KEAN UNIVERSITY
NJ CENTER FOR SCIENCE, TECHNOLOGY & MATHEMATICS (NJCSTM)
(30111) B.S. in Science and Technology (NJIT Engineering Science Option): 124 S.H.
(EFFECTIVE: Fall/2011)

START TERM: _____

STUDENT NAME:	**Credits**	TRANSFER INSTITUTIONS (X)	**Credits**
STUDENT ID#			
GENERAL EDUCATION: 34 Semester Hours (S.H.)		**ACADEMIC MAJOR REQUIREMENTS[5]: 66-71 S.H.**	
Foundation Requirements: 14 S.H.		**STME CORE: 30**	
GE 1000 Transition to Kean[1]	1	STME 2610 Current Issues in Science & Technology I	1
ENG 1030 College Composition[2]	3	STME 3610 Current Issues in Science & Technology II	1
STME 1403 Math. & Computational Methods of Science I[3]	4	STME 2401 Physical Systems	4
COMM 1402 Speech Communication As Critical Citizenship[2]	3	STME 2402 Physical Systems II	4
GE 2024 Research & Technology[2]	3	PHYS 2097 Physics III	4
DISCIPLINARY / INTERDISCIPLINARY DISTRIBUTION REQUIREMENTS: 20 S.H.		STME 2403 Math. & Computational Methods of Science III	4
***Humanities:* 6 S.H.**		STME 2603 Probabilistic Methods in Science	4
*ENG 2403 World Literature	3	STME 1601 Chemical Systems II	4
(Select one course from below) Fine Arts or Art History	3	STME 2601 Living Systems	4
Music or Theater	3		
Philosophy or Religion	3		
Foreign Language[4] (Must take I and II for credit)	3	**MAJOR / GE CAPSTONE COURSE: 3 S.H.**	
Interdisciplinary	3	STME 4610 Science & Technology Seminar WE	3
***Social Sciences*: 6 S.H.**			
*HIST 1000 History of Civil Society in America -or- HIST 1062 Worlds of History	3	**ENGINEERING SCIENCE: 33-39 S.H.** (select with advisement based on track. Courses may be taken at NJIT. Sum of CORE and CONCENTRATION may not be greater than 38 credits.)	
(Select one course from below) PSY 1000 General Psychology	3	**ENGINEERING SCIENCE CORE 14-17 S.H.:**[5] (select based on track, see additional sheets)	
SOC 1000 or ANTH 1800	3	**CONCENTRATION ELECTIVES 19-24 S.H.:**[5] (select based on track, see additional sheets)	
Economics or Geography	3		
Interdisciplinary	3		
Political science	3		
***Science and Mathematics*: 8 S.H.**			
STME 1603 Math & Computational Methods of Science II	4		
STME 1401 Chemical Systems I	4		
ADDITIONAL REQUIREMENTS[2]: 15-19 S. H.			
MATH 3451 Calculus III	3		
MATH 3452 Calculus IV	3	**FREE ELECTIVES: 0-9 S.H.** (selected with advisement, no more than 3 may be below 3000 level)	
MATH 3455 Differential Equations	3		
CPS 2231 Computer Organization & Programming and CPS 2232 Data Structures & Algorithm Analysis -or-	4 4		
CHEM 2581 Organic Chemistry Lecture I and CHEM 2582 Organic Chemistry Lecture II -or-	3 3	[1]Required of all Freshmen and Transfers with fewer than 10 credits. *(G.E) General Education required course. [2]Foundations & Additional Requirements require grade of C or better, except ENG 1030 requires B or better.	
CHEM 2581 Organic Chemistry Lecture I and CHEM 2583 Organic Chemistry Lab I and CHEM 3381 Physical Chemistry Lecture I and CHEM 3383 Physical Chemistry Lab I	3 2 3 2	[3]Prerequisite of qualifying placement test score or the equivalent of MATH 1054. [4]Credit granted only upon completion of two semesters of elementary or intermediate foreign language. [5]Engineering science and concentration electives to be selected based on concentration and in consultation with advisors at both NJIT and Kean. 2 courses must be graduate level engineering courses taken at NJIT. Other courses may be taken at NJIT or Kean based on course availability and under directions of the academic advisor.	
WE: Writing Emphasis course.			
		TOTAL CREDITS:	

GENERAL EDUCATION INFO & REQUIREMENTS

Testing and Placement

Incoming freshmen and transfer students may be placed in specific GE Foundations, Developmental or ESL courses as a result of testing prior to registration. Students may be exempt from testing due to SAT scores or prior college work.

Prerequisites and Equivalencies for GE Foundations Courses

ENG 1030
Prereq: Placement testing
Equiv: ENG 1031/32; 1033/34; 1430; ENG 1020; 1400

MATH 1000
Prereq: Placement testing
Equiv: MATH 1001/02; 1003/04; 1051

COMM 1402
Prereq: CS 0411 or 0412 if required by placement testing
ENG 1031/32; 1033/34
May be taken concurrently with ENG 1030
Equiv: COMM 1400

GE 2021-2024 Research & Technology is offered as college-based course
GE 2021 College of BPA
GE 2022 College of ED
GE 2023 College of AHSS
GE 2024 College of NAHS
Prereq: ENG 1030 or equivalent
MATH 1000 or equivalent
Equiv: GE 2020

Course Paired with Reading
Must be taken concurrently with CS 0412 if required by placement testing.

