

Systems Science Engineering (SSE)

MINIMUM 40CU Total

Course Planning Guide (1. Entered Fall 2006 or later; 2. Entered Fall 2005 and taken pilot ESE 112/113, date 25October06)

1. MATH (6 CU)

- MATH 104
- MATH 114
- MATH 240
- ESE 301
- ESE 302

Choose 1: MATH 241 or MATH 412

2. NATURAL SCIENCE (4.5 CU)

- PHYS 150
- PHYS 151

Choose 1: CHEM 101 or BIOL 101 or BIOL 121

CHEM 053 (only if CHEM 101 is taken)

NOTES:

1. All SSE Freshman are required to take ESE 112 and 113. Since ESE 112 and 113 may only be taken in Freshman year, students who transfer into SSE without these courses must replace them as follows:

(i) CSE 110 and

(ii) ESE 116 and

(iii) an SEAS 100 level course taken in the Freshman year or an engineering course that is not used to satisfy requirements elsewhere.

3. ENGINEERING (MINIMUM 15.5 CU)

- ESE 112¹ ESE 113¹
- or
- CSE 110¹⁽ⁱ⁾
- ESE 116¹⁽ⁱⁱ⁾ _____¹⁽ⁱⁱⁱ⁾

ESE 210

ESE 303

ESE 304

ESE 350

ESE 406

ESE 400²

ESE 444

ESE 490

ESE 491

Choose 1 course³: ESE 200/201, 224, 325

ENGINEERING ELECTIVES

(Choose 2 courses)

_____³

_____⁴

If ESE 112 and 113 are not taken (Choose 1 course)

_____³

4. APPLICATION FOCUS (4 CU)

APPLICATION FOCUS⁵: (see the back page for more information.)
State Application area _____

_____⁴

_____⁶

NOTES (cont'd.)

2. M&T and dual degree (with Wharton) students are encouraged to substitute for ESE 400 another ESE course at 300 level or higher in consultation with their advisor.

3. Must be ENG course at 200 level or higher.

4. Must be ENG course at 300 level or higher.

5. A cohesive selection to prepare for work in stated focus area.

6. Must be ENG course.

7. EAS 303 is to be taken in the Sophomore or Junior year. M&T and other dual degree students, who are required to take an ethics course for their second major, may petition to use this ethics course in place of EAS 303.

5. SSH (7 CU)

EAS 303⁷

SS _____

SS _____

H _____

H _____

SS, H or TBS _____

SS, H, or TBS⁸ _____

Depth (from SSH)

Writing Reqt (from SSH)

6. FREE ELEC (3 CU)

8. TBS Courses:

<http://www.seas.upenn.edu/ugrad/TBS.html>

semester planning

TERM	MATH & NAT SCI	ENGINEERING	APPLICATION FOCUS	SSH & FREE ELEC
Fall, Yr _____				
Spr, Yr _____				
Sum, Yr _____				
Fall, Yr _____				
Spr, Yr _____				
Sum, Yr _____				
Fall, Yr _____				
Spr, Yr _____				
Sum, Yr _____				
Fall, Yr _____				
Spr, Yr _____				
Sum, Yr _____				
Fall, Yr _____				
Spr, Yr _____				
Sum, Yr _____				

STUDENT NAME: _____ SSN: _____ EXP GRAD DATE: _____ EMAIL: _____

FACULTY ADVISOR NAME: _____ SIGNATURE: _____ DATE SIGNED: _____

UG CHAIR NAME: _____ SIGNATURE: _____ DATE SIGNED: _____

Suggested Application Focus Elective Courses

Courses with broad applicability to many fields:

