

**UNDERGRADUATE MAJOR: *BS Computer Science***  
**2021/2022**

**CREDITS REQUIRED IN MAJOR: 74**

**A grade of C- or higher is required in all courses for the major.**

**FOUNDATION/REQUIRED MAJOR COURSES**

<b>COURSE NUMBER</b>	<b>COURSE NAME</b>	<b>CREDITS</b>	<b>PREREQUISITES</b>	<b>OFFERED</b>	<b>Online</b>
COS 160	Structured Problem Solving: Java	3	MAT 108 (C or higher) or AAF Score of 250 or higher	Fall and Spring	Fall
COS 161	Algorithms in Programming	4	COS 160 (C or higher) and working knowledge of word processing and Web browsing	Fall and Spring	No
COS 170	Structured Programming Laboratory	1	Must be taken concurrently with COS 160	Fall and Spring	Fall
COS 250	Computer Organization	3	COS 161 (C or higher) and course must be taken concurrently with COS 255	Spring	no
COS 255	Computer Organization Laboratory	1	Must be taken concurrently with COS 250	Spring	no
COS 280	Discrete Mathematics II	4	MAT 145 and COS 160 (C or higher)	Fall	no
COS 285	Data Structures	4	COS 161 and either of MAT 145 or MAT 152, or their equivalents (C or higher)	Fall	no
COS 350	Systems Programming	3	COS 250, COS 285 (C or higher)	Spring	no
COS 360	Programming Languages	3	COS 280, COS 285 (C or higher)	Fall	no
COS 398	Professional Ethics and Social Impact of Computing	3	COS 161 (C or higher) and 60 earned credits	Fall	no
COS 420	Object-Oriented Design	4	COS 350 or COS 360 or any COS 400 level course (C or higher)	Spring	no
COS 485	Design of Computing Algorithms	3	COS 285 (C or higher)	Spring	no

**SELECT 1 CLASSES FROM THE FOLLOWING:**

<b>COURSE NUMBER</b>	<b>COURSE NAME</b>	<b>CREDITS</b>	<b>PREREQUISITES</b>	<b>OFFERED</b>	<b>Online</b>
COS 450	Operating Systems	3	COS 250, COS 350 (C or higher)	Even Fall	no

COS 457	Database Systems	3	COS 280, COS 285 (C or higher)	Odd Fall	no
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**SELECT 3 COS >300 ELECTIVES: (9-12 CREDITS)**

COURSE NUMBER	COURSE NAME	CREDITS	PREREQUISITES	OFFERED	Online

**NON-MAJOR REQUIREMENTS: 19-21 CREDITS**

COURSE NUMBER	COURSE NAME	CREDITS	PREREQUISITES	OFFERED	Online
MAT 145	Discrete Mathematics I	3	Prerequisite: MAT 108, MAT 140, MAT 152, or permission of instructor	All semesters	no
<b><i>Choose Two Sciences with Lab:</i></b>					
CHY 113	Principles of Chemistry I	3	Successful completion of MAT 108 or equivalent	Fall and Spring	no
CHY 114	Laboratory Techniques I	1	Pre- or co-requisite: CHY 113	Fall and Spring	no
CHY 115	Principles of Chemistry II	3	A grade of C or better in CHY 113	Spring and Summer	no
CHY 116	Laboratory Techniques II	1	Pre- or co-requisite: CHY 115	Spring and Summer	no
PHY 121	General Physics I	4	Prior or concurrent registration in MAT 152 or equivalent experience	All semesters	no
PHY 114	Introductory Physics Laboratory I	1	Concurrent registration in PHY 111 or 121	All semesters	no
PHY 123	General Physics II	4	PHY 121 or equivalent and one semester of calculus	All semesters	no

