

# PHYSICS – MECHANICAL ENGINEERING TRACK

## 3+2 ENGINEERING DUAL DEGREE PROGRAM WITH NOTRE DAME

### COURSE REQUIREMENTS

CORE Requirements	Credits	King's Requirements	Credits	Notre Dame Requirements	Credits
___ CORE 090 First Yr Exp.	1	___ PHYS 113 Physics for Sci. & Eng. I	3	___ AME 20213 Measurements & Data Analy	4
___ CORE 100 Lib Arts Sem.	3	___ PHYS 113L Phys. for Sci./Eng. I Lab	1	___ AME 20214 Intro to Eng. Computing	1
___ CORE 110 Effect Writ.	3	___ PHYS 114 Physics for Sci. & Eng. II	3	___ AME 20221 Mechanics I	-
___ CORE 115 or 116 Oral Comm.	3	___ PHYS 114L Phys. for Sci./Eng. II Lab	1	___ AME 20222 Mechanics II	-
___ CORE 131 or 133 Civilization	3	___ PHYS 231 Modern Physics	3	___ AME 20231 Thermodynamics	-
___ CORE 140 or 141-145 Forgn.	3	___ PHYS 231L Modern Physics Lab	1	___ AME 20241 Solid Mechanics	-
___ CORE 150-159 Soc. Sci. <sup>1</sup>	3	___ PHYS 241 Statics	3	___ AME 30314 Diff. Eq. Vib & Controls I	3
___ CORE 160-169 Literature	3	___ PHYS 242 Mechanics of Solids	3	___ AME 30315 Diff. Eq. Vib & Controls II	3
___ CORE 170-179 The Arts	3	___ PHYS 330 Classical Mech.	3	___ AME 30331 Fluid Mechanics	3
___ CORE 180-189 Amer. Studies <sup>1</sup>	3	___ PHYS 350 Thermo/Stat. Mech.	3	___ AME 30334 Heat Transfer	3
___ CORE 190-199 Global Studies <sup>1</sup>	3	___ PHYS 371 Electricity & Magnetism I	3	___ AME 30361 CAD/CAM	3
___ CORE 250-259 Syst. Theology	3	___ PHYS 440 Quantum Mech.	3	___ AME 30362 Design Methodology	3
___ CORE 260-269 Mor. Theology	(3)	___ PHYS 490 Senior Seminar	3	___ AME 30363 Design of Machine Elements	3
___ CORE 280 Philos. I	(3)	___ PHYS Elective	-	___ AME 40423 Mechanisms & Machines	3
___ CORE 281-289 Philos. II	(3)	___ CHEM 113 Gen. Chem. I	3	___ AME 40463 Senior Design Project	4
A student will need to complete three (3) of King's College CORE requirements at Notre Dame		___ CHEM 113L Gen. Chem. I Lab	1	___ AME Elective	3
		___ CHEM 114 Gen. Chem. II	3	___ AME Elective	3
		___ CHEM 114L Gen. Chem. II Lab	1	___ AME Elective	3
		___ MATH 129 Calculus I	4	___ AME Elective	3
		___ MATH 130 Calculus II	4	___ CBE 30361 Materials Science	3
		___ MATH 231 Calculus III	4	___ EE 20222 Intro to Electrical Eng.	4
		___ MATH 237 Math Meth. for Phys. Sci.	3	___ Technical Elective	3
		___ MATH 238 Diff. Equations	3	___ Technical Elective	-
		___ ENGR 150 Engineering Seminar	2	___ A&L Course (King's CORE)	3
		___ ENGR 250 System Design & Analysis	3	___ A&L Course (King's CORE)	3
		___ ENGR 250L Syst. Design & Analysis Lab	1	___ A&L Course (King's CORE)	3
		___ CS 111 Programming for Sci. and Eng.	3		
		___ CS 111L Prog. for Sci. and Eng. Lab	-		
	34		68		64

**Total Credits = 166**

**Note:** The PHYS Elective required for the King's degree is satisfied by any of the 30000 or 40000 level AME courses  
 PHYS 231, PHYS 371 or PHYS 440 will satisfy one of Notre Dame's Technical Elective requirements  
 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

<sup>1</sup>Students are required to take CORE 150, CORE 180 **OR** CORE 190 to fulfill the Interdisciplinary CORE requirement.

- If a student takes CORE 150, then he/she should choose from 181 – 188 to fulfill the 18x requirement AND from 191 – 198 to fulfill the 19x requirement.
- If a student takes CORE 180, then he/she should choose from 151 – 158 to fulfill the 15x requirement AND from 191 – 198 to fulfill the 19x requirement.
- If a student takes CORE 190, then he/she should choose from 151 – 158 to fulfill the 15x requirement AND from 181 – 188 to fulfill the 18x requirement.

