University of Colorado Colorado Springs

College of Engineering and Applied Science – BS 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	See Degree Audit
Explore – Society, Behavior and Health	Business/ECON option
Explore – Physical and Natural World	PES 1110
Navigate	ECE 3610
Summit	MAE 4511
Writing Intensive Course (WIC)[1] *Two courses with at least one upper-division (3000+ level).*	ECE 3610 See Degree Audit
Inclusiveness[1]	See Degree Audit
Sustainability[1]	See Degree Audit

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

Bachelor of Science, Data Analytics & Systems Engineering Degree

Department website: www.uccs.edu/eas

Degree Requirements	Courses		
DASE Required Courses (32 hours) **Additional Engineering Courses** (19-21 hours) Pre-requisites will not be waived, plan sequences accordingly using electives to take pre-requisites when necessary. *You must be admitted into the College of Engineering in order to take any CS, MAE, ECE, or ENGR coursework.*	Course Number	Course Title (*pre-requisites shown in parentheses*)	Credit Hours
	Introductory Courses – Complete one course from the list below:		
	CS 1090	Intro to Matlab	3
	ECE 1001	Introduction to Robotics	3
	ECE 1021	Computer Based Modeling *(ECE 1001 and MATH 1350)*	3
	MAE 1503	Introduction to Engineering Design	3
	Engineering Foundations – Complete ENGR 3040 **OR** CS 3050; and 6 hours of Engineering Foundations courses (any EAS course 1600 or higher and that you can meet the pre-requisites, may use tech elective courses)		
	ENGR 3040 **OR** CS 3050	Engineering Ethics **or** Social and Ethical Implications of Computing	3 1
	Programming Sequence Courses – Complete the courses listed below		
	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 (*Instructor Permission*) 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
	MAE 4510	Project Design I *(ENGL 2090, Sr. Standing)*	2
	MAE 4511	Project Design II *(ENGR 4510, Sr. Standing)*	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 *(CS1150 or Math ACT 20)*	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 (12 hours)	Complete all of the following courses (chemistry/biology sequence can sub 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
	Additional Science Course	Any biology, chemistry, astronomy, climatology, ecology, geology, meteorology, oceanography, or physical sciences course	3

Business/Economics (6 hours)	*Complete 6 credit hours from the course listed below.* **NOTE:** ENTP 1000 will fulfill the Compass Curriculum Sustainability requirement		
	BUAD 1000	Introduction to Business	3
	ECON 1010	Introduction to Microeconomics	3
	ECON 2020	Introduction to Macroeconomics	3
	ENTP 1000	Introduction to Entrepreneurship	3
	MKTG 3000	Principles of Marketing	3
Technical Electives (9 hours)	9 hours should be completed. Sample topics are listed below. Courses must be 3000-level or higher unless approved by the 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 (6 hours)	*Complete ENGL 1310, 2090, and The English Writing Portfolio.*		
	ENGL 1310	Rhetoric & Writing I	3
	ENGL 2090	Technical Writing & Presentation *(ENGL 1310)*	3
	PORT 3000	Writing Portfolio Assessment *(ENGL 2090)*	0
Compass Curriculum/ Humanities/ Social Science (9 hours)	**COMPASS CURRICULUM –** In addition to the courses outlined above, a Gateway Seminar (**GPS 1010**) must be completed by all students to complete the Compass Curriculum. To see a list of all Compass Curriculum courses, please visit: www.uccs.edu/compasscurriculum.		
	GPS 1010	Gateway Program Seminar	3
	Select 3 hours from the Explore - Arts, Humanities & Cultures list		
	Select 3 hours from the Explore – Society, Behavior and Health list (may be with one of the required Business/Economics courses)		
Open Electives (9-11 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:		
	Queuing	**Non-linear Programming**	**Simulation**	**Time Series**	**Stochastics/Regression/SPC option(s)**

UCCS Four-Year Degree Plan – 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		ENGL 2090 Technical Writing & Presentation	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
	Engineering Introductory Course	3		Engineering Foundations Course	3
	TOTAL	16		**TOTAL**	18

Suggested Second Year

	FALL			SPRING	
√	*Course*	*Hours*	√	*Course*	*Hours*
	CS 2060 Programming with C	3		ECE 3610 (Spring Only) Engineering Probability & Stats OR MATH 3810 Introduction to Probability & Statistics	3 3
	CS 2300 Computational Linear Algebra	3		Business/Economics Elective	3
	MATH 2150 Discrete Math	3		Engineering Foundations Course	3
	MATH 2350 Calculus III	4		Explore – Arts, Humanities & Cultures Course	3
	PES 1120 Physics II	4		Additional Science 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		MAE 3342 Engineering Economy	3
	Explore – Society, Behavior & Health			Technical Elective	3
	Open Elective	3		Open Elective (Sustainability)	3
	TOTAL	16-18		**TOTAL**	18

Suggested Fourth Year

	FALL			SPRING	
√	*Course*	*Hours*	√	*Course*	*Hours*
	CS 4720 Design & Analysis of Algorithms	3		MAE 4511 Project Design II	3
	DASE 4030 Intro to Systems Engineering	3		Technical Elective	3
	DASE 4570 Optimization	3		Business/Economics Elective	3
	MAE 4510 Project Design I	2		Open Electives[1]	3-5
	Technical Elective	3			
	TOTAL	14		**TOTAL**	12-14

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