Physics – Biomedical Engineering Track

3+2 Engineering Dual Degree Program

Bachelor of Science (BS.PHYS(BIOM))

Core Requirements				Credits
College Sem.		Quest for Meaning	CSEM 100	3
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	PHIL 170-199	(3)
		Theology & Wisdom	THEO 150-159	(3)
		Theology & the Good Life	THEO 160-169	(3)
			Total Core Credits taken at King's	**24**

Notes/Instructions

†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. . (See college catalog for more information)

SBM = Satisfied By King's Major requirement(s) and credit(s) listed below.

(3) To satisfy the King's Core requirements, a student will need to complete five (5) Core requirements at Washington University

Foundational Mathematics, Science and Engineering Requirements	Credits
PHYS 113[2,CR] Physics for Science & Engineering I	3
PHYS 113L Phys. for Sci. & Eng. I Lab	1
PHYS 114[PR] Physics for Science & Engineering II	3
PHYS 114L[PR] Phys. for Sci. & Eng. II Lab	1
CHEM 113[2] General Chemistry I	3
CHEM 113L General Chemistry I Lab	1
CHEM 114[PR] General Chemistry II	3
CHEM 114L[PR] General Chemistry II Lab	1
MATH 129 Calculus I	4
MATH 130[PR] Calculus II	4
MATH 231[PR] Calculus III	4
MATH 237[PR] Math Methods for Physical Sciences	3
MATH 238[PR] Differential Equations	3
ENGR 150 Engineering Seminar	2
ENGR 250[PR] System Design & Analysis	3
ENGR 250L[PR] System Design & Analysis Lab	1
ENGR 300 Programming for Science and Engineering	3
ENGR 300L Programming for Science and Eng. Lab	1
BIOL 213 Cell and Molecular Biology	3
BIOL 213L Cell and Molecular Biology Lab	1
Other Requirements	
HCE 101 Holy Cross Experience	1
Total Foundational Mathematics, Science and Engineering Requirements and Other Credits	**49**

Physics Major Requirements	Credits
PHYS 231[PR] Modern Physics	3
PHYS 231L[PR] Modern Physics Lab	1
PHYS 233[PR] Electronics I	3
PHYS 233L[PR] Electronics I Lab	1
PHYS 241[PR] Statics	3
PHYS 330[PR] Classical Mech.	3
PHYS 350[PR] Thermodynamics & Stat. Mechanics	3
PHYS 371[PR] Electricity & Magnetism I	3
PHYS 440[PR] Quantum Mechanics	3
PHYS 490[PR] Senior Seminar	3
PHYS Elective*	-
Total Physics Major Credits	**26**

General Information

The 3+2 Physics-Biomedical Engineering Dual Degree Program is a collaboration with Washington University in St. Louis. Students will spend three years at King's College taking mathematics, science, engineering, and general education CORE courses. Eligible students will then transfer to Washington University for two years to complete engineering courses in their chosen field. Upon successful completion of the program, students will receive both a B.S. in Physics from King's College and a B.S. in Biomedical Engineering from WashU. *(For more information, refer to the college catalog).*

Total Credits earned at King's College = 99

Notes:

* PHYS Elective required for the King's degree satisfied by any junior or senior level biomedical engineering course at Washington University

See reverse side for a suggested sequence

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3+2 Dual Degree Engineering Program

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	**Credits**		**Spring**	**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	**Credits**		**Spring**	**Credits**
	PHYS 231[PR] Modern Physics	3		PHYS 330[PR] Classical Mech.	3
	PHYS 231L[PR] Modern Physics Lab	1		ENGR 250[PR] System Design & Analysis	3
	MATH 231[PR] Calculus III	4		ENGR 250L[PR] Syst. Design & Analysis Lab	1
	MATH 238[PR] Differential Equations	3		MATH 237[PR] Math Methods for Phys. Sci.	3
	ENGR 300 Programming for Sci. and Eng.	3		Core Course[1]	3
	ENGR 300L Prog. for Sci. and Eng. Lab	1		Core Course[1]	3
	Core Course[1]	3			
		18*			**16**
	Fall	**Credits**		**Spring**	**Credits**
	PHYS 371[PR] Electricity & Magnetism I	3		PHYS 440[PR] Quantum Mech.	3
	PHYS 350[PR] Thermo/Stat. Mech.	3		PHYS 490[PR] Senior Seminar	3
	PHYS 241[PR] Statics	3		PHYS 233[PR] Electronics	3
	BIOL 213 Cell and Molecular Biology	3		PHYS 233L[PR] Electronics I Lab	1
	BIOL 213L Cell and Molecular Biology Lab	1		Core Course[1]	3
	Core Course[1]	3		Core Course[1]	3
		16			**16**

Total Credits earned at King's College = 99

Students apply for transfer admission to Washington University in St. Louis after completion of the Fall semester of their 3rd year. Students must have satisfied King's College academic guidelines, as well as the following general criteria:

- For Admission to Washington University in St. Louis
  - Cumulative grade-point average (GPA) of at least 3.25 on a 4.0 scale.
  - Cumulative technical grade-point average of at least 3.25 on a 4.0 scale (all math, science and engineering courses)
  - GPA must be maintained through Spring Semester of Year 3
  - All grades that transfer to Washington University must be a "C" or higher
  - At least 60 credit-hours of work that can be transferred to satisfy WashU engineering and general education degree requirements
- The specific admission criteria for each school will be confirmed by the 3+2 Program Director

Notes:

The combination of MATH 231, 237 and 238 taken at King's satisfies the WashU requirements for ESE 318 Engineering Mathematics A and ESE 319 Engineering Mathematics B

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

[2] Course 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.