

Physics – Aerospace Engineering Track

3+2 Engineering Dual Degree Program with Notre Dame

Bachelor of Science (BS.PHYS(AERO))

| Core Requirements | | | Credits | Notes/Instructions |
|---|-----------------------------------|---|-----------|---|
| College Sem. | Quest for Meaning | CSEM 100 | 3 | †A student may be required to take ENGL 105 and/or MATH 100 based on placement exams administered prior to their first semester at King's College. ENGL 105 and MATH 100 are 3-credit courses and will count as free electives. †† The Intercultural Competence requirement can be satisfied by taking a 100-level language class for 3 credits or participating in an approved Study Abroad experience. SBM = Satisfied By King's Major requirement(s) and credit(s) listed below. |
| Communication & Creative Expression | Writing | ENGL 110† | (3) | |
| | Oral Communication | COMM 101 | (3) | |
| | Literature | ENGL 140-149 | (3) | |
| | The Arts | ARTS 100-149 | (3) | |
| Citizenship | History | HIST 100-149 | (3) | |
| | Intercultural | FREN/GERM/SPAN 100-level or Study Abroad†† | (3) | |
| | Global Connections | ECON 150-199; GEOG 150-199; HIST 150-199; PS 150-199; SOC 150-199 | (3) | |
| Quantitative & Scientific Reasoning | SBM Quantitative Reasoning | MATH 120 [†] or higher level | - | |
| | SBM Scientific Endeavor | NSCI 100 | - | |
| | SBM Science in Context | NSCI 171-199 | - | |
| | Human Beh. & Soc. Inst | ECON 111, 112; GEOG 101, 102; PS 101, PSYC 101, SOC 101 | (3) | |
| Wisdom, Faith, & the Good Life | Introduction to Phil. | PHIL 101 | (3) | |
| | Phil. Investigations ³ | PHIL 170-199; MSB 287 ³ | (3) | |
| | Theology & Wisdom | THEO 150-159 | (3) | |
| | Theology & the Good Life | THEO 160-169 | (3) | |
| Total Core Credits taken at King's | | | 30 | |

(3) To satisfy the King's Core requirements, a student will need to complete three (3) Core requirements at Notre Dame.

| King's Major Requirements | | Credits |
|---|--|-----------|
| PHYS 113 ^{2,CR} Physics for Sci. & Eng. I | | 3 |
| PHYS 113L Phys. for Sci./Eng. I Lab | | 1 |
| PHYS 114 ^{PR} Physics for Sci. & Eng. II | | 3 |
| PHYS 114L ^{PR} Phys. for Sci./Eng. II Lab | | 1 |
| PHYS 231 ^{PR} Modern Physics | | 3 |
| PHYS 231L ^{PR} Modern Physics Lab | | 1 |
| PHYS 241 ^{PR} Statics | | 3 |
| PHYS 242 ^{PR} Mechanics of Solids | | 3 |
| PHYS 330 ^{PR} Classical Mech. | | 3 |
| PHYS 350 ^{PR} Thermo/Stat. Mech. | | 3 |
| PHYS 371 ^{PR} Electricity & Magnetism I | | 3 |
| PHYS 440 ^{PR} Quantum Mech. | | 3 |
| PHYS 490 ^{PR} Senior Seminar | | 3 |
| PHYS Elective* | | - |
| CHEM 113 ² Gen. Chem. I | | 3 |
| CHEM 113L Gen. Chem. I Lab | | 1 |
| CHEM 114 ^{PR} Gen. Chem. II | | 3 |
| CHEM 114L ^{PR} Gen. Chem. II Lab | | 1 |
| MATH 129 Calculus I | | 4 |
| MATH 130 ^{PR} Calculus II | | 4 |
| MATH 231 ^{PR} Calculus III | | 4 |
| MATH 237 ^{PR} Math Meth. for Phys. Sci. | | 3 |
| MATH 238 ^{PR} Diff. Equations | | 3 |
| ENGR 150 Engineering Seminar | | 2 |
| ENGR 250 ^{PR} System Design & Analysis | | 3 |
| ENGR 250L ^{PR} Syst. Design & Analysis Lab | | 1 |
| CS 111 Programming for Sci. and Eng. | | 3 |
| CS 111L Prog. for Sci. and Eng. Lab | | 0 |
| Other Requirements | | |
| HCE 101 Holy Cross Experience | | 1 |
| Total King's Major and Other Credits | | 69 |

