Five-Year Computational Science & Engineering – Applied Math Track

Sample Pathway to Graduation

124 S.H. – RFI & non-RFI Tracks

Freshman Year: Summer Semester			
GE 1000: Transition to Kean	1		
Freshman Year: Fall Semester		**Freshman Year: Spring Semester**	
ENG 1030: Composition	3	COMM 1402: Speech Communication	3
STME 1403: Math & Computational Methods I	4	STME 1603: Math & Computational Methods II	4
STME: 1401: Chemical Systems I	4	STME 1601: Chemical Systems II OR HIST 1062: Worlds of History *(if electing to take STME 2602)*	3 – 4
STME 1903: Research Methods	1	GE 2024: Research and Technology	3
STME 1605: Intro to Programming	4	STME 2903: Research Experience (RFI track)	2
	16		13 – 16
Sophomore Year: Fall Semester		**Sophomore Year: Spring Semester**	
STME 3903: Advanced Research Experience (RFI track)	3	STME 2402: Physical Systems II	4
STME 2401: Physical Systems I	4	MATH 3415: Calculus III	4
STME 2403: Math & Computational Methods III	4	STME 2603: Probabilistic Methods of Science	4
CPS 2231: Computer Organization & Programming	4	CPS 2232: Data Structures & Algorithm Analysis	4
GE Approved Social Sciences Requirement	3		
	15 – 18		16
Junior Year: Fall Semester		**Junior Year: Spring Semester**	
STME 2601: Living Systems I	4	STME 4805: Mathematical Modeling	3
MATH 2110: Discrete Structures	3	MATH 3455: Differential Equations	3
MATH 3225: Comp Methods in Matrix & Linear Algebra	3	STME 2602: Living Systems II OR HIST 1062: Worlds of History *(if elected to take STME 1601)*	3 – 4
MATH 3940: Numerical Analysis	3	STME 3610: Current Issues in Sci & Tech (non-RFI track)	1
Free elective	3	Free elective	3
		Major elective	3
	16		15 – 17
Senior Year: Fall Semester		**Senior Year: Spring Semester**	
CPS 5965: High Performance Computing OR STME 5630: Modeling & Simulation of Dynamic Systems	3	STME 5410: Modeling & Simulation of Continuous Systems OR STME 5631: Data Analysis & Visualization	3
CPS 3962: Information Systems Analysis & Design OR CPS 4301: Software Engineering I	3	STME 4610: Science & Technology Seminar (Capstone)	3
Major elective (RFI track = 2 cr./non-RFI = 3 cr.)	2 – 3	Major elective (non-RFI track)	3
ENG 2403: World Literature	3	Free elective	3
Free elective	3	GE Approved Humanities Requirement	3
	14 – 15		12 – 15

**Major Electives: RFI Track = 5 cr.; non-RFI Track = 9 cr.*

***STME 3610 to be taken by students who did not complete both STME 2903 & 3903 (RFI Research Experience)*

5th Year Courses

Summer prior to start of 5th Year			
ID 5700: Independent Study	3	Graduate elective	3
5th Year: Fall Semester		**5th Year: Spring Semester**	
*CPS 5965: High Performance Computing OR *STME 5630: Modeling & Simulation of Dynamic Systems	3	*STME 5410: Modeling & Simulation of Continuous Systems OR *STME 5631: Data Analysis & Visualization	3
ID 5800: Thesis	3	ID 5800: Thesis	3
Graduate Elective	3	STME 5610: Advanced Science & Technology Seminar	3
Graduate Elective	3		
	12		12

**Must select the course that was not taken towards B.S. degree*

Five-Year Computational Science & Engineering – Bioinformatics Track

Sample Pathway to Graduation

124 S.H. – RFI & non-RFI Tracks

Freshman Year: Summer Semester			
GE 1000: Transition to Kean	1		
Freshman Year: Fall Semester		**Freshman Year: Spring Semester**	
ENG 1030: Composition	3	COMM 1402: Speech Communication	3
STME 1403: Math & Computational Methods I	4	STME 1603: Math & Computational Methods II	4
STME: 1401: Chemical Systems I	4	STME 1601: Chemical Systems II	4
STME 1903: Research Methods	1	GE 2024: Research and Technology	3
STME 1605: Intro to Programming	4	STME 2903: Research Experience (RFI track)	2
	16		14 – 16
Sophomore Year: Fall Semester		**Sophomore Year: Spring Semester**	
STME 2681: Organic Chemistry I	3	HIST 1062: Worlds of History	3
STME 2683: Organic Chemistry I Lab	2	STME 2603: Probabilistic Methods of Science	4
STME 2601: Living Systems I	4	STME 2602: Living Systems II	4
STME 2403: Math & Computational Methods III	4	MATH 2110: Discrete Structures	3
STME 3903: Advanced Research Experience (RFI track)	3	GE Approved Social Sciences Requirement	3
	13 – 16		17
Junior Year: Fall Semester		**Junior Year: Spring Semester**	
GE Approved Humanities Requirement (non-RFI track)	3	STME 3610: Current Issues in Sci & Tech (non-RFI track)	1
STME 2401: Physical Systems I	4	STME 3401: Biochemistry OR BIO 4105: Essentials of Biochemistry	4
BIO 3709: Genetics	4	CPS 2232: Data Structures & Algorithm Analysis	4
CPS 2231: Computer Organization & Programming	4	Free elective	3
Free elective	3	GE Approved Humanities Requirement (RFI track)	3
		ENG 2403: World Literature	3
	15 – 18		15 – 17
Senior Year: Fall Semester		**Senior Year: Spring Semester**	
CPS 5965: High Performance Computing OR STME 5630: Modeling & Simulation of Dynamic Systems	3	STME 5410: Modeling & Simulation of Continuous Systems OR STME 5631: Data Analysis & Visualization	3
CPS 4301: Software Engineering I (OR CPS 3962 Info. Systems Ana. & Design in Spring Semester)	3	CPS 3962: Information Systems Analysis & Design (OR CPS 4301: Software Engineering I in Fall Semester)	3
BIO 4700: Molecular Genetics	4	STME 4610: Science & Technology Seminar (Capstone)	3
BIO 3305: Principles of Microbiology	4	Free elective	3
Major elective (non-RFI track)	4	Free elective *(Independent Research STME 4903 highly recommended)*	3
	14 – 18		15

