University of Colorado Colorado Springs

College of Engineering and Applied Science – BI Data Analytics & Systems Engineering

Engineering Academic Advising Hours:

Location: Main Hall 208
Hours: Monday: 9am-5pm Walk-in Advising
Tuesday–Friday: 9am-4pm Appointments Only
Call: (719) 255-3260
Website: www.uccs.edu/advising

General Academic Information

Academic Policies
It is the responsibility of each student to know and follow all Academic policies established by the University and the College of Letters, Arts & Sciences (LAS) that are set forth in the Catalog (catalog.uccs.edu).

Course Prerequisites
Students are responsible for knowing and completing all course prerequisites. Course prerequisites are strictly enforced for all classes at UCCS.

Restrictions and Limitations
Students must be admitted into the degree major in the College of Engineering and Applied Science at least 30 credit hours prior to graduation. Only three hours of Independent Study may count toward the degree. Work Experience/Military Science/ROTC credit will not apply toward fulfillment of the requirements for a degree from the College of Engineering.

Probation/Suspension
Students whose semester or cumulative GPA falls below 2.0 may be placed on probation for the next semester in which they are enrolled in the College of Engineering and Applied Science and will be notified by email. If, after that semester, the next semester or cumulative GPA is still below 2.0, the student may be suspended from the college. PLEASE NOTE: *While on probation, registration for the subsequent semester will be blocked until final grades are posted for the current semester. This is to verify that the minimum semester GPA for each student has been fulfilled.*

UCCS Bachelor of Science, Data Analytics & Systems Engineering Major Degree Requirements

- A minimum of 128 hours must be completed with a cumulative CU grade point average of 2.0.
- The last 30 hours of the degree must be completed while registered in the College of Engineering and Applied Science at UCCS.
- Courses numbered below 1000 do not count towards degree completion.
- This guide is provided for student use only. It does not represent an official documentation of a student's progress towards completion of their degree program. The Engineering Education program requires a minimum 2.0 GPA in all Engineering course work taken in order to graduate. Students must also complete an Exit Interview during their final semester to graduate.

Compass Curriculum
Compass Curriculum is the campus-wide general education program at UCCS. The Compass Curriculum has multiple components many of which will coincide with the degree requirements listed in this guide. Please visit the Compass Curriculum website at www.uccs.edu/compasscurriculum, review your degree audit, or check out the Compass Curriculum advising guide for specific course details. The required components are listed below and referenced in the guide.

REQUIRED COMPASS CURRICULUM COMPONENTS:

Component	Course
Gateway	GPS 1010
Explore – Arts, Humanities and Cultures	INOV 1010
Explore – Society, Behavior and Health	ENTP 1000
Explore – Physical and Natural World	PES 1110
Navigate	INOV 3010
Summit	ENTP 4500
Writing Intensive Course (WIC)[1] *Two courses with at least one upper-division (3000+ level).*	INOV 2010 INOV 3010
Inclusiveness[1]	INOV 1010
Sustainability[1]	ENTP 1000

[1] *Can count towards other requirements within the Compass Curriculum or within a student's degree program.*

Bachelor of Innovation, Data Analytics & Systems Engineering Degree

Department website: www.uccs.edu/eas

Degree Requirements	Courses		
DASE Required courses (27 hours) **Additional Engineering Courses** (10-12 hours) Pre-requisites will not be waived, plan sequences accordingly using electives to take pre-requisites when necessary.	Course Number	Course Title (pre-requisites shown in parentheses)	Credit Hours
	Engineering Foundations – Complete ENGR 3040 or CS 3050.		
	ENGR 3040 **OR** CS 3050	Engineering Ethics or Social and Ethical Implications of Computing	3 1
	Programming Sequence Courses – Complete the courses listed below (9 hours):		
	CS 1150	Principles of Computer Science *(HS algebra, familiarity with computer concepts)*	3
	CS 1450	Data Structures and Algorithms *(CS 1150)*	3
	CS 2060	Programming with C *(CS 1150)*	3
	Data Analytics & Systems Engineering Core Courses		
	CS 4720	Design and Analysis of Algorithms (CS 1450, MATH 2150)	3
	CS 4770	Data Visualization *(CS 4800)*	3
	CS 4435 **OR** CS 4860	Data Mining (*Sr. Standing*) Machine Learning (*MATH 2150, ECE 3610 or MATH 3810*)	3 3
	CS 4800	Computer Graphics *(CS 1450, CS 2300)*	3
	DASE 4000	Intro to Operations Research *(CS 2300)*	3
	DASE 4030	Intro to Systems Engineering *(Sr. Standing)*	3
	DASE 4570/ ECE 5570	Optimization *(MATH 3130, MATH 3400)*	3
	DASE 4910	Design of Experiments *(ECE 3610 or MATH 3810)*	3
	MAE 3342	Engineering Economy *(Jr. Standing)*	3
Innovation Core (24 hours)	**Innovation Core** – Complete the following courses		
	BLAW 2010	Business and Intellectual Property Law	3
	ENTP 1000	Intro to Entrepreneurship	3
	ENTP 4500	Entrepreneurship and Strategy	3
	INOV 1010	Innovation Process	3
	INOV 2010	Innovation Team: Analyze and Report	3
	INOV 2100	Technical Writing, Proposals, and Presentations	3
	INOV 3010	Innovation Team: Research and Execute	3
	INOV 4010	Innovation Team: Design and Lead	3
Mathematics (24 hours)	Complete all of the following courses*:*		
	MATH 1350	Calculus I *(MATH 1050)*	4
	MATH 1360	Calculus II *(MATH 1350)*	4
	MATH 2150	Discrete Math *(MATH 1350)*	3
	MATH 2350	Calculus III *(MATH 1360)*	4
	CS 2300	Computational Linear Algebra	3
	DASE 3400	Mathematical Modeling, Optimization, & Differential Equations	3
	ECE 3610 OR MATH 3810	Engineering Probability and Statistics *(MATH 1360)* Introduction to Probability & Statistics *(MATH 2350)*	3
Science (9 hours)	Complete all of the following courses (may substitute chemistry or biology for physics)*:*		
	PES 1110	General Physics I – Calculus based *(co-req MATH 1350)*	4
	PES 1120	General Physics II	4
	PES 1160	General Physics Lab	1

