### University Requirements (20)

- Writing – American Thought and Language (ATL) 4
- Integrative Studies in Humanities (IAH) 8
- Integrative Studies in Social Sciences (ISS) 8

### Bioscience (4-5)

Select one course from Group A and one course from Group B. *A selection of BS 110 satisfies both Group A and Group B.*

**Group A**

- BOT 105 Plant Biology 3
- BS 110 Organisms & Populations 4
- BS 111 Cells & Molecules 3
- ENT 205 Pests, Society & Environment 3
- MIC 205 Allied Health Microbiology 3
- PSL 250 Introductory Physiology 4
- ZOL 141 Introductory Human Genetics 3

**Group B**

- BOT 106 Plant Biology Lab 1
- BS 110 Organisms & Populations 4
- BS 111L Cells & Molecular Biology Lab 2
- CEM 161 Chemistry Lab I 1
- CEM 162 Chemistry Lab II 1
- MIC 206 Allied Health Microbiology Lab 1
- PHY 191 Physics Lab for Scientists I 1

### College Requirements (26)

- CSE 231 Introduction to Programming I 4
- MTH 132 Calculus I 3
- MTH 133 Calculus II 4
- MTH 234 Multivariable Calculus 4
- MTH 235 Differential Equations 4

OR

- MTH 314 Matrix Algebra with Applications 3
  - PHY 183 Physics for Scientists & Engineers I 4
  - PHY 184 Physics for Scientists & Engineers II 4

### Major Requirements (46-47)

- CSE 232 Introduction to Programming II 4
- CSE 260 Discrete Structures in Computer Science 4
- CSE 320 Computer Organization 4
- CSE 331 Algorithms & Data Structures 4
- CSE 410 Operating Systems 4
- CSE 420 Computer Architecture 4
- CSE 460 Computability & Formal Language Theory 3
- CSE 470 Software Engineering 4
- CSE 498 Collaborative Design 4
- STT 351 Statistics & Probability for Engineering 3

Select 8 credits from the following:

- CSE 422 Computer Networks 4
- CSE 440 Artificial Intelligence & Symbolic Prog. 4
- CSE 450 Translation of Programming Languages 4
- CSE 452 Organization of Programming Languages 4
- CSE 471 Media Processing & Multimedia Computing 4
- CSE 472 Computer Graphics 4
- CSE 480 Database Systems 4
- MTH 416 Introduction to Algebraic Coding 3
- MTH 451 Numerical Analysis I 3
- MTH 481 Discrete Mathematics I 3

### Required Cognate

A minimum of four courses outside of the College of Engineering totaling 12 or more credits.

- Option A: At least 6 of the 12 credits must be in courses numbered at 300-400 level.
- Option B: A four-course sequence in a foreign language.

And

The academic advisor of the Department of Computer Science & Engineering must approve both the cognate and the related courses. The cognate should enhance the student’s ability to apply analytic procedures in a specific subject area.

### Other Electives (Variable)

**Total Credits Required for Degree** 120

The requirements listed above apply to students admitted to the major of Computer Science in the Department of Computer Science and Engineering beginning Fall, 1999. The Department of Computer Science and Engineering (CSE) constantly reviews program requirements and reserves the right to make changes as necessary. Consequently, each student is strongly encouraged to consult with his/her advisor to obtain assistance in planning an appropriate schedule of courses. Students who have questions about Computer Science should contact the Computer Science and Engineering Department Advising Office, 3115 Engineering Building, phone (517) 353-3148.

Some courses may have prerequisites, which are not otherwise required in the program. Students should check course descriptions to ensure they are aware of prerequisites.

1 If PHY 231 is taken in place of PHY 183, PHY 233B must also be completed. If PHY 232 is taken in place of PHY 184, PHY 234B must also be completed.

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*Last revised October, 2001*
## Computer Science
### Sample Program

#### Freshman Year
<table>
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<th>Fall</th>
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<th>Spring</th>
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<tr>
<td>CSE 131/Elec</td>
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<td>CSE 231</td>
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<td>MTH 133</td>
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#### Sophomore Year
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#### Senior Year
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