GE Distribution Courses

All courses under the General Education Disciplinary/Interdisciplinary Distribution requirements must be selected from the Approved General Education Distribution Course List, printed in Registration Bulletin. These courses are designated as GEHU, GESS, GESM, GEHPE or GECP.

GEHU Humanities

GESS Social Sciences

GESM Science and Mathematics

GEHPE Health and Physical Education

Required GE Distribution Courses

ENG 2403 is a required Humanities Distribution course with an emphasis on diversity.

HIST 1000 is a required Social Sciences Distribution course with an emphasis on diversity.

Foreign Language Credit

The three credits for a foreign language that may satisfy the GE Disciplinary/Interdisciplinary Distribution Requirement are awarded only upon successful completion of two semesters of study at the introductory or intermediate level.

Major/GE Capstone Course

A Capstone course is a major course that satisfies three credits of GE requirements.
Each major guide sheet will count three credits for the Capstone as either GE credits or major credits, but not both.

UNIVERSITY REQUIREMENT

Writing-Emphasis Requirement

All students are required to complete one "Writing-Emphasis" course. The "W-E" course must be within the major portion of your program. Consult your major program advisor for specific information.

Course Prerequisites

ENG 2403: ENG 1030 (or equivalent) & completion of any freshmen placement requirements in reading.
CPS 2231: CPS 1231, MATH 1054 (Precalculus) or computer programming experience & instructor permission.
CPS 2232: CPS 2231, MATH 2110 (Discrete Structures).
CPS 3250: CPS 2232, CPS 2390
CPS 3962: CPS 3351 or instructor permission.
CPS 4301: Completion of CPS core.
MATH 3451: MATH 2412 (Calculus II)
MATH 3452: MATH 3451
MATH 3455: MATH 2412 (Calculus II)
MATH 3120: MATH 2110 (Discrete Structures)
MATH 3940: MATH 2412, CPS 2231
MATH 4805: MATH 3544 (Probability & Mathematical Statistics).
STME 1403: Qualifying testing placement or equivalent Math 1054 (Precalculus)
STME 1601: STME 1401
STME 1603: STME 1403
STME 2401: STME 1603
STME 2403: STME 1603
STME 2601: STME 1601
STME 2603: STME 1603
STME 2610: GE 2024
STME 3610: STME 2610, STME 2603, STME 2601
STME 4610: Senior standing in the five year science, technology & math education program.

Track specific course listings (all courses listed are NJIT courses to be taken at NJIT unless otherwise specified)

GENERAL ENGINEERING SCIENCE (33)	
ENGINEERING SCIENCE CORE (14)	
Mech 320 Statics and Strength of Materials	3
Mech 236 Dynamics	2
ECE 231 Circuits and Systems I	3
ME 304 Fluid Dynamics	3
ME 311 Thermodynamics	3
CONCENTRATION COURSES (19)	
Selected with advisement, 6 credits must be at the graduate level	19

MECHANICAL ENGINEERING (37)	
ENGINEERING SCIENCE CORE (17)	
Mech 236 Dynamics	2
Mech 237 Strength of Materials	3
ME 311 Thermodynamics I	3
ME 304 Fluid Mechanics	3
ME 315 Stress Analysis	3
Mech 235 Statics	3
CONCENTRATION COURSES (20)	
ME 231 Kinematics of Machinery	3
ME 407 Heat Transfer	3
ME 430 Introduction to Computer-Aided Design	3
ME 343 Mechanical Laboratory I	3
ME 215 Engineering Materials and Processes	2
2 additional courses to be selected with advisement at the graduate level	6

INDUSTRIAL ENGINEERING (38)	
ENGINEERING SCIENCE CORE (14)	
Mech 236 Dynamics	2
Mech 320 Statics and Strength of Materials	3
ME 311 Thermodynamics I	3
ME 304 Fluid Mechanics	3
ECE 231 Circuits and Systems I	3
CONCENTRATION COURSES (24)	
IE 339 Work Measurement and Standards	3
IE 355 Human Factors	3
IE 439 Deterministic Models in Operations Research	3
IE 440 Stochastic Models in Operations Research	3
IE 224 Production Processes	3
IE 334 Engineering Economy and Capital Investment	3
IE 604 Advanced Engineering Statistics	3
IE 618 Engineering Cost and Production Economics	3

ELECTRICAL ENGINEERING (36)	
ENGINEERING SCIENCE CORE (15)	
ECE271 Electronic Circuits I	3
Mech 320 Statics and Strength of Materials	3
ECE231 Circuits and Systems I	3
ECE 232 Circuits and Systems II	3
ECE251 Digital Design	3
CONCENTRATION COURSES (21)	
ECE 252 Microprocessor	3
ECE 333 Signals and Systems	3
ECE 372 Electronic Circuits II	3
ECE 321 Random Signals and Noise	3
ECE 361 Electromagnetic Fields I	3
ECE 601 Linear Systems	3
ECE 673 Random Signal Analysis	3

