## Engineering Dual Degree Requirements
### Computer Engineering & Computer Science

### University Core Curriculum
#### Common Core Requirements
- **FYS** 101 First Year Seminar 3
- **FYS** 102 First Year Seminar 3
- **GHS** 201-209 Global and Historical Studies 3
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### General Core Requirements
- **TI** Text and Ideas 3
- **PCA** Perspectives in the Creative Arts 3
- **SW** The Social World (SW 220-EC)* 3
- **AR** Analytical Reasoning (exempt) 3
- **NW** The Natural World (exempt) 5
- **PWB** Physical Well-Being 1

### Liberal Arts and Science Requirements
- Foreign Language (min 6 cr 200 level or above) 6-14
  - Spanish, French, German, Chinese, Latin

### Additional Core Requirements
- **BCR** Butler Cultural Requirement 8 events
- **ICR** Indianapolis Community Requirement 1 course
- **SAC** Speaking Across the Curriculum 1 course
- **WAC** Writing Across the Curriculum 1 course

### Core Credits 22(30)

### Computer Science
- **CS** 151 Foundations of Computing I 3
- **CS** 248 Object-Oriented Prog & Data Structures² 5
- **CS** 252 Foundations of Computing II* 3
- **CS** 321 Computer Organization⁷ 3
- **CS** 333 Database Systems* 3
- **CS** 351 Algorithms* 3
- **CS** 383 EPICS (ICR) 3
- **CS** 452 Parallel Algorithm Design & Prog 3
- **CS** 473 Topics in Computer Science 6
- **CS** 485 Computer Ethics (WAC)* 1
- **SE** 361 Object-Oriented Design (SAC)⁶ 3

### Theory Course
- **Theory** 3
- **CS** 441 Organization of Prog Languages
- **CS** 447 Computer Graphics
- **CS** 451 Theory of Computation
- **CS** 458 Intro to Cryptography and Cryptanalysis Systems Course 3
- **CS** 431 Theory of Operating Systems²
- **CS** 435 Computer Networks
- **SE** 461 Managing Software Development

### Credits 33

### Common Engineering
#### Mathematics
- **MA** 106 Calculus & Analytical Geometry 1* 4
- **MA** 107 Calculus & Analytical Geometry 2* 4
- **MA** 208 Calculus & Analytical Geometry 3 4
- **MA** 215 Linear Algebra* 3
- **MA** 334 Differential Equations 3

#### Science
- **CH** 105 General Chemistry 1 5
- **CH** 106 General Chemistry 2 5
- **PH** 201 Introduction to Analytical Physics 1 5
- **PH** 202 Introduction to Analytical Physics 2 5

#### Engineering
- **DD** 190 Elementary Engineering Design 3
- **DD** 297 MATLAB 1
- **CS** 142 Intro to Comptuer Science & Prog 3

#### Liberal Arts and Science Requirements
- **Foreign Language** (min 6 cr 200 level or above) 6-14
  - Spanish, French, German, Chinese, Latin

### Credits 28-36

### Computer Engineering
#### Credits
- **ECON** 201 Microeconomics ⁸
- **PH** 351 Analog Electronics (WAC) 4
- **ECE** 202 Circuit Analysis II 3
- **ECE** 210 Sophomore Seminar 1
- **ECE** 264 Advanced C Programming 3
- **ECE** 270 Digital Logic Design 4
- **ECE** 282 Unix Programming for Engineering 1
- **ECE** 301 Signals and Systems 3
- **ECE** 302 Probabilistic Methods 3
- **ECE** 362 Microprocessors Systems & Interface 4
- **ECE** 365 Intro to Design of Digital Computers 3
- **ECE** 401 Engineering Ethics ⁵
- **ECE** 408 Operating Systems ⁷
- **ECE** 487 Senior Design I 1
- **ECE** 488 Senior Design II 2
- **CSCI** 240 Advanced Programming ²
- **CSCI** 340 Discrete Mathematics ³
- **CSCI** 362 Data Structures ⁶

#### Advanced CmpE Electives 6

#### Credits 38

### Total Credits
151 - 159

² used as equivalents for degree requirements
* also required for Computer Science major

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1. **WAC** Writing Across the Curriculum
2. **SAC** Speaking Across the Curriculum
3. **ICR** Indianapolis Community Requirement
4. **SW** The Social World (SW 220-EC)*
5. **AR** Analytical Reasoning (exempt)
6. **NW** The Natural World (exempt)
7. **TI** Text and Ideas
8. **PCA** Perspectives in the Creative Arts