

Tufts University – School of Engineering
Class of 2024
Bachelor of Science in Data Science (BSDS)
Major Requirement
School of Engineering Requirements shown in italics
*** Courses that require a letter grade (i.e., no pass/fail)**

The BSDS comprises credit requirements and course requirements as established by the School of Engineering and Department of Computer Science. Students must satisfy the SOE requirements listed in the Credit Requirements box, as well as fulfill all course requirements. SHU values listed for each course requirement reflect those associated with the corresponding Tufts course. Unless otherwise noted, course requirements may be satisfied with transfer courses having SHU values that are different than those shown here. In all cases, students should enter the SHUs received or earned in the correct SOE-Attribute column for a given course requirement to ensure they meet the credit requirements. For planning purposes, students completing the BSDS requirements with Tufts courses will earn at least 120 SHU.

Mathematics & Natural Sciences*	SHU	SOE Attribute						Term
		C	E	M	NS	HASS	None	
MATH 32 Calculus I	3							
MATH 34 Calculus II or MATH 39 Honors Calculus I-II	3-4							
MATH 42 Calculus III or MATH 44 Honors Calculus III	4							
COMP/MATH 61 Discrete Math	3							
MATH 70 Linear Algebra or MATH 72 Abstract Linear Alg.	3							
Probability Elective (a)	3-4							
MATH 166 Statistics	3							
CHEM 1 Chem. Fund. w/ lab	5							
PHY 11 Gen. Physics I w/ lab	5							
BIO-CHEM-PHY Elective (b)	5							
NS Elective (c)	≥3							
subtotal	≥40	-	-			-	-	

HASS	SHU	SOE Attribute						Term
		C	E	M	NS	HASS	None	
ENG 1* Expos. Writing or ENG 3	3							
Humanities Elective (d)	≥3							
Social Science Elective (e)	≥3							
Ethics & Social Context Elec. (f)	3-4							
≥24 SHU of SOE-HASS are required for the degree. List below HASS courses that do not appear in the Breadth Elective Section (see note g).								
subtotal	≥15	-	-	-	-		-	

Credit Requirements	SOE Attribute						Total
	E	C	M	NS	HASS	None	
SOE Requirements	≥30		≥30		≥24	-	≥120
Student Totals							

- Abbreviations:**
SHU = Semester Hour Unit
SOE = School of Engineering
C = Courses having attribute SOE-Computing
E = Courses having attribute SOE-Engineering
M = Courses having attribute SOE-Mathematics
NS = Courses having attribute SOE-Natural Sciences
HASS = Course having attribute SOE-HASS (Humanities, Arts, and Social Sciences)
None = Course without SOE attribute

Student and Advisor Notes:

Engineering*	SHU	SOE Attribute						Term
		C	E	M	NS	HASS	None	
EN 1 Applications in Eng.	3							
ES 2 Intro. Computing in Eng. or ENG-COMP Elective (h)	≥3							
subtotal	≥6			-	-	-	-	

Data Science Core*	SHU	SOE Attribute						Term
		C	E	M	NS	HASS	None	
COMP 11 Intro. Comp. Sci.	4							
COMP 15 Data Structures	4							
COMP 40 Machine Structure & Assembly-Language Prog.	5							
COMP 135 Intro Machine Learning & Data Mining	3							
COMP 136 Stat. Pat. Recog. or MATH 126 Num. Lin. Alg.	3-4							
COMP 160 Algorithms	4							
DS 97 Sr. Capstone Proj. I	3							
DS 98 Sr. Capstone Proj. II	3							
DS Infrast. & Systems Elec. (i)	≥3							
Data Anal. Interfaces Elec. (j)	≥3							
Comp & Theor. Asp. Elec. (k)	≥3							
DS Elective (l)	≥3							
subtotal	≥41			-	-	-	-	

Breadth Electives	SHU	SOE Attribute						Term
		C	E	M	NS	HASS	None	
≥9 SHU of Breadth Electives are required for the degree. List courses below (see note m).								
subtotal	≥9							

Additional Courses	SHU	SOE Attribute						Term
		C	E	M	NS	HASS	None	
List below additional courses needed to satisfy the credit requirements.								
subtotal	≥0							

BSDS Notes

(a) Probability

Select From:

EE 24, EE104, or Math 165

(b) Biology, Chemistry or Physics Elective

Select From:

BIO 13, CHEM 2, or PHY 12

(c) Natural Sciences Elective

Select From:

Any course having attribute SOE-Natural Sciences

(d) Humanities Elective

At least 3 SHU of Humanities are required. Requirement may not be satisfied with pre-matriculation credits, ENG 1, or ENG 3.

Select From:

Any course having attribute SOE-HASS-Humanities

(e) Social Sciences Elective

At least 3 SHU of Social Sciences are required. Requirement may not be satisfied with pre-matriculation credits.

Select From:

Any course having attribute SOE-HASS-Social Sciences

(f) Ethics & Social Context Elective

Select From:

PHIL 24 or EM 54

(g) Humanities, Arts or Social Sciences Electives

Select From:

Any course having attribute SOE-HASS

Any course having attribute SOE-HASS-Humanities

Any course having attribute SOE-HASS-Arts

Any course having attribute SOE-HASS-Social Sciences

(h) Engineering or Computing Elective

Course selected may not be used to fulfill any other course requirement.