STRUCTURAL ENGINEERING (38)	
ENGINEERING SCIENCE CORE (15)	
Mech 235 Statics	3
Mech 236 Dynamics	2
Mech 237 Strength of Materials	3
CE 320 Fluid Mechanics	3
CE 341 Soil Mechanics	3
CE 341A Soil Mechanics Lab	1
CONCENTRATION COURSES (21)	
CE 210 Construction Materials and Procedures	3
CE 332 Structural Analysis	3
CE 333 Reinforced Concrete Design	3
CE 432 Steel Design	3
CE 443 Foundation Design	3
CE 639 Applied Finite Elements	3
CE 636 Stability of Structures	3

CONSTRUCTION ENGINEERING (34)	
ENGINEERING SCIENCE CORE (15)	
Mech 235 Statics	3
Mech 236 Dynamics	2
Mech 237 Strength of Materials	3
CE 320 Fluid Mechanics	3
CE 341 Soil Mechanics	3
CE 341A Soil Mechanics Lab	1
CONCENTRATION COURSES (19)	
CE 200 Surveying	3
CE 200A Surveying Lab	1
CE 210 Construction Materials and Procedures	3
ENE 262 Environmental Engineering	3
CE 350 Transportation Engineering	3
CE 610 Construction Management	3
CE 611 Project Planning and Control	3

TRANSPORTATION ENGINEERING (34)	
ENGINEERING SCIENCE CORE (15)	
Mech 235 Statics	3
Mech 236 Dynamics	2
Mech 237 Strength of Materials	3
CE320 Fluid Mechanics	4
CE321 Water Resources Engineering	3
CONCENTRATION COURSES (19)	
CE 200 Surveying	3
CE 200A Surveying Lab	1
CE 210 Construction Materials and Procedures	3
ENE 262 Environmental Engineering	3
CE 350 Transportation Engineering	3
TAN 615 Traffic Study and Capacity	3
TRAN 650 Urban Systems Engineering	3

CHEMICAL ENGINEERING (36)	
ENGINEERING SCIENCE CORE (14)	
Mech 320 Statics and Strength of Materials	3
ChE 210 Chemical Process Calculations I	2
ChE 210W Chemical Process Calculations I Workshop	0
ChE 230 Chemical Engineering Thermodynamics I	3
ChE 230W Chemical Engineering Thermodynamics I Workshop	0
ChE 240 Chemical Process Calculations II	3
ChE 240W Chemical Process Calculations II Workshop	0
ChE 260 Fluid Flow	3
CONCENTRATION COURSES (22)	
ChE 342 Chemical Engineering Thermodynamics II	3
ChE 349 Kinetics and Reactor Design	3
ChE 360 Separation Processes I	3
ChE 370 Heat and Mass Transfer	4
ChE 396 Chemical Engineering Lab I	3
2 additional courses to be selected with advisement at the graduate level	6
Students should take one semester each of organic and physical chemistry with lab as part of their Kean coursework	

PHARMACEUTICAL ENGINEERING (36)	
ENGINEERING SCIENCE CORE (14)	
Mech 320 Statics and Strength of Materials	3
ChE 210 Chemical Process Calculations I	2
ChE 210W Chemical Process Calculations I Workshop	0
ChE 230 Chemical Engineering Thermodynamics I	3
ChE 230W Chemical Engineering Thermodynamics I Workshop	0
ChE 240 Chemical Process Calculations II	3
ChE 240W Chemical Process Calculations II Workshop	0
ChE 260 Fluid Flow	3
CONCENTRATION COURSES (22)	
ChE 342 Chemical Engineering Thermodynamics II	3
ChE 349 Kinetics and Reactor Design	3
ChE 360 Separation Processes I	3
ChE 370 Heat and Mass Transfer	4
ChE 396 Chemical Engineering Lab I	3
PhEn 601 Principles of Pharmaceutical Engineering	*3*
PhEn 604 Validation and Regulatory Issues in the Pharmaceutical Industry	*3*
Students should take one semester each of organic and physical chemistry with lab as part of their Kean coursework	

BIOMEDICAL ENGINEERING (38)	
ENGINEERING SCIENCE CORE (15)	
BME 302 Fundamentals of Biomechanics	3
BME 304 Fundamentals of Biomaterials	3
BME 301 Fundamentals of Bioelectronics	3
BME 351 Biofluid Dynamics	3
ME 311 Thermodynamics	3
CONCENTRATION COURSES (23)	
BIO 3403 Anatomy and Physiology I (Kean course)	4
BIO 3404 Anatomy and Physiology II (Kean course)	4
BME 310 Biomedical Computing	3
2 additional BME courses to be selected with advisement at the undergraduate level	6
2 additional courses to be selected with advisement at the graduate level	6
Students should take two semesters of organic chemistry as part of their Kean coursework	

Advisor's Signature_____**Date**_____

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