Tech Electives (9 hours)	At least 9 hours should be completed. Sample topics listed below. 3000 level or higher courses unless approved by program director.		
		Non-linear programming	
		Queuing	
		Simulation	
		Time Series	
		Stochastics/Regression/Statistical Process Control options	
		Database Management	
		Supply Chain Management	
		Other existing areas in Engineering, Business, and Psychology	
Composition (3 hours)	*Complete ENGL 1310 and The English Writing Portfolio.*		
	ENGL 1310	Rhetoric & Writing I	3
	PORT 3000	Writing Portfolio Assessment *(ENGL 2090)*	0
Compass Curriculum (3 hours)	GPS 1010	Gateway Program Seminar	3
	All other Compass Curriculum requirements are fulfilled by other required courses		
Cross-Discipline Core (15 hours)	Complete one of the Cross-Discipline Cores listed below. Each one consists of 15 credits hours. See the BI website for specific courses (innovation.uccs.edu)		
	Business		
	Creative Communication		
	Globalization		
Open Elective(s) (2-4 hours)	Complete open electives to fulfill the total hours requirement for the degree program. The chosen course(s) can be selected from any discipline but may not include any math course below MATH 1350. Only 3 credit hours of CS course work numbered below CS 1150 may count towards Electives. Some possible topics are listed below (or any Tech elective from above):		
	Queuing	**Non-linear Programming**	**Simulation**	**Time Series**	**Stochastics/Regression/SPC option(s)**

UCCS Four-Year Degree Plan – BI Data Analytics & Systems Engineering

The following four-year plan lists all the specific course requirements for the Bachelor of Science in Engineering Education degree at UCCS. The order in which these courses are taken may vary with course availability. **Students are responsible for completing all course prerequisites.** Please note that this is a *suggested* degree program; your program may vary.

Suggested First Year

FALL			SPRING		
√	*Course*	*Hours*	√	*Course*	*Hours*
	CS 1150 Principles of Computer Science	3		CS 1450 Data Structures and Algorithms	3
	ENGL 1310 Rhetoric and Writing I	3		INOV 1010 Innovation Processes	3
	GPS 1010 Gateway Program Seminar	3		MATH 1360 Calculus II	4
	MATH 1350 Calculus I	4		PES 1110/1160 Physics I and Lab Calculus Based	5
	ENTP 1000 Intro to Entrepreneurship	3			
	TOTAL	16		**TOTAL**	15

Suggested Second Year

FALL			SPRING		
√	*Course*	*Hours*	√	*Course*	*Hours*
	BLAW 2010 Business Law	3		ECE 3610 (Spring Only) Engineering Probability & Stats OR MATH 3810 Introduction to Probability & Statistics	3 3
	CS 2060 Programming with C	3		INOV 2010 Innovation Team: Analyze and Report	3
	CS 2300 Computational Linear Algebra	3		INOV 2100 Tech Writing, Proposals, and Presentations	3
	PES 1120 Physics II	4		MATH 2150 Discrete Math	3
	MATH 2350 Calculus III	4		Cross-Discipline Core Course	3
	TOTAL	17		**TOTAL**	15

Suggested Third Year

FALL			SPRING		
√	*Course*	*Hours*	√	*Course*	*Hours*
	CS 3050 Social and Ethical Implications of Computing OR ENGR 3040 Engineering Ethics	3 1		CS 4435 Data Mining OR CS 4860 Machine Learning	3 3
	CS 4800 Computer Graphics	3		CS 4770 Data Visualization	3
	DASE 3400 Mathematical Modeling, Optimization, & Differential Equations	3		DASE 4910 Design of Experiments	3
	DASE 4000 Intro to Operations Research	3		INOV 3010 Innovation Team: Research and Execute	3
	Technical Elective	3		MAE 3342 Engineering Economy	3
	Open Elective	2		Cross-Discipline Core Course	3
	TOTAL	15-17		**TOTAL**	18

Suggested Fourth Year

FALL			SPRING		
√	*Course*	*Hours*	√	*Course*	*Hours*
	CS 4720 Design & Analysis of Algorithms	3		ENTP 4500 Entrepreneurship and Strategy	3
	DASE 4030 Intro to Systems Engineering	3		Technical Elective	3
	DASE 4570 Optimization	3		Cross-Discipline Core Course	3
	INOV 4010 Innovation Team: Design and Lead	3		Cross-Discipline Core Course	3
	Technical Elective	3		Open Elective[1]	0-2
	Cross-Discipline Core Course	3			
	TOTAL	18		**TOTAL**	12-14

[1]Hours will depend on course choice between CS 3050 and MAE 3040.