

NETWORKED AND SOCIAL SYSTEMS ENGINEERING, BSE

The Rajendra and Neera Singh Program in Networked and Social Systems Engineering (NETS), formerly called Market and Social Systems Engineering (MKSE), is the world's first course of study to fully integrate the disciplines needed to design and analyze the complex networks that are reshaping our society. This program prepares students to shape the technologies that underpin Internet-based search and electronic commerce, financial networks, social networks, and even such exchanges as the power grid. Graduates of this program will be prepared to engineer networks that work for both end-users and investors. Other graduates may become the policy-makers who are urgently needed to regulate these networks for the protection of commercial property and societal good.

For more information: <https://www.seas.upenn.edu/prospective-students/undergrad/majors/networked-social-systems-engineering/>

Networked and Social Systems Engineering (NETS) Major Requirements

40 course units are required. Read more about the Undergraduate Student Handbook (<http://www.seas.upenn.edu/undergraduate/handbook>).

Code	Title	Course Units
Engineering		
CIS 110	Introduction to Computer Programming	1
CIS 120	Programming Languages and Techniques I	1
CIS 121	Programming Languages and Techniques II	1
CIS 320	Introduction to Algorithms	1
ESE 210	Introduction to Dynamic Systems	1
ESE 303	Stochastic Systems Analysis and Simulation	1
ESE 304	Optimization of Systems	1
NETS 112	Networked Life	1
NETS 150	Market and Social Systems on the Internet	1
NETS 212	Scalable and Cloud Computing	1
NETS 312	Theory of Networks	1
NETS 412	Algorithmic Game Theory	1
CIS 400	Senior Project	1
or ESE 450	Senior Design Project I - EE and SSE	
CIS 401	Senior Project	1
or ESE 451	Senior Design Project II - EE and SSE	
Math and Natural Science		
MATH 104	Calculus, Part I	1
MATH 114	Calculus, Part II	1
MATH 240	Calculus, Part III	1
CIS 160	Mathematical Foundations of Computer Science	1
EAS 205	Applications of Scientific Computing.	1
or MATH 312	Linear Algebra	
Select one of the following:		1
EAS 301	Climate Policy and Technology	

STAT 430	Probability	
PHYS 150	Principles of Physics I: Mechanics and Wave Motion	1.5
or PHYS 170	Honors Physics I: Mechanics and Wave Motion	
PHYS 151	Principles of Physics II: Electromagnetism and Radiation	1.5
or PHYS 171	Honors Physics II: Electromagnetism and Radiation	
Natural Science Elective		1
Technical Electives		
Technical Electives ¹		6
Social Sciences and Humanities		
ECON 101	Intermediate Microeconomics	1
ECON 212	Game Theory	1
Select 2 Humanities courses		2
Ethics Requirement: Select one of the following courses:		1
CIS 125	Technology and Policy	
EAS 203	Engineering Ethics	
Select 2 Social Science or Humanities or Technology in Business & Society courses		2
Free Elective		
Select 3 course units of free electives		3
Total Course Units		40

¹ Approval of the advisor and undergrad chair required. At least 3 course units required from an approved Depth area of choice available on the NETS website, plus 3 additional courses from any Depth Area and/or CIS, ESE, CMPE, OIDD, MATH, STAT, ECON.

The degree and major requirements displayed are intended as a guide for students entering in the Fall of 2018 and later. Students should consult with their academic program regarding final certifications and requirements for graduation.