

# ROBOTICS ENGINEERING MAJOR

## Program Tracking Sheet

Effective for students entering AY 2022-2023

|          |                        |
|----------|------------------------|
| Name:    | Class Year:            |
| Advisor: | 2 <sup>nd</sup> Major: |

**NOTES:** Minimum total academic credit = 15 units

Residency Req.: Min. of 8 units must be completed at WPI

### HUMANITIES AND ARTS (2 units)

All 5 HUA courses must be completed before beginning the Inquiry Seminar or Practicum.

| <b>Depth Component</b>  |                    |      |       |       |
|---|--------------------|------|-------|-------|
| Students must complete at least three thematically-related courses prior to the culminating Inquiry Seminar or Practicum in the same thematic area. At least one of the three courses should be at the 2000-level or above. |                    |      |       |       |
|   | Course             | Term | Grade | Units |
| 1   |                    |      |       | 1/3   |
| 2   |                    |      |       | 1/3   |
| 3   |                    |      |       | 1/3   |
| 4   | HU 3900 or HU 3910 |      |       | 1/3   |
| <b>Breadth Component</b>  |                    |      |       |       |
| Students must take at least one course outside the grouping in which they complete their depth component. To identify breadth, courses are grouped in the following manner.   |                    |      |       |       |
| i. art/art history, drama/theatre, and music (AR, EN/TH, MU);   |                    |      |       |       |
| ii. foreign languages (AB, CN, EN, GN, SP);   |                    |      |       |       |
| iii. literature and writing rhetoric (EN, WR, RH);  |                    |      |       |       |
| iv. history and international studies (HI, HU, INTL);   |                    |      |       |       |
| v. philosophy and religion (PY, RE).  |                    |      |       |       |
| Exception: May take all six courses in a foreign language   |                    |      |       |       |
| 5   |                    |      |       | 1/3   |
| <b>Humanities Elective</b>  |                    |      |       |       |
| 6   |                    |      |       | 1/3   |

### PHYSICAL EDUCATION (4 PE classes = 1/3 unit)

|   |  |  |  |      |
|---|--|--|--|------|
| 7 |  |  |  | 1/12 |
|   |  |  |  | 1/12 |
|   |  |  |  | 1/12 |
|   |  |  |  | 1/12 |

### SOCIAL SCIENCE (2/3 unit) ECON, ENV, GOV, PSY, SD, SOC, SS, STS, DEV, and ID2050

|   |  |  |  |     |
|---|--|--|--|-----|
| 8 |  |  |  | 1/3 |
| 9 |  |  |  | 1/3 |

### THE INTERACTIVE QUALIFYING PROJECT (1 unit)

|    |  |  |  |     |
|----|--|--|--|-----|
| 10 |  |  |  | 1/3 |
| 11 |  |  |  | 1/3 |
| 12 |  |  |  | 1/3 |

### FREE ELECTIVES (1 unit)

|    |  |  |  |     |
|----|--|--|--|-----|
| 13 |  |  |  | 1/3 |
| 14 |  |  |  | 1/3 |
| 15 |  |  |  | 1/3 |

### MATHEMATICS (7/3 units) Courses with prefix: MA

Must include Differential and Integral Calculus, Differential Equations, Linear Algebra, and Probability

|    |                            |  |  |     |
|----|----------------------------|--|--|-----|
| 16 | MA 1021 (Calc 1)           |  |  | 1/3 |
| 17 | MA 1022 (Calc 2)           |  |  | 1/3 |
| 18 | MA 1023 (Calc 3)           |  |  | 1/3 |
| 19 | MA 1024 (Calc 4)           |  |  | 1/3 |
| 20 | MA 2051 (Diff Eqs)         |  |  | 1/3 |
| 21 | MA 2071 (Lin Alg)          |  |  | 1/3 |
| 22 | MA 2621/2631 (Probability) |  |  | 1/3 |

### BASIC SCIENCE (4/3 units)

**PHYSICS** (2/3 unit) Courses with prefix: PH

|    |                          |  |  |     |
|----|--------------------------|--|--|-----|
| 23 | PH 1110/1111 (Mechanics) |  |  | 1/3 |
| 24 | PH 1120/1121 (E&M)       |  |  | 1/3 |