#### 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. Admission into Notre Dame requires a minimum GPA of 3.30 after 5 semesters of college study. Students must earn at least 60 credits from ND to receive the ND degree. 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 Mechanical Engineering from Notre Dame. (*For more information, refer to the college catalog.*)

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### SUGGESTED SEQUENCE

- Use the information below as a guide when selecting courses.
- Refer to the reverse side when selecting major courses, major electives, core courses, and free electives when applicable.
- Consult your Academic Advisor prior to course registration.
- Refer to the King's College Catalog and/or website for course titles and descriptions.
- Choose one course from each CORE category as listed on the reverse side.
- CORE courses may be taken in any order approved by the academic advisor with the following conditions:
  - CORE 100 and CORE 110 should be taken in the first year.
  - CORE 115 (or 116) should be taken within the first two years.
  - For students selecting a Foreign Language (CORE 14x), every effort should be made to register for that language in the first available semester at King's.

King's College					
1 <sup>st</sup> Year - Fall		cr.	1 <sup>st</sup> Year - Spring		cr.
_____	CHEM 113 Gen. Chem. I	3	_____	CHEM 114 Gen. Chem. II	3
_____	CHEM 113L Gen. Chem. I Lab	1	_____	CHEM 114L Gen. Chem. II Lab	1
_____	PHYS 113 Physics for Scientists & Engineers I	3	_____	PHYS 114 Physics for Scientists & Engineers II	3
_____	PHYS 113L Physics for Sci. & Eng. I Lab	1	_____	PHYS 114L Physics for Sci. & Eng. II Lab	1
_____	MATH 129 Calculus I	4	_____	ENGR 150 Engineering Seminar	2
_____	CORE	3	_____	MATH 130 Calculus II	4
_____	CORE 090 First Year Exp.	1	_____	CORE	3
		<b>16</b>			<b>17</b>
2 <sup>nd</sup> Year - Fall			2 <sup>nd</sup> Year - Spring		
_____	PHYS 231 Modern Physics	3	_____	PHYS 330 Classical Mech.	3
_____	PHYS 231L Modern Physics Lab	1	_____	PHYS 241 Statics	3
_____	MATH 231 Calculus III	4	_____	ENGR 250 System Design & Analysis	3
_____	MATH 237 Math Methods for Phys. Sci.	3	_____	ENGR 250L Syst. Design & Analysis Lab	1
_____	CS 111 Programming for Sci. and Eng.	3	_____	MATH 238 Diff. Equations	3
_____	CS 111L Prog. for Sci. and Eng. Lab	0	_____	CORE	3
_____	CORE	3			
		<b>17</b>			<b>16</b>
3 <sup>rd</sup> Year - Fall			3 <sup>rd</sup> Year - Spring		
_____	PHYS 371 Electricity & Magnetism I	3	_____	PHYS 440 Quantum Mech.	3
_____	PHYS 350 Thermo/Stat. Mech.	3	_____	PHYS 242 Mechanics of Solids	3
_____	CORE	3	_____	PHYS 490 Senior Seminar	3
_____	CORE	3	_____	CORE	3
_____	CORE	3	_____	CORE	3
_____	CORE	3	_____	CORE	3
		<b>18*</b>			<b>18*</b>

Notre Dame					
4 <sup>th</sup> Year - Fall			4 <sup>th</sup> Year - Spring		
_____	AME 20214 Intro to Eng. Computing	1	_____	AME 20213 Measurements & Data Analysis	4
_____	AME 30314 Diff. Eq. Vib & Controls I	3	_____	AME 30315 Diff. Eq. Vib & Controls II	3
_____	AME 30331 Fluid Mechanics	3	_____	AME 30334 Heat Transfer	3
_____	AME 30361 CAD/CAM	3	_____	AME 30363 Design of Machine Elements	3
_____	CBE 30361 Materials Science	3	_____	A&L Course (King's CORE)	3
_____	A&L Course (King's CORE)	3			
		<b>16</b>			<b>16</b>
5 <sup>th</sup> Year - Fall			5 <sup>th</sup> Year - Spring		
_____	AME 30362 Design Methodology	3	_____	AME 40463 Senior Design Project	4
_____	AME 40423 Mechanisms & Machines	3	_____	AME Elective	3
_____	AME Elective	3	_____	AME Elective	3
_____	AME Elective	3	_____	Technical Elective	3
_____	EE 20222 Intro to Electrical Engineering	4	_____	A&L Course (King's CORE)	3
		<b>16</b>			<b>16</b>

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