CS + Bioengineering Engineering Curriculum Map

Suggested Sequence **"Option A"** by Semester

Fall Year 1 (18 hrs)	Spring Year 1 (16 hrs)	Fall Year 2 (16 hrs)	Spring Year 2 (15/16 hrs)	Fall Year 3 (16/18 hrs)	Spring Year 3 (16 hrs)	Fall Year 4 (15/17 hrs)	Spring Year 4 (15/16 hrs)
MATH 221 (4) Calculus I	MATH 231 (3) Calculus II	MATH 241 (4) Calculus III	MATH 285 (3) Intro Diff Eq	*CS 341 (4) System Programming	CS 374 (4) Intro Algorithms & Models of Comp.	CS 357 (3) Numerical Methods OR CS 421 Programming Lang & Compilers (4)	BIOE 404 CS + BIOE Senior Design (4) OR GenEd Elec (3)
ENG 100 (1) Engineering Lecture	PHYS 211 (4) Univ Physics, Mechanics	PHYS 212 (4) Univ Physics, Elec & Mag	BIOE 210 (3) Linear Algebra For Biomedical Data Science OR MATH 257 Linear Algebra (3)	BIOE 206 (3) Cellular Bioengineering OR BIOE 302 Modeling Human Physiology (3)	BIOE 310 (3) Comp. Tools Bio Data	**Upper Divison Tech Elective (3)	**Upper Divison Tech Elective (3)
BIOE 100 (1) BIOE Freshman Seminar	BIOE 120 (1) Introduction to Bioengineering	CS 222 (1) Software Design Lab	BIOE 205 (3) Systems in Bioengineering	BIOE Tech Elec (3)	**Upper Divison Tech Elective (3)	BIOE 404 CS + BIOE Senior Design (4) OR GenEd Elec (3)	BIOE Tech Elec (3)
CS 124 (3) Intro to Comp	CS 173 (3) Discrete Structures (Prereq required For CS 225)	CS 225 (4) Data Structures	*CS 233 (4) Computer Architecture	Free Elec (3 or 4)	CS Tech Elec (3)	BIOE Tech Elec (3)	GenEd Elec (3)
RHET 105 (4) Principles of Composition	CS 128 (3) Intro. To Comp II (Prereq required For CS 225)	GenEd Elec (3)	GenEd Elec (3)	Free Elec (3 or 4)	BIOE Tech Elec (3)	BIOE Tech Elec (3)	Free Elec (3)
**MCB 150 (4) Molec&Cellular Basis of Life	Free Elec (2)					BIOE Tech Elec (3)	
						Free Elec (3)	

* Note – *Option A: CS 233 Computer Architecture (4) & CS 341 System Programming (4). **Option B is displayed below on the next page.

**Note – Students should take MCB 150 for their science elective, as it is a prerequisite for BIOE 206, a required year 3 course.

Note – not taking courses as advised may result in a delayed graduation date.
Students are responsible for any impact resulting from not following departmental advising.