PHY 116	Introductory Physics Laboratory II	1	Concurrent registration in PHY 112 or PHY 123	All semesters	no
BIO 105	Biological Principles I: Cellular Biology	3	Students must have fulfilled the University minimum proficiency requirements in writing and mathematics	All semesters	no
BIO 106	Laboratory Biology	1.5	Grade of C- or higher or concurrent enrollment in BIO 105. Students must have fulfilled the University minimum proficiency requirements in writing and mathematics	All semesters	no
BIO 107	Biological Principles II: Evolution, Biodiversity, and Ecology	4.5	Grades of C- or higher in BIO 105 and BIO 106	Fall and Spring	no
ESP 101	Fundamentals of Environmental Science	3	Co-requisite: ESP 102	Fall and Spring	no
ESP 102	Fundamentals of Environmental Science Laboratory	1	Co-requisite: ESP 101	Fall and Spring	no
ESP 125	Introduction to Environmental Ecology	3	Successful completion of the University's writing and mathematics proficiency requirements; ESP 101/102 or BIO 105/106. Co-requisite: ESP 126	Spring only	no
ESP 126	Introduction to Environmental Ecology Laboratory	1	Prerequisites: successful completion of the University's writing and mathematics proficiency requirements. Prerequisites: ESP 101/102 or BIO 105/106. Co-requisite: ESP 125	Spring only	no
<b>Successful Completion of enough additional courses from the following math classes to equal 15 credits total of math.</b>					
MAT 148 (or MAT 152)	Applied Calculus	3	MAT 140 or appropriate score on the AAF exam	? TBD	No
MAT 152 (or MAT 148)	Calculus A	4	MAT 140 or appropriate score on the AAF exam	All semesters	All semesters
MAT 153	Calculus B	4	MAT 152	All semesters	All semesters
MAT/EGN 181	Computing with Mathematica	1	MAT 152	Even Spring	no
MAT 220	Statistics for Biological Sciences	4	MAT 152	All semesters	Summer
EGN 248	Intro to Differential Equations and Linear Algebra	4	MAT 153	Fall and Spring	No

MAT 252	Calculus C	4	MAT 153	Every semester	No
MAT 281	Introduction to Probability	3	MAT 153	Fall only	No
MAT 282	Statistical Inference	3	MAT 281 or permission of instructor	Spring only	No
MAT 295	Linear Algebra	4	MAT 153 or permission of the instructor	Fall and Spring	No
MAT 350	Differential Equations	4	MAT 252	Spring only	No
MAT 352	Real Analysis	3	MAT 252 and MAT 290 or permission of the instructor	Every Three Semesters	No
MAT 355	Complex Analysis	3	MAT 252 and MAT 290 or permission of the instructor	Every Three Semesters	No
MAT 364	Numerical Analysis	3	MAT 252, MAT 295, and COS 160; or permission of instructor	Odd Spring Years	No
MAT 366	Deterministic Models in Operations Research	3	MAT 153 and MAT 295	Even Fall years	No
MAT 470	Non-Euclidean Geometry	3	MAT 290 or permission of the instructor	Every Three Semesters	No
MAT 380	Probability and Statistics	3	MAT 153	Spring and Summer	Summer
MAT 383	System Modeling and Simulation	3	MAT 281 or MAT 380	Even Spring Years	No
MAT 392	Theory of Numbers	3	MAT 290 or permission of the instructor	Every Three Semesters	No
MAT 395	Abstract Algebra	3	MAT 290 or permission of the instructor	Every Three Semesters	No
MAT 460	Mathematical Modeling	3	Junior or Senior Standing	Odd Fall Years	No
MAT 461	Stochastic Models in Operations Research	3	MAT 281 or MAT 380, or permission of instructor	Odd Spring Years	No
MAT 490	Topology	3	MAT 252 and MAT 290 or permission of the instructor	Every Three Semesters	No
MAT 492	Graph Theory and Combinatorics	3	MAT 290 or permission of the instructor	Even Spring Years	No
<b>Completion of Both:</b>					

THE 170	Public Speaking	3		All semesters	Summer
ITP 210	Technical Writing	3	ENG 100 and ENG 102	All semesters	Fall and Spring

**MAJOR COURSES OVERLAPPING IN THE CORE:**

CORE AREA	COURSE NUMBER	COURSE NAME	REQUIRED BY MAJOR?
CE	THE 170	Public Speaking	Yes
WRI III	ITP 210	Technical Writing	Yes
SE	CHY 113	Principles of Chemistry I	No
SE	CHY 114	Laboratory Techniques I	No
SE	BIO 107	Biological Principles II: Evolution, Biodiversity, and Ecology	No
SE	ESP 101	Fundamentals of Environmental Science	No
SE	ESP 102	Fundamentals of Environmental Science Laboratory	No
SE	ESP 125	Introduction to Environmental Ecology	No
SE	ESP 126	Introduction to Environmental Ecology Laboratory	No
SE	PHY 121	General Physics I	No
SE	PHY 114	Introductory Physics Laboratory I	No
EISRC	COS 398	Professional Ethics and Social Impact of Computing	Yes
CAP	COS 420	Object-Oriented Design	Yes
EL	COS 498	Computer Science Internship	No

**CORE CURRICULUM CODES**

**CW** – College Writing

**WRI** – Writing, Reading, and Inquiry

**QR** – Quantitative Reasoning

**CE** – Creative Expression

**SCA** – Socio-cultural Analysis

**CI** – Cultural Interpretation

**SE** – Science Exploration

**EISRC** – Ethical Inquiry, Social Responsibility, & Citizenship

**DIV** – Diversity

**INT** – International

**EL**- Engaged Learning

**CAP** - Capstone