

## Engineering Dual Degree Requirements

### Motorsports Engineering & Astronomy and Astrophysics

#### University Core Curriculum

##### Common Core Requirements

	Credits
FYS 101 First Year Seminar	3
FYS 102 First Year Seminar	3
GHS 201-209 Global and Historical Studies	3
GHS 201-209 Global and Historical Studies	3

##### General Core Requirements

	Credits
TI Text and Ideas (TI 244-PL) <sup>3</sup>	3
PCA Perspectives in the Creative Arts	3
SW The Social World	3
AR <i>Analytical Reasoning (exempt)</i>	3
NW <i>The Natural World (exempt)</i>	5
PWB Physical Well-Being	1
Core Credits	22(30)

##### 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

##### Liberal Arts and Science Requirements

	Credits
Foreign Language (min 6 cr 200 level or above)	6-14
Spanish, French, German, Chinese, Latin	
Credits	28-36

#### Common Engineering

##### Mathematics

	Credits
MA 106 Calculus & Analytical Geometry 1 <sup>+</sup>	4
MA 107 Calculus & Analytical Geometry 2 <sup>+</sup>	4
MA 208 Calculus & Analytical Geometry 3 <sup>+</sup>	4
MA 215 Linear Algebra	3
MA 334 Differential Equations	3

##### Science

	Credits
CH 105 General Chemistry 1	5
CH 106 General Chemistry 2	5
PH 201 <i>Introduction to Analytical Physics 1</i>	-
PH 202 <i>Introduction to Analytical Physics 2</i>	-

##### Engineering

	Credits
DD 190 Elementary Engineering Design	3
DD 297 MATLAB	1
CS 142 Intro to Computer Science & Prog <sup>+</sup>	3

##### Other

	Credits
COM 101 Rhetoric and the American Demo	3
TCM 250 Career Planning for Engineers	1
TCM 360 Comm in Engineering Practice (WAC/SAC)	2
ENGR 200 Engineering Internship	1
Credits	42

#### Astronomy & Astrophysics

	Credits
AS 102 Modern Astronomy	5
AS 301 Modern Astronomical Techniques	3
AS 311 Astrophysics I	3
AS 312 Astrophysics II	3
PH 201 Introduction to Analytical Physics 1	5
PH 201 Introduction to Analytical Physics 2	5
PH 301 Modern Physics	3
PH 303 Electromagnetic Waves and Optics	3
PH 321 <i>Intermediate Classical Mechanics</i> <sup>1</sup>	-
PH 331 Electromagnetic Theory I (WAC)*	4
PH 495 Senior Seminar	1
Credits	35

##### Recommended Courses

PH 311 Experimental Modern Physics	3
PH 325 <i>Thermodynamics &amp; Statistical Physics</i> <sup>2</sup>	-
PH 421 Quantum Theory I	4
PH 461 Computational Physics	3

#### Motorsports Engineering

	Credits
PHIL 120 <i>Ethics</i> <sup>3</sup>	-
PH 351 Analog Electronics (WAC)	4
MA 359 Probability and Statistics <sup>2</sup>	3
ME 200 Thermodynamics <sup>2</sup>	3
ME 270 Basic Mechanics I <sup>1</sup>	3
ME 272 Mechanics of Materials	3
ME 274 Basic Mechanics II <sup>1</sup>	3
ME 310 Fluid Mechanics	3
ME 325 Fluids Lab	1
ME 344 Intro to Engineering Materials	3
ME 482 Control Systems	3
MET 338 Manufacturing Processes	4
MSTE 272 Introduction to Motorsports	3
MSTE 297 Modeling for Motorsports	2
MSTE 298 Computer Modeling & Programming	2
MSTE 312 Business of Motorsports	3
MSTE 317 Motorsports Practicum II	1
MSTE 320 Motorsports Design I	3
MSTE 330 Data Acquisition in Motorsports I	2
MSTE 331 Data Acquisition in Motorsports II	3
MSTE 340 Dynamic Systems and Signals	3
MSTE 350 Comp Aided Design & Analysis	3
MSTE 414 Motorsports Design II	3
MSTE 417 Motorsports Practicum III	1
MSTE 426 Internal Combustion Engines	3
MSTE 472 Vehicle Dynamics	3
MSTE 482 Motorsports Aerodynamics	3
Tech Electives (*credits used toward 6 cr req)	3
Credits	74

**179 - 187 Total Credits**

<sup>1-3</sup> used as equivalents for degree requirements

\* also required for Astronomy and Astrophysics major