CS + Bioengineering Engineering Curriculum Map

Suggested Sequence **"Option B"** by Semester

Fall Year 1 (18 hrs)	Spring Year 1 (16 hrs)	Fall Year 2 (16 hrs)	Spring Year 2 (15/16 hrs)	Fall Year 3 (16/18 hrs)	Spring Year 3 (16 hrs)	Fall Year 4 (15/17 hrs)	Spring Year 4 (15/16 hrs)
MATH 221 (4) Calculus I	MATH 231 (3) Calculus II	MATH 241 (4) Calculus III	MATH 285 (3) Intro Diff Eq	*CS Tech Elective (3)	CS 374 (4) Intro Algorithms & Models of Comp.	CS 357 (3) Numerical Methods OR CS 421 Programming Lang & Compilers (4)	BIOE 404 CS + BIOE Senior Design (4) OR GenEd Elec (3)
ENG 100 (1) Engineering Lecture	PHYS 211 (4) Univ Physics, Mechanics	PHYS 212 (4) Univ Physics, Elec & Mag	BIOE 210 (3) Linear Algebra For Biomedical Data Science OR MATH 257 Linear Algebra (3)	BIOE 206 (3) Cellular Bioengineering OR BIOE 302 Modeling Human Physiology (3)	BIOE 310 (3) Comp. Tools Bio Data	BIOE 404 CS + BIOE Senior Design (4) OR GenEd Elec (3)	**Upper Divison Tech Elective (3)
BIOE 100 (1) BIOE Freshman Seminar	BIOE 120 (1) Introduction to Bioengineering	CS 222 (1) Software Design Lab	BIOE 205 (3) Systems in Bioengineering	BIOE Tech Elec (3)	**Upper Divison Tech Elective (3)	BIOE Tech Elec (3)	BIOE Tech Elec (3)
CS 124 (3) Intro to Comp	CS 173 (3) Discrete Structures (Prereq required For CS 225)	CS 225 (4) Data Structures	*CS 340 Intro to Comp Systems (3)	Free Elec (3 or 4)	*CS Tech Elective (3)	BIOE Tech Elec (3)	GenEd Elec (3)
RHET 105 (4) Principles of Composition	CS 128 (3) Intro. To Comp II (Prereq required For CS 225)	GenEd Elec (3)	GenEd Elec (3)	Free Elec (3 or 4)	BIOE Tech Elec (3)	BIOE Tech Elec (3)	Free Elec (3)
**MCB 150 (4) Molec&Cellular Basis of Life	Free Elec (2)					Free Elec (3)	

* Note – ***Option B:** CS 340: Introduction to Computer Systems & Two CS 400-level courses: Any two (2) 400-level CS courses above CS 403, excluding CS 491 and distinct from any 400-level courses taken to satisfy other requirements. If either or both of the courses are chosen for 4 credits, the extra credit hours will count towards free electives.

**Note – Students should take MCB 150 for their science elective, as it is a prerequisite for BIOE 206, a required year 3 course.

Note – not taking courses as advised may result in a delayed graduation date.
Students are responsible for any impact resulting from not following departmental advising.

General Education Requirements

- ❑ 6 hours in Humanities
- ❑ 6 hours in Social/Behavioral Sciences
- ❑ 1 Advanced Composition Course
- ❑ Language Other Than English
- ❑ 1 Western Comparative Cultures Course
- ❑ 1 Non-Western Comparative Cultures Course
- ❑ 1 US Minority Cultures Course

Bioengineering Technical Electives

- **BIOE 303 – Quantitative Physiology Lab (2 hr)**
- **BIOE 360 – Transport & Flow in BIOE (3 hr)**
- **BIOE 414 – Biomedical Instrumentation (3 hr)**
- **BIOE 415 – Biomedical Instrumentation Lab (2 hr)**
- **BIOE 430 – Intro to Synthetic Biology (3 hr)**
- **BIOE 461 – Cellular Biomechanics (3 hr)**
- **BIOE 467 – Biophotonics (3 hr)**
- **BIOE 476 – Tissue Engineering (3 hr)**
- **BIOE 479 – Cancer Nanotechnology (3 hr)**
- **BIOE 483 – Biomedical Computed Imaging Systems (3 hr)**
- **BIOE 484 – Statistical Analysis of Biomedical Images (3 hr)**
- **BIOE 485 – Comp Math for Machine Learning & Imaging (3 hr)**
- **BIOE 486 – Applied Deep Learning for Biomedical Imaging (3 hr)**
- **BIOE 487 – Stem Cell Bioengineering (3 hr)**
- **BIOE 488 – Applied High Performance Computing for Imaging Science (3 hr)**
- **BIOE 489 – Regulations, Ethics, & Logistics in Biomedical Applications of Machine Learning (3 hr)**

Upper Division Technical Electives:
***Students should select 6 hours of 300-400 level general technical elective coursework from the following rubrics:**

AE, ABE, BIOE, CHBE, CHEM, CS, CEE, ECE, EM, IE , MCB, MATH, ME, NE, NEUR, NPRE, PHYS, SE, STAT.

****extra credit hours will count towards free electives.**