| Notre Dame's Major Requirements | | Credits |
|---|--|-----------|
| AME 20211 Introduction to Aeronautics | | 3 |
| AME 20214 Intro to Eng. Computing | | 1 |
| AME 20216 AME Lab I | | 1 |
| AME 20217 AME Lab II | | 1 |
| AME 21267 Design Tools I | | 2 |
| AME 21268 Design Tools II | | 2 |
| AME 20221 Mechanics I | | - |
| AME 20222 Mechanics II | | - |
| AME 20231 Thermodynamics | | - |
| AME 20241 Solid Mechanics | | - |
| AME 30314 Diff. Eq. Vib & Controls I | | 3 |
| AME 30315 Diff. Eq. Vib & Controls II | | 3 |
| AME 30331 Fluid Mechanics | | 3 |
| AME 30332 Compressible Aerodynamics | | 3 |
| AME 30333 Theo & Exp. Aerodynamics | | 4 |
| AME 30334 Heat Transfer | | 3 |
| AME 30341 Aerospace Structures | | 3 |
| AME 30381 Orbital & Space Dynamics | | 3 |
| AME 40431 Gas Turbines & Propulsion | | 3 |
| AME 40451 Aerospace Dynamics | | 3 |
| AME 40461 Flight Mechanics/Design | | 3 |
| AME 40462 Aerospace Design | | 4 |
| Technical Specialization/Prof Develop | | - |
| Technical Specialization | | 3 |
| Technical Specialization | | 3 |
| Technical Specialization | | 3 |
| A&L Course (King's Core Course) | | 3 |
| A&L Course (King's Core Course) | | 3 |
| A&L Course (King's Core Course) | | 3 |
| Total Notre Dame Credits | | 63 |
| General Information | | |
| The 3-2 engineering program is a dual degree program. Students spend 3 years at King's College (King's) taking math, science and CORE courses and then transfer to Notre Dame (ND) for 2 years, focusing on engineering courses in their chosen field. Upon successful completion of the program at Notre Dame, students will receive both a B.S. in Physics from King's and a B.S. in Aerospace Engineering from Notre Dame. (For more information, refer to the college catalog). | | |

Total Credits required for Graduation = 162

Physics – Aerospace Engineering Track

3+2 Dual Degree Engineering Program with Notre Dame

Suggested Sequence

A suggested course sequence of degree requirements is listed below. Refer to the college catalog for course titles, descriptions, and prerequisites. Always consult your Academic Advisor when planning and scheduling your classes.