**OTHER SCIENCE** (2/3 unit) Courses with prefix: BB/CH/GE/PH

|    |  |  |  |     |
|----|--|--|--|-----|
| 25 |  |  |  | 1/3 |
| 26 |  |  |  | 1/3 |

**ENTREPRENEURSHIP** (1/3 unit)

|    |                     |  |  |     |
|----|---------------------|--|--|-----|
| 27 | ETR 1100/3633/Other |  |  | 1/3 |
|----|---------------------|--|--|-----|

### SOCIAL IMPLICATIONS (1/3\* unit)

At least 1/3 unit of Social Implications in Technology (CS3043, GOV2302, GOV/ID 2314, RBE 3100)

|    |  |  |  |     |
|----|--|--|--|-----|
| 43 |  |  |  | 1/3 |
|----|--|--|--|-----|

### ENGINEERING SCIENCE AND DESIGN (6\*\* units)

**ROBOTICS ENGINEERING** (5/3 units)

Must include at least 5/3 units in Robotics Engineering, including RBE 2001, 2002, 3001, 3002 or equivalent. RBE 3100 may not be used to fulfill this requirement.

|    |                               |  |  |     |
|----|-------------------------------|--|--|-----|
| 28 | RBE 1001†(Intro Robotics)     |  |  | 1/3 |
| 29 | RBE 2001 (Unified Robotics 1) |  |  | 1/3 |
| 30 | RBE 2002 (Unified Robotics 2) |  |  | 1/3 |
| 31 | RBE 3001 (Unified Robotics 3) |  |  | 1/3 |
| 32 | RBE 3002 (Unified Robotics 4) |  |  | 1/3 |

**COMPUTER SCIENCE** (1 unit)

At least 1 unit in Computer Science, including Object-Oriented Programming and Software Engineering

|    |                                  |  |  |     |
|----|----------------------------------|--|--|-----|
| 33 | CS 1101/1102/1004 (Intro. Prog.) |  |  | 1/3 |
| 34 | CS 2102 (Object Oriented)        |  |  | 1/3 |
| 35 | CS 3733 (Software Eng)           |  |  | 1/3 |

**ELECTRICAL AND COMPUTER ENGINEERING** (2/3 unit)

At least 2/3 unit in Electrical and Computer Engineering, including Embedded Systems. ECE 2010 is a recommended course for RBE majors, but not required

|    |                         |  |  |     |
|----|-------------------------|--|--|-----|
| 36 |                         |  |  | 1/3 |
| 37 | ECE 2049 (Embedded Sys) |  |  | 1/3 |

**ENGINEERING SCIENCE** (2/3 unit) Course with prefix: ES

At least 1/3 unit in Statics and 1/3 unit in Controls

|    |                           |  |  |     |
|----|---------------------------|--|--|-----|
| 38 | ES 2501 (Statics)         |  |  | 1/3 |
| 39 | ES 3011/ME3703 (Controls) |  |  | 1/3 |

**ENGINEERING SCIENCE AND DESIGN ELECTIVES** (1 unit)

At least 2/3 unit must be at the 4000 level or higher.

|    |  |  |  |     |
|----|--|--|--|-----|
| 40 |  |  |  | 1/3 |
| 41 |  |  |  | 1/3 |
| 42 |  |  |  | 1/3 |

**MAJOR QUALIFYING PROJECT** (1 unit)

|    |  |  |  |     |
|----|--|--|--|-----|
| 44 |  |  |  | 1/3 |
| 45 |  |  |  | 1/3 |
| 46 |  |  |  | 1/3 |

\* If GOV 2302, or GOV/ID 2314 are double-counted as meeting the Social Science Requirement and the Social Implications Requirement, then the Distribution Requirements total 10 units, otherwise the Distribution Requirements total 10 1/3 units.

\*\* Specific courses listed above are given as examples only. Alternatives exist for all requirements, including equivalent courses, independent study/project work, experimental courses and graduate courses.

† Students entering with a strong robotics background should substitute a more advanced RBE course.