COMPUTER INFORMATION SYSTEMS: DATA ANALYTICS CONCENTRATION, BACHELOR OF SCIENCE

The Bachelor of Science in Computer Information Systems (BS-CIS) with a data analytics concentration prepares students across all industries to leverage the power of big data to identify and solve problems and improve decision-making.

Students will be on the leading edge of this growing field after completing the program. They will learn a variety of data analytic techniques such as Excel decision-making models, data analytics programming with Python, SQL database management, data visualization with tools such as Tableau, and more advanced technologies such as cloud computing, artificial intelligence, and deep learning. Students will gain the necessary data analytical skills needed to guide critical business decisions in their chosen career path.

Program Objectives

The program seeks to develop a deeper understanding of the role of information systems within organizations and the processes that support technology-enabled business development.

At the conclusion of the CIS program, students will demonstrate the ability to:

1. Analyze, design, implement, and maintain an information system.
2. Communicate clearly and effectively in writing and speaking.
3. Work effectively as a team member for a common purpose.
4. Identify ethical issues and provide alternatives or solutions.

Outcomes Assessment Activities

The CIS program primarily uses a direct-assessment approach. Artifacts of student work pertinent to a particular learning outcome are collected. These artifacts are then evaluated by faculty external to the course in which the artifact was collected to determine students' level of mastery. Each learning outcome has been separated into sub-skills, or "measurable objectives", that are components of the overall learning objectives. Students' level of mastery is assessed using rubrics which have been developed for this purpose. To ensure inter-rater reliability, we implement processes whereby raters meet before and after artifacts are assessed. In addition, for follow-up (loop-closing) activities on subsequent artifact evaluation, the same raters are utilized when possible, for consistency and reliability.

The CIS program includes a senior capstone project course required of all majors. This course requires students to apply the communication, problem solving, and technical skills they have learned during the completion of the CIS program. Each team of students is assigned a live project in the Pueblo community (or sometimes surrounding areas). The team is evaluated on not only the final IT product they develop, but the process they follow in completing the project.

Finally, the CIS program meets annually with the CIS Industrial Advisory Committee to get feedback on the effectiveness of the CIS curriculum in meeting the needs of the IT industry along the Colorado Front Range.

The CIS program also requires CIS graduates to complete a survey to determine the effectiveness of the program and curriculum in preparing them for jobs in IT.

Specific Program Requirements

CIS majors complete a total of 120 credits. These credits include 36 credit hours of general education, 52 credits in CIS major courses, 10 credits of quantitative analysis, 9 credits of required related non CIS courses and 13 credits of electives. CIS majors are encouraged to complete a minor in Business Administration or another Business-related minor. The minor may be completed within the 13 elective credits.

Course	Title	Credits
General Education		**36**
See General Education below for specific requirements		
Quantitative Analysis Requirement		**10**
MATH 220	Quantitative Analysis for Business	4
BSAD 265	Inferential Statistics & Problem Solving	3
BSAD 360	Advanced Business Statistics	3
Required Related Courses		**9**
BSAD 270	Business Communications	3
MGMT 201	Principles of Management	3
MGMT 368	Project Management	3
Open Electives [1]		**13**
CIS Major Courses		**52**
CIS 105	Introduction to Access DBMS	1
CIS 150	Introduction to Computer Information Systems	3
CIS 171	Introduction to Java Programming	4
CIS 210	Introduction to Cyber Security	3
CIS 240	SYSTEMS ANALYSIS & DESIGN	3
CIS 250	Introduction to Business Analytics	3
CIS 271	Advance Program Design With Java	4
CIS 289	Network Concepts	3
CIS 311	Introduction to Web Development	3
CIS 315	Linux Fundamentals	3
CIS 350	Database Management	3
CIS 432	Senior Professional Project	6
CIS 493	Senior Seminar	1
CIS 3/400	Concentration Area Electives	12
Total Credits		**120**

[1] CIS majors may select one of the following concentration areas and complete the indicated required courses (12 credits of 3/400 upper division electives) within the chosen concentration.