| King's College | | | |
|---|-----------|--|------------|
| Fall 2019 | Credits | Spring 2020 | Credits |
| CHEM 113 ² Gen. Chem. I | 3 | CHEM 114 ^{PR} Gen. Chem. II | 3 |
| CHEM 113L Gen. Chem. I Lab | 1 | CHEM 114L ^{PR} Gen. Chem. II Lab | 1 |
| PHYS 113 ^{2,CR} Physics for Scientists & Engineers I | 3 | PHYS 114 ^{PR} Physics for Scientists & Engineers II | 3 |
| PHYS 113L Physics for Sci. & Eng. I Lab | 1 | PHYS 114L ^{PR} Physics for Sci. & Eng. II Lab | 1 |
| MATH 129 Calculus I | 4 | ENGR 150 Engineering Seminar | 2 |
| Core Course ¹ | 3 | MATH 130 ^{PR} Calculus II | 4 |
| HCE 101 Holy Cross Experience | 1 | Core Course ¹ | 3 |
| | 16 | | 17 |
| Fall 2020 | Credits | Spring 2021 | Credits |
| PHYS 231 ^{PR} Modern Physics | 3 | PHYS 330 ^{PR} Classical Mech. | 3 |
| PHYS 231L ^{PR} Modern Physics Lab | 1 | PHYS 241 ^{PR} Statics | 3 |
| MATH 231 ^{PR} Calculus III | 4 | ENGR 250 ^{PR} System Design & Analysis | 3 |
| MATH 238 ^{PR} Differential Equations | 3 | ENGR 250L ^{PR} Syst. Design & Analysis Lab | 1 |
| CS 111 Programming for Sci. and Eng. | 3 | MATH 237 ^{PR} Math Methods for Phys. Sci. | 3 |
| CS 111L Prog. for Sci. and Eng. Lab | 0 | Core Course ¹ | 3 |
| Core Course ¹ | 3 | | |
| | 17 | | 16 |
| Fall 2021 | Credits | Spring 2022 | Credits |
| PHYS 371 ^{PR} Electricity & Magnetism I | 3 | PHYS 242 ^{PR} Mechanics of Solids | 3 |
| PHYS 350 ^{PR} Thermo/Stat. Mech. | 3 | PHYS 440 ^{PR} Quantum Mech. | 3 |
| Core Course ¹ | 3 | PHYS 490 ^{PR} Senior Seminar | 3 |
| Core Course ¹ | 3 | Core Course ¹ | 3 |
| Core Course ¹ | 3 | Core Course ¹ | 3 |
| | 15 | Core Course ¹ | 3 |
| | | | 18* |

| Notre Dame | | | |
|---|-----------|---|-----------|
| Fall 2022 | Credits | Spring 2023 | Credits |
| AME 20214 Intro to Engineering Computing | 1 | AME 30334 Heat Transfer | 3 |
| AME 20211 Introduction to Aeronautics | 3 | AME 30332 Compressible Aerodynamics | 3 |
| AME 30314 Diff. Eq. Vib & Controls I | 3 | AME 30333 Theoretical & Exp. Aerodynamics | 4 |
| AME 30331 Fluid Mechanics | 3 | AME 30315 Diff. Eq. Vib & Controls II | 3 |
| AME 20216 AME Lab I | 1 | AME 20217 AME Lab II | 1 |
| AME 21267 Design Tools I | 2 | AME 21268 Design Tools II | 2 |
| A&L Course (King's Core Course ¹) | 3 | | |
| | 16 | | 16 |
| Fall 2023 | Credits | Spring 2024 | Credits |
| AME 30341 Aerospace Structures | 3 | AME 30381 Orbital & Space Dynamics | 3 |
| AME 40431 Gas Turbines & Propulsion | 3 | AME 40462 Aerospace Design | 4 |
| AME 40451 Aerospace Dynamics | 3 | Technical Specialization | 3 |
| AME 40461 Flight Mechanics/Design | 3 | Technical Specialization | 3 |
| A&L Course (King's Core Course ¹) | 3 | A&L Course (King's Core Course ¹) | 3 |
| | 15 | | 16 |

Total Credits Required for Graduation = 162

Notes:

PHYS Elective required for the King's degree is satisfied by any of the 30000 or 40000 level AME courses

PHYS 231, PHYS 350, PHYS 371 or PHYS 440 will satisfy Notre Dame's Technical Specialization/Professional Development requirement

PHYS 241 satisfies the Notre Dame requirement for AME 20221 Mechanics I

PHYS 330 satisfies the Notre Dame requirement for AME 20222 Mechanics II

PHYS 350 satisfies the Notre Dame requirement for AME 20231 Thermodynamics

PHYS 242 satisfies the Notre Dame requirement for AME 20241 Solid Mechanics

*Students are encouraged to take summer courses to relieve the course load pressure during this semester.

¹Choose one course from each of the Core Requirements listed on the reverse side.

²Course may satisfy both a Major and a Core requirement. CHEM 113 and PHYS 113 will satisfy the Scientific Endeavor and Science in Context Core requirements.

MATH 129 will satisfy the Quantitative Reasoning Core requirement.

^{PR} Course has a prerequisite – check college catalog.

^{CR} Course has a co-requisite – check college catalog.