

# B.S. ELECTRICAL ENGINEERING & B.A. GERMAN

## Plan of Study

|        |  |                     |  |
|--------|--|---------------------|--|
| Year 1 | <b>Fall</b>  |                     | <b>Spring</b>  |
|        | FYEX Foundation for College Success                        |                     |  |
|        | ENGR 100 (FYE) Introduction to Engineering Design          |                     |  |
|        | ENGR 175 Introduction to Electrical & Computer Engineering |                     | PHYS 211 Classical Physics I   |
|        | MATH 113 Calculus I  |                     | MATH 114 Calculus II   |
|        | CORE requirement   | ↔                   | CISC 130 Introduction to Programming & Problem Solving in the Sciences |
|        | GERM 111 Elementary German I                               |                     | GERM 112 Elementary German II  |
|        | <b>January-term</b>  |                     | <b>Summer</b>  |
|        | CORE requirement   |                     | CORE requirement   |
| Year 2 | <b>Fall</b>  |                     | <b>Spring</b>  |
|        | ENGR 230 Digital Design (Lab)                              |                     | ENGR 240 Circuit Analysis (Lab)  |
|        | MATH 200 Multi-Variable Calculus                           | ↔                   | MATH 210 Introduction to Differential Equations & Systems              |
|        | PHYS 212 Classical Physics II                              |                     | PHYS 225 Application of Modern Physics (Lab)                           |
|        | GERM 211 Intermediate German I                             |                     | GERM 212   |
|        |  | <b>January-term</b> |  |
|        | CORE requirement   |                     | CORE requirement   |
| Year 3 | <b>Fall</b>  |                     | <b>Spring</b>  |
|        | ENGR 340 Signals & Systems                                 |                     | ENGR 410 Control Systems & Automation (Lab)                            |
|        | ENGR 345 Electronics I (Lab)                               |                     | ENGR 346 Electronics II  |
|        | ENGR 331 Application of Microprocessors (Lab)              |                     | CORE requirement   |
|        | GERM 300   |                     | GERM (1) 3XX or 4XX  |
|        |  | <b>January-term</b> |  |
|        | CORE requirement   |                     | Local Internship   |
| Year 4 | <b>Fall - In Germany</b>                                   |                     | <b>Spring - In Germany</b>   |
|        | GERM (2) 3XX or 4XX  |                     | ENGR XXX Internship Engineering Elective 1                             |
|        | GERM (3) 3XX or 4XX  |                     | GERM (4) 477 or 478 Experiential Learning                              |
|        | Allied European or STEM History                            |                     |  |
|        | CORE requirement   |                     |  |
| Year 5 | <b>Fall</b>  |                     | <b>Spring</b>  |
|        | ENGR 480 Engineering Design Clinic I                       |                     | ENGR 481 Engineering Design Clinic II                                  |
|        | PHYS 341 Electricity & Magnetism                           |                     | ENGR 342 Electromagnetic Fields & Waves                                |
|        | ENGR XXX Engineering Elective 2                            |                     | ENGR XXX Engineering Elective 3  |
|        | GERM (5) 3XX or 4XX  |                     | GERM (6) 3XX or 4XX  |
|        | <b>January-term</b>  |                     | <b>Summer</b>  |
|        | CORE requirement   |                     |  |

\* arrow indicates that the two courses can be interchanged

\* this illustrates just one example of how all courses could be taken within a 5-year plan

## **Complete Course Listing:**

### **Engineering Courses:**

ENGR 100 - Introduction to Engineering Design (2 credits)  
ENGR 175 - Introduction to Electrical & Computer Engineering (2 credits)  
ENGR 230 - Digital Design (4 credits)  
ENGR 240 - Circuit Analysis (4 credits)  
ENGR 331 - Applications of Microprocessors (4 credits)  
ENGR 340 - Signals & Systems (4 credits)  
ENGR 342 - Electromagnetic Fields & Waves (4 credits)  
ENGR 345 - Electronics I (4 credits)  
ENGR 346 - Electronics II (4 credits)  
ENGR 410 - Control Systems and Automation (4 credits)  
ENGR 480 - Engineering Design Clinic I (4 credits)  
ENGR 481 - Engineering Design Clinic II (4 credits)  
ENGR Electives -THREE technical elective courses as approved by the program.

**Two of the elective courses must be from ONE track.**

### **Power Track:**

ETLS 744 Power Systems and Smart Grids [required in track] (3 credits)  
ETLS 746 Power Electronics (3 credits)  
ETLS 747 Electrical Machines and Vehicles (3 credits)  
ETLS 748 Renewable Energy and the Future (3 credits)  
ETLS 750 Smart Distribution Systems (3 credits)

### **Signal Processing & Communications Track:**

ETLS 620 Analog Communications (3 credits)  
ETLS 621 Digital Communications (3 credits)  
ETLS 675 Digital Signal Processing (3 credits)  
ETLS 676 Real Time DSP (3 credits)  
ETLS 810 Advanced Control Systems (3 credits)

### **Embedded Systems Track:**

ENGR 330 Microprocessor Architectures (4 credits)  
ENGR 431 Embedded Systems (4 credits)  
ENGR 432 Current Trends in Computing Systems (4 credits)

### **Physics Track:**

PHYS 215 Modern Physics (4 credits)  
PHYS 347 Optics (4 credits)  
OR four credits of physics electives as approved by the chair

56 Engineering Credits

### **Allied Requirements:**

MATH 113 - Calculus I (4 credits)  
MATH 114 - Calculus II (4 credits)  
MATH 200 - Multi-Variable Calculus (4 credits)  
MATH 210 - Introduction to Differential Equations and Systems (4 credits)  
PHYS 211 - Classical Physics I (4 credits)  
PHYS 212 - Classical Physics II (4 credits)  
PHYS 225 - Applications of Modern Physics (4 credits)  
PHYS 341 - Electricity & Magnetism (4 credits)  
CISC 130 - Introduction to Programming and Problem Solving in the Sciences (4 credits)

36 Allied Requirement Credits

### **German Requirements:**

GERM 111 - Elementary German I (4 credits)  
GERM 112 - Elementary German II (4 credits)  
GERM 211 - Intermediate German I (4 credits)  
GERM 212 - Intermediate German II (4 credits)  
GERM 300 - Introduction to German Studies (4 credits)  
GERM 3XX or 4XX - (24 credits)

44 German Credits

Plus, Allied European History Requirement (4 Credits, See Core Curriculum Below)

### **University of St. Thomas Core Curriculum:**

FYEX Foundation for College Success (1 credit)  
Language and Culture (0-8 credits)  
Literature and Writing (4 credits)  
Philosophy and Theology (12 credits)  
Social Analysis (4 credits)  
Fine Arts (4 credits)  
Historical Studies (4 credits) - *Allied European History Integrations in the Humanities* (8 credits)  
Some of these courses must satisfy the flagged requirements; check your degree evaluation  
45 Core Curriculum Credits