**Major Electives: RFI Track = 0 cr.; non-RFI Track = 4 cr.*

***STME 3610 to be taken by students who did not complete <u>both</u> STME 2903 & 3903 (RFI Research Experience)*

5th Year Courses

Summer prior to start of 5th Year			
ID 5700: Independent Study	3	Graduate elective	3
5th Year: Fall Semester		**5th Year: Spring Semester**	
*CPS 5965: High Performance Computing OR *STME 5630: Modeling & Simulation of Dynamic Systems	3	*STME 5410: Modeling & Simulation of Continuous Systems OR *STME 5631: Data Analysis & Visualization	3
ID 5800: Thesis	3	ID 5800: Thesis	3
*Graduate Elective	3	STME 5610: Advanced Science & Technology Seminar	3
*Graduate Elective	3		
	12		12

**Must select the course that was not taken towards B.S. degree*

Five-Year Computational Science & Engineering – Physics Track

Sample Pathway to Graduation

124 S.H. – RFI & non-RFI Tracks

Freshman Year: Summer Semester			
GE 1000: Transition to Kean	1		
Freshman Year: Fall Semester		**Freshman Year: Spring Semester**	
ENG 1030: Composition	3	COMM 1402: Speech Communication	3
STME 1403: Math & Computational Methods I	4	STME 1603: Math & Computational Methods II	4
STME: 1401: Chemical Systems I	4	STME 1601: Chemical Systems II	4
STME 1903: Research Methods	1	GE 2024: Research and Technology	3
STME 1605: Intro to Programming	4	STME 2903: Research Experience (RFI track)	2
	16		14 – 16
Sophomore Year: Fall Semester		**Sophomore Year: Spring Semester**	
STME 3903: Advanced Research Experience (RFI track)	3	STME 2402: Physical Systems II	4
STME 2401: Physical Systems I	4	MATH 3415: Calculus III	4
STME 2403: Math & Computational Methods III	4	STME 2603: Probabilistic Methods of Science	4
CPS 2231: Computer Organization & Programming	4	CPS 2232: Data Structures & Algorithm Analysis	4
GE Approved Social Sciences Requirement	3		
	15 – 18		16
Junior Year: Fall Semester		**Junior Year: Spring Semester**	
STME 2601: Living Systems I	4	STME 4805: Mathematical Modeling	3
MATH 2110: Discrete Structures	3	MATH 3455: Differential Equations	3
PHYS 2097: Physics III	4	HIST 1062: Worlds of History	3
MATH 3940: Numerical Analysis	3	STME 3610: Current Issues in Sci & Tech (non-RFI track)	1
Free elective	3	PHYS 4592: Modern Physics	4
		Free elective	3
	17		16 – 17
Senior Year: Fall Semester		**Senior Year: Spring Semester**	
CPS 5965: High Performance Computing OR STME 5630: Modeling & Simulation of Dynamic Systems	3	STME 5410: Modeling & Simulation of Continuous Systems OR STME 5631: Data Analysis & Visualization	3
CPS 3962: Information Systems Analysis & Design OR CPS 4301: Software Engineering I	3	PHYS 4593: Landmarks in 20th Century Physics OR PHYS 4901: Independent Research in Physics	3
Major elective (non-RFI track)	4	STME 4610: Science & Technology Seminar (Capstone)	3
ENG 2403: World Literature	3	GE Approved Humanities Requirement	3
Free elective	3		
	12 – 16		12

**Major Electives: RFI Track = 0 cr.; non-RFI Track = 4 cr.*

***STME 3610 to be taken by students who did not complete <u>both</u> STME 2903 & 3903 (RFI Research Experience)*

5th Year Courses

Summer prior to start of 5th Year			
ID 5700: Independent Study	3	Graduate elective	3
5th Year: Fall Semester		**5th Year: Spring Semester**	
*CPS 5965: High Performance Computing OR *STME 5630: Modeling & Simulation of Dynamic Systems	3	*STME 5410: Modeling & Simulation of Continuous Systems OR *STME 5631: Data Analysis & Visualization	3
ID 5800: Thesis	3	ID 5800: Thesis	3
Graduate Elective	3	STME 5610: Advanced Science & Technology Seminar	3
Graduate Elective	3		
	12		12

**Must select the course that was not taken towards B.S. degree*