning in the major by designing and implementing a significant information system or developing a research question, typically in response to a problem of personal interest related to or informed by their secondary area of study. The course reinforces project planning, public presentation, collaboration and professional ethics skills.

Total Credit Hours: 3

Upper-division Electives in Information Science

Information science students will take a total of 5 upper division elective courses numbered from 3500 to 4999. These courses fall into two general categories, investigations and mastery.

In investigations courses, students deeply engage in specific domains, applying the skills they have learned in the foundation courses through instructor-guided projects. Examples of investigations courses include: Digital Identity, Designing for Creativity and Learning, Data and the Humanities and Online Community.

Mastery courses offer deep dives into theory and methods in different areas of information science. Examples of mastery topics include: Applied Machine Learning, Ethnography, Survey Research Design, Information Visualization, Ubiquitous Computer Experience Design, and Ethical and Policy Dimensions of Information.

Elective courses offered in any given semester will vary. These may include:

Code	Title	Credit Hours
INFO 3502	Online Communities	3
INFO 3501	Open Collaboration	3
INFO 3504	Digital Identity	3
INFO 3505	Designing for Creative Learning	3
INFO 3506	Online Fandom	3
INFO 3507	Data and the Humanities	3
INFO 3508	Personal Information Management	3
INFO 3509	Personal Health Informatics	3
INFO 3510	Music as Information	3
INFO 3702	Cognitive Science	3
INFO 4601	Ethical and Policy Dimensions of Information and Technology	3
INFO 4602	Information Visualization	3

INFO 4603	Survey Research Design	3
INFO 4604	Applied Machine Learning	3
INFO 4605	Ethnographic Research in Applied Settings	3
INFO 4606	Critical Technical Practice	3
INFO 4608	Community-Based Design	3
INFO 4609	User-Centered Design	3
INFO 4611	Ubiquitous Computing Experience Design	3
INFO 4612	Recommender Systems	3
INFO 4613	Network Science	3
INFO 4614	Information and Data Retrieval Systems	3
INFO 4620	Race and Technology	3
INFO 4651	Fundamental Concepts in Data Science	3
INFO 4652	Statistical Programming in R	3
INFO 4747	Defamiliarizing Data: The Ethnography and Design of Making Data Strange	4
INFO 4871	Special Topics	3

Students in the Honor's Program may use 2–3 credit hours of Honor's Independent Study as an upper division elective.

Total Credit Hours: 15

Secondary Area of Study

In addition to the coursework required for the major, all students in INFO must complete a secondary area of study outside of INFO. This can be met by any of the following: a minor, a second major within CMCI, a double degree or a credit-based certificate program of at least 12 credit hours offered by a department in any school or college at CU. Information science majors may not receive an information science minor nor a data science minor.

Students are encouraged to select one of the programs of study described above, since these have been officially approved by experts who can either provide a formal certificate or list the minor on a student's official transcript upon graduation. In exceptional circumstances, however, students may apply to complete an individualized secondary area of study equal to or greater than 18 credit hours. Application for an individualized secondary area of study must be submitted and approved before the student has earned 50 credit hours.

Sample Four-Year Plan of Study

Year One

Fall Semester		**Credit Hours**
CMCI 1040 Foundational Concepts and Creativity in Media, Communication and Information (4) or CMCI Core or Elective (3)		4
INFO 1111	Introduction to Information Science: Understanding the World Through Data	4
INFO 1701	Programming for Information Science 1	4
WRTG 1160 or other first year writing course		3
	Credit Hours	**15**
Spring Semester		
CMCI Core or Elective		3
INFO 1121	Designing Interactions	4
INFO 2201	Programming for Information Science 2	4
INFO 1301	Statistics for Information Science	3
	Credit Hours	**14**
Year Two		
Fall Semester		
INFO 2131	Information Ecosystems	3
INFO 2001	Information Science Portfolio and Professional Development	1
CMCI Core [2]		3
CMCI Core or Elective [1]		6
Secondary Area		3
	Credit Hours	**16**
Spring Semester		
INFO 2301	Quantitative Reasoning for Information Science	3
CMCI Core [3]		4
CMCI Core or Elective [1]		3
Secondary Area		3
Elective		3
	Credit Hours	**16**
Year Three		
Fall Semester		
INFO 3401	Information Exploration	3
INFO Upper Division Electives		6
CMCI Core [1]		3
Secondary Area		3
	Credit Hours	**15**
Spring Semester		
INFO 3402	Information Exposition	3
INFO 3101	History of Computing and Information	3
Secondary Area		3
Electives		3
	Credit Hours	**12**
Year Four		
Fall Semester		
INFO 4001	Information Science Portfolio and Professional Development	1
INFO Upper Division Electives		6
CMCI Core [1]		3
Secondary Area		3
Elective		3
	Credit Hours	**16**
Spring Semester		
INFO 4700	Senior Capstone	3
INFO Upper Division Elective		3
Secondary Area		3
Electives		4
	Credit Hours	**13**
	Total Credit Hours	**117**

1 P/S; H & A; Hist V; Div & Global
2 Natural World
3 Natural World with Lab

Learning Outcomes

Students will be able to:

- Design, prototype and analyze information artifacts.*
- Identify and implement multiple methods for data collection and analysis, from small data to big data, from quantitative to qualitative.*
- Write computer programs to answer questions and generate interactive artifacts.*
- Understand and be able to apply methods for generating insights from data.*
- Accurately and persuasively communicate information to different audiences.*
- Understand and evaluate social contexts and ethical implications of information technologies.
- Identify biases in technologies and understand their ethical ramifications.

Footnotes

* Program Learning Outcomes with an asterisk are included in the program's assessment plan and assessed at least once every 3 years.

Bachelor's–Accelerated Master's Degree Program(s)

The bachelor's–accelerated master's (BAM) degree program options offer currently enrolled CU Boulder undergraduate students the opportunity to receive a bachelor's and master's degree in a shorter period of time. Students receive the bachelor's degree first but begin taking graduate coursework as undergraduates (typically in their senior year).

Because some courses are allowed to double count for both the bachelor's and the master's degrees, students receive a master's degree in less time and at a lower cost than if they were to enroll in a stand-alone master's degree program after completion of their baccalaureate degree. In addition, staying at CU Boulder to pursue a bachelor's–accelerated master's program enables students to continue working with their established faculty mentors.

BS and MS in Information Science

The BAM program in information science has been created in recognition of the increasing demand for master's-level training and research skills.

Admissions Requirements

In order to gain admission to the BAM program named above, a student must:

- Fill out the intent form, around the junior year, for admission to the program.
- Have a cumulative GPA of 3.5 or better.
- Have completed MAPS requirements (students admitted to CU Boulder prior to Summer 2023 only).
- Submit a resume or CV.
- Provide two letters of recommendation.

Program Requirements

Students may take up to and including 12 credit hours while in the undergraduate program which can later be used toward master's degree requirements. Six credits may be double counted toward both the bachelor's degree and master's degree, effectively shortening the expected time to completion for the master's degree from three semesters to two. Graduate courses will not be counted as satisfying program requirements unless a grade of B or higher is earned. Double-counted courses may not be used toward a subsequent doctoral program (or additional master's program) at CU Boulder.

- Students must maintain a 3.0 cumulative GPA at all times in the program.
- Students must apply to graduate at the beginning of the semester in which they will complete the bachelor's degree requirements.
- Students must apply to continue with the master's degree program.
- Students will be matriculated into the master's program without further program review.
- Students must maintain a cumulative 3.0 GPA while in the master's program, including in the courses being used toward the master's degree.