

Cleveland State University
Washkewicz College of Engineering
Bachelor of Science in Data Science (DS)
Fall 2022

DS Degree Map for students immediately eligible for College Writing I, General Chemistry I, and Calculus I

First Year

Fall Semester				Spring Semester				
Credits	Major	Gen. Ed.	Credits	Major	Gen. Ed.	Credits	Major	Gen. Ed.
ENG 100 Intensive Writing or ENG 100 Writing I	3		W/C	ESC 102 Tech. Writing or ENG 102 College Writing II	3		W/C	
MTH 181 Calculus I	4	X	M	MTH 182 Calculus II	4	X	M	
CIS 151 Invitation to Computing	3	X		CIS 260 Introduction to Programming	4	X		
ESC 120 Introduction to Engineering Design	2	X		PHY 241 University Physics I (Writing) OR	5		NS+WAC	
ESC 100 New Student Orientation	1		Intro	BIO 266/267 Human Anatomy & Physiology I/Lab OR	4	X	NS&LAB	
				CHM 261/266 General Chemistry I and Lab				
Semester Total	13			Semester Total	15 or 16			

Second Year

Fall Semester				Spring Semester				
Credits	Major	Gen. Ed.	Credits	Major	Gen. Ed.	Credits	Major	Gen. Ed.
MTH 283 Multivariable Calculus for Engineers OR	2	X		STA 347 Applied Statistics	3	X		
MTH 281 Multivariable Calculus	or 4			CIS 340 Systems Programming	3	X		
STA 323 Statistical Methods	3	X		MTH 288 Linear Algebra	3	X		
CIS 265 Data Structures & Algorithms	4	X		General Education Elective**	3	X	AA DIV	
MTH 220 Introduction to Discrete Mathematics	3	X		PHY 244 University Physics I (Writing) OR	5		NS+WAC	
DSA 230 Introduction to Data Science I	3	X		BIO 268/269 Human Anatomy & Physiology I/Lab OR	4	X	NS&LAB	
ESC 130 Engineering Co-op Orientation*	1			CHM 262/267 General Chemistry I and Lab				
Semester Total	16 or 18			Semester Total	16 or 17			

(Electives can be taken in any order.)

Third Year

Fall Semester				Spring Semester				
Credits	Major	Gen. Ed.	Credits	Major	Gen. Ed.	Credits	Major	Gen. Ed.
CIS 430 Database Concepts	3	X		STA 400 Data Visualization	3	X		
CIS 390 Introduction to Algorithms	3	X		CIS 467 Artificial Intelligence	3	X		
STA 431 Categorical Data Analysis	3	X		DSA 460 Data Mining	3	X		
DSA 330 Introduction to Data Science II	3	X		General Education Elective**	3		A&H	
PHL 216 Data Ethics	3	X	A&H	ESC 282 Engineering Economy	3	X	SS	
Semester Total	15			Semester Total	15			

(Electives can be taken in any order.)

Fourth Year

Fall Semester				Spring Semester				
Credits	Major	Gen. Ed.	Credits	Major	Gen. Ed.	Credits	Major	Gen. Ed.
DSA 493 Senior Design I	2	X	WAC	DSA 494 Senior Design II	3	X	WAC	
CIS 475 Computer Security	3	X		DS Major Elective	3	X		
DSA 469 Big Data Processing Systems	3	X		DS Major Elective	3	X		
DS Major Elective	3	X		DS Major Elective	3	X		
General Education Elective**	3		SS	General Education Elective	3		US DIV	
Semester Total	14			Semester Total	15			

Degree Total Hours: 120 to 123

Assumption: University Requirement of Foreign Language has been met by either successfully completing two (2) years of the same language in high school; or two (2) semesters of the same language in college; or passing CSU's language placement test in reading, writing, and speaking of a second language other than English.

College/Program Notes:

The plan above is a suggested guide to ensure that all General Education, College, University, and Major requirements are met within 4 years of study. Students may deviate from the suggested placement of General Education courses, although the M/QL and W/C requirements should be completed during the first year of study. General Electives ensure that a student accumulates the minimum credit hour totals needed for graduation. Students must have a **minimum of 120 total credit hours**, of which a **minimum of 42 credit hours** must be upper division (300 or 400-level courses). Depending upon other elective choices made, students may not need as many general electives as indicated above or may need additional electives. For information about declaring a Math Minor with the courses you already need for the DS major, email: impt.engr.info@csuohio.edu

University Notes:

General Education Key + Notes

General Ed. courses can be taken in any order except ESC 282 (Engineering Economy) after MTH 182 (Calculus II) as well as PHL 215 (Engineering Ethics after ESC 102 /ENG 102 (Tech. Writing/College Writing II.)	
Intro = Introduction to University Life Requirement (one course)	SS = Social Sciences Requirement (2 courses, one of which must be focused outside the US)
W/C = Writing/Composition Requirement (two courses; C or better required)	A&H = Arts & Humanities Requirement (2 courses, one must be focused outside the US)
M = Mathematics Requirement (minimum two courses required, each C or better)	DIV = Social Diversity Requirement (2 courses; one US Diversity and one African American, AA, Experience)
NS = Natural Sciences (minimum two courses, one of which must have a lab – NS&LAB)	WAC/SPAC = Writing/Speaking Across the Curriculum Requirement (3 courses, one in the major)
ESC 100 = waived for transfer students enrolling with 60 credit hours or more	CAP = Capstone Requirement
* Introduction to Co-op Orientation is highly recommended, yet not required	** of the SS and A&H courses focused outside the US, 1 must be focused on Africa, Latin America, Asia or the Middle East (ALAAME)

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