**State University of New York at Binghamton**
**Thomas J. Watson School of Engineering and Applied Science**
**BS in Bioengineering Four-Year-Program**
SUNY Application Center Curriculum Code: 1532
(If undecided use: 0229)

## FALL 2012

### Engineering Design Division

*(The freshman year is common to all engineering majors)*

| | Fall | | Spring |
|---|---|---|---|
| MATH 221 | Calculus I (M) | MATH 222 | Calculus II (MATH 221) |
| CHEM 111 | Chemical Principles (L) | PHYS 131 | General Physics I (MATH 221) |
| WTSN 111 | Exploring Engineering I | WTSN 112 | Exploring Engineering II (J) (WTSN 111) |
| WTSN 103 | Engineering Communications I | WTSN 104 | Engineering Communications II (WTSN 103) |
| | General Education Elective[1] (P) | | General Education Elective[1] (G) |
| | Body/Wellness | | Body/Wellness |

**CONFIRMATION OF MAJOR FORM FILED IN WATSON STUDENT SERVICES**

### Final Three Years of Bioengineering Major

*(Prerequisites in parentheses)*

#### Year 2

| | Fall | | Spring |
|---|---|---|---|
| BIOL 117 | Organisms and Populations | BIOL 118 | Cell and Molecular Biology |
| PHYS 132 | General Physics II (PHYS 131) | MATH 323 | Calculus 3 (MATH 222) |
| BE 203 | Numerical Methods in Bioengineering | BE 260 | Circuits and Signals for BE (PHYS 132, MATH 371) |
| MATH 371 | Ordinary Diff Eqns (MATH 222) | BE 202 | Biological & Engineering Networks (BE 203) |

#### Year 3

| | Fall | | Spring |
|---|---|---|---|
| BE 316 | Statics/Dynamics for BE (PHYS 131, MATH 222) | BE 318 | Biomechanics (BE 316) |
| BE 303 | Life in Moving Fluids (MATH 371) | BE 312 | Heat & Mass Transfer in Bio Sys (MATH 371) |
| BE 351 | Data Acq & Analysis 1 (BE 203) | BE 352 | Data Acq & Analysis 2 (BE 351) |
| BE 340 | Bioinformatics (BE 203) | | Science Elective[3] |
| | General Education Elective[1] (H) | | Engineering Elective[2] |

#### Year 4

| | Fall | | Spring |
|---|---|---|---|
| BE 450 | Senior Design I (BE 260,303,312,316,318,352) | BE 451 | Senior Design II (BE 450) (J) |
| BE 422 | Biomaterials (CHEM 111, BE 312) | BE 424 | Bioimaging (BE 260, BE 352) |
| BE 432 | Ethics in Bioengineering (coreq BE 450) | BE 410 | Complexity in Biological Systems (BE 203, MATH 371) |
| | Engineering Elective[2] | | General Education Elective[1] (N) |
| | General Education Elective[1] (A) | | |

**********SEE MAJOR NOTES ON BACK**********

## Bioengineering

The mission of the undergraduate bioengineering program at Binghamton University is to develop future leaders in the broad field encompassed by bioengineering. Upon graduation, our students will possess the analytical and creative skills, reinforced through the development of a solid ethical foundation, necessary to achieve professional employment in the broad field of bioengineering or to pursue graduate study in bioengineering, biomedical engineering, or the sciences, as well as other disciplines such as business, law, or medicine.

********MAJOR NOTES********

- **WTSN 111/112 are required only for those who do their freshman year in Watson.**
- **WTSN 103/104 are required only for those who do their freshman year in Watson. Others may use any C and O (or J) Gen Ed course in place of these two courses.**
- **A minimum of 128 semester credits of coursework are required to earn a B.S. in Bioengineering, including a minimum residency requirement of 30 credits in Watson school courses.**
- **[1]General Education electives may be taken in any semester, in any order.**
- **[2]Engineering electives allow students to tailor their program to match individual interests. Engineering electives must be taken from a list of departmentally approved engineering courses. They may be taken in any semester.**
- **[3]Students must take a science elective from a list of departmentally approved courses.**

**2/24/13**