Select any course of 3 SHU or more from:

Any course having attribute SOE-Computing

Any course having attribute SOE-Engineering

(i) Data Science Infrastructure and Systems Elective

Course selected may not be used to fulfill any other course requirement.

Select from:

COMP 112, COMP 115, COMP 116, COMP 117, COMP 118, COMP 119, or special topics listed as COMP 51 or COMP 151

(j) Data Analysis Interfaces Elective

Course selected may not be used to fulfill any other course requirement.

Select from:

COMP 136, COMP 137, COMP 138, COMP 141, COMP 142, COMP 171, COMP 175, COMP 177, or special topics listed as COMP 52 or COMP 152

(k) Computational and Theoretical Aspects Elective

Course selected may not be used to fulfill any other course requirement.

Select From:

COMP 131, COMP 160

MATH 123, MATH 125, MATH 126

EE 109, EE 127, EE 130, EE 133, EE 140

COMP/DS 53, COMP/DS 153

(l) DS Elective

Courses selected may not be used to fulfill any other course requirement.

Select from:

Any course listed under Data Science Infrastructure and Systems Elective (g)

Any course listed under Data Analysis Interfaces Elective (h)

Any course listed under Computational and Theoretical Aspects Elective (i)

Additionally approved courses:

MATH 51, MATH 63, MATH 87, MATH 133, MATH 153, MATH 155, MATH 156, CEE 187, ME 150, DS or COMP 93, DS or COMP 193, COMP 94, COMP 191, COMP 193, COMP 194, COMP 197, EE 93, EE 94, EE 95, EE 96, EE 191, EE 192, EE 197

(m) Disciplinary Breadth

Courses selected for this category may not be used to fulfill any other course requirement.

9 SHUs of courses chosen from the following options:

Courses in one social science, with attribute SOE-HASS-Social-Sciences

Courses in one natural science, with attribute SOE-Natural-Sciences

Three courses in Civil and Environmental Engineering (CEE)

Three courses in Classics (CLS)

Students may petition to replace these options with a coherent program of at least 9 SHUs. Petitions must list all course to be taken but may be multi-disciplinary.

BSDS Course Selection Guidance

Fall Semester, First Year

Course	SHU	SOE Attribute
<i>EN 1 Introduction to Engineering</i>	3	Engineering
MATH 32 Calculus I (or MATH 39)	3	Mathematics
PHY11 General Physics I with laboratory	5	Natural Sciences
<i>ENG 1 Expository Writing</i>	3	HASS

Semester Total SHU 14

Spring Semester, First Year

Course	SHU	SOE Attribute
<i>COMP 11 Intro. Computer Science</i>	4	Computing
MATH 34 Calculus II	4	Mathematics
CHEM 1 Chemical Fundamentals with laboratory	5	Natural Sciences
NS Elective	3-5	Natural Sciences

Semester Total SHU 16-18

Fall Semester, Second Year

Course	SHU	SOE Attribute
COMP 15 Data Structures	4	Computing
MATH 42 Calculus III (or MATH 44)	4	Mathematics
COMP/MATH 61 Discrete Mathematics	3	Mathematics
BIO-CHEM-PHY Elective	5	Natural Sciences
<i>HASS Elective</i>	3-5	HASS

Semester Total SHU 19-21

Spring Semester, Second Year

Course	SHU	SOE Attribute
COMP 40 Machine Structure & Assembly-Language Prog.	5	Computing
MATH 70 Linear Algebra (or MATH 72)	3	Mathematics
Ethics & Social Context Elective	3-4	HASS
Engineering Elective (e.g., COMP 20, 22, etc...)	3-5	Computing
<i>HASS Elective</i>	3-5	HASS

Semester Total SHU 17-21

Fall Semester, Third Year

Course	SHU	SOE Attribute
COMP 135 Intro Machine Learning & Data Mining	3	Computing
Data Science Elective	3-4	varies with selection
Probability Elective	3-4	Mathematics
Disciplinary Breadth	3-5	varies with selection
<i>HASS Elective</i>	3-5	HASS

Semester Total SHU 15-21

Spring Semester, Third Year

Course	SHU	SOE Attribute
COMP 160 Algorithms	4	Computing
MATH 166 Statistics	3	Mathematics
Data Science Elective	3-4	varies with selection
Disciplinary Breadth	3-5	varies with selection
<i>HASS Electives</i>	6-10	HASS

Semester Total SHU 19-26

Fall Semester, Fourth Year

Course	SHU	SOE Attribute
DS 97 Senior Capstone Project I	3	Computing
Data Science Electives	6-8	varies with selection
Disciplinary Breadth	3-5	varies with selection
<i>HASS Elective</i>	3-5	HASS

Semester Total SHU 15-21

Spring Semester, Fourth Year

Course	SHU	SOE Attribute
DS 98 Senior Capstone Project II	3	Computing
MATH 126 Numerical Linear Algebra	3	Computing
Data Science Elective	3-4	varies with selection
<i>HASS Electives</i>	6-10	HASS

Semester Total SHU 15-20