<p>CSE 140 (Intro to Cognitive Science) CSE 391 (Introduction to Artificial Intelligence) MSE 220 (Structural & Biomaterials) TCOM 370 (Digital Communication) ESE 250 (Logistics, Manufacturing, and Transportation) ESE 405 (Systems Methodology) ESE 501 (Multi-criteria Decision Making) ESE 502 (Spatial Data Analysis)</p>	<p>ESE 564 (Environmental Impact Assessment) ESE 567 (Risk Analysis and Environment) ESE 608 (Intelligent & Animated Software Agents) MATH 241 (Advanced Calculus) MATH 370 (Algebra) EAS 345, 346 (Engineering Entrepreneurship; does not count as ENG)</p>
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The SSE Application Foci suggested are as follows:

1. Courses designated by # directly address systems in the covered Application Focus.
2. Courses designated by * count as engineering in the covered Application Focus category.
3. Students in any application focus may petition to count up to one course with suitable analytic or engineering content as engineering in the Application Focus column.

<p>Environmental Systems: ESE 360#, 502, 564#, 567# BIOL 101, 121 ENVS 200, 301#, 400, 404, 405, 502, 575, 608, 609, 612, 625, 627, 628, 630 BPUP 204, 206, 261 MEAM 203, 302 CBE 230, 231, 351, 451 CPLN 676, 765, 767 HSSC 360</p>	<p>Transportation Systems: Courses designated by # directly address transportation systems ESE 250#, 452#, 501, 502, 550#, 551#, 552#, 554#, 555#, 564 TRAN 201# BPUB 202, 204 URBS 203, 204, 206, 250, 450 CPLN 625, 651, 655, 723, 728, 752, 790 HSSC 13</p>
<p>Manufacturing Systems: ESE 250#, 350, 522#, 524#, 550#, 603 OPIM 210, 315* MEAM 101, 211 TCOM 370, 500 MGMT 101, 104, 111 MSE 220 ACCT 101, 102</p>	<p>Logistics Systems: ESE 250#, 405, 522#, 524, 550#, 564, 590, 603 OPIM 210, 220#*, 221#*, 261, 315* MEAM 101, 211 TCOM 370, 500 MGMT 101, 104, 205, MSE 266 (does not count as ENG) ACCT 101, 102, 230</p>
<p>Information and Telecommunication Systems: ESE 200/201, 215/205, 216/206, 220, 224, 501, 504, 508, 530#, 564, 608 TCOM 370#, 500#, 501#, 502#, 503, 504#, 510#, 511#, 551#, 670# CSE 120, 121, 240, 260, 320, 330#, CIS 500, 550# OPIM 210#, 311, 314, 315#*, 316#, 319, 667, 668 MATH 412 HSSC 202, 203, 215</p>	<p>Economic and Financial Systems: ESE 250, 405, 501#, 508, 523#, 600# ECON 33, 35, 50, 72, 101, 102, 212#\$, 220#\$, 221#\$, 222#\$, 243#\$\$ FNCE 101, 203#\$, 205#\$, 207#\$, 208, 220, 235#\$\$ INSR 251, 252#\$, 253#\$\$ OPIM 653#\$\$ ACCT 101, 102, 203 BPUB 204, 206, 288 TCOM 370, 500 Students in this application focus may petition to count up to one course designated by \$ as engineering the Application Focus column.</p>
<p>Service Systems: ESE 522, 524 MGMT 101, 104 OPIM 210, 315*</p>	<p>Computer Systems: CSE 120#, 121#, 240#, 260, 261, 350#, 371#, 391 ESE 200/201#, 220#, 508 OPIM 210, 311, 315*, 316, 319, 321, 325 TCOM 370, 500</p>
<p>Military Defense Systems ESE 200/201, 215/205, 216/206, 220, 224, 250, 405, 501, 523, 530#, 608 NSCI 201#, 401# TCOM 370#, 500#, 511# OPIM 210, 315#* COMM 640 CSE 120, 121, 240, 260, 320, 330, 334, 391 CIS 500, 520, 550 HSSC 212</p>	<p>Health Care Systems ESE 405, 608 HCMG 101#, 202#, 203#, 204#, 211#, 212# HSSC 125, 206, 248</p>