Data Analytics Concentration Area Electives

Course	Title	Credits
CIS 359	ADVANCED PROGRAMMING WITH C#	3
CIS 410	Data Analytics with Python	3
CIS 450	Advanced Data Analytics	3
CIS 460	Cyber Security & Defense	3.0
Total Credits		**12**

In addition to the requirement to complete (BSAD 265 Inferential Statistics & Problem Solving (3 c.h.), BSAD 270 Business

Communications (3 c.h.), BSAD 360 Advanced Business Statistics (3 c.h.), ECON 201 Principles of Macroeconomics (GT-SS1) (3 c.h.), ECON 202 Principles of Microeconomics (GT-SS1) (3 c.h.), MGMT 201 Principles of Management (3 c.h.), MGMT 368 Project Management (3 c.h.), MATH 101 Introductory College Mathematics (GT-MA1) (3 c.h.) and MATH 220 Quantitative Analysis for Business (4 c.h.)), CIS majors are strongly encouraged to complete a minor in Business Administration.

The general elective courses must include the specific courses listed below:

Course	Title	Credits
Humanities		
CID 103	Speaking & Listening	3
Social Science		
ECON 201 & ECON 202	Principles of Macroeconomics (GT-SS1) and Principles of Microeconomics (GT-SS1)	6
Mathematics		
MATH 101	Introductory College Mathematics (GT-MA1)	3

Specific Graduation Requirements

- Students majoring in computer information systems must maintain grades of C or higher in all CIS courses. In addition, all required CIS prerequisites must be completed with a grade of C or higher.
- Students must complete at least 120 semester hours in an approved program of study, including 52 hours in the major.
- Students must complete a minimum of 21 credits of CIS upper-division course work. At least 16 of these upper-division CIS credits must be taken in residence.
- Students must complete a course planning worksheet and participate in the advisement process with a CIS faculty advisor.

Summary of Graduation Requirements (CIS)

General Education: 36
Quantitative Analysis Requirement: 10
Required Related: 9
Open Electives: 13
Major: 52

TOTAL (minimum credits): 120

Planning Sheet

Disclaimer: The Planning Sheet is designed as a guide for student's planning their course selections. The information on this page provides only a suggested schedule. Actual course selections should be made with the advice and consent of an academic advisor. While accurately portraying the information contained in the college catalog, this form is not considered a legal substitute for that document. Students should become familiar with the catalog in effect at the time in which they entered the institution.

Course	Title	Credits
Year 1		
Fall		
CIS 100	Introduction to Word	1
CIS 103	Introduction to PowerPoint	1
CIS 104	Introduction to Excel Spreadsheets	1
CIS 105	Introduction to Access DBMS	1
CIS 150	Introduction to Computer Information Systems	3
ENG 101	Rhetoric & Writing I (GT-CO1)	3
MATH 101	Introductory College Mathematics (GT-MA1)	3
	Credits	**13**
Spring		
CIS 171	Introduction to Java Programming	4
CIS 185	PC Architecture	3
ENG 102	Rhetoric & Writing II (GT-CO2)	3
MATH 220	Quantitative Analysis for Business	4
	Credits	**14**
Year 2		
Fall		
CIS 271	Advanced Program Design with Java	4
CIS 315	Linux Fundamentals	3
CID 103	Speaking & Listening	3
ECON 202	Principles of Microeconomics (GT-SS1)	3
General Education		4
	Credits	**17**
Spring		
BSAD 265	Inferential Statistics & Problem Solving	3
CIS 240	Systems Analysis & Design	3
CIS 289	Network Concepts	3
MGMT 201	Principles of Management	3
General Education		3
	Credits	**15**
Year 3		
Fall		
BSAD 360	Advanced Business Statistics	3
CIS 311	Introduction to Web Development	3
CIS 350	Database Management	3
ECON 202	Principles of Microeconomics (GT-SS1)	3
General Education		4
	Credits	**16**
Spring		
BSAD 270	Business Communications	3
General Education		6
Elective [3]	3 credits must be upper division CIS course.	6
	Credits	**15**
Year 4		
Fall		
MGMT 368	Project Management	3
Elective [6]	6 credits must be upper division CIS course.	13
	Credits	**16**
Spring		
CIS 432	Senior Professional Project	6
CIS 493	Senior Seminar	1
Elective [3]	3 credits must be upper division CIS course.	6
	Credits	**13**
	Total Credits	**119**