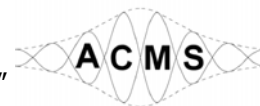


## Industrial Engineering -and- ACMS "Operations Research Option" Double Degree Graduation Requirements University of Washington



### Mathematics.....[33 credits]

MATH 124	[5cr]	Calculus with Analytic Geometry I
MATH 125	[5cr]	Calculus with Analytic Geometry II
MATH 126	[5cr]	Calculus with Analytic Geometry III
MATH 307	[3cr]	Intro to Differential Equations <i>[pr: MATH 125]</i>
MATH 308	[3cr]	Linear Algebra with Applications <i>[pr: MATH 126]</i>
IND E 315	[3cr]	Probability & Statistics for Engr <i>[pr: MATH 307]</i>
AMATH 352	[3cr]	Appl Linear Algebra & Num Analy <i>[pr: MATH 126]</i>
MATH 381	[3cr]	Discrete Mathematical Modeling <i>[pr: MATH 126]</i>
AMATH 383	[3cr]	Intro to Cont Math Modeling <i>[pr: MATH 307]</i>

### Physical Sciences.....[25 credits]

CHEM 142	[5cr]	General Chemistry with lab
CHEM 152	[5cr]	General Chemistry with lab <i>[pr: CHEM 142]</i>
PHYS 121	[5cr]	Mechanics with lab <i>[pr: MATH 124]</i>
PHYS 122	[5cr]	Electro/ Oscillatory with lab <i>[pr: MATH 125]</i>
PHYS 123	[5cr]	Waves with lab <i>[pr: MATH 126]</i>

### Written and Oral Communications.....[27 credits\*]

ENGL COMP	[5cr]	University English Composition requirement
TC 231	[3cr]	Intro to Technical Writing <i>[pr: ENGL COMP]</i>
TC 333	[4cr]	Adv Tech Writing/Oral Present <i>[pr: TC 231]</i>
Foreign Lang	[15cr*]	<i>See Art/Sciences guidelines for meeting req.</i>

\*Foreign Lang req. can be met in less than 15cr, but student must be sure that total credits for double degree still equals at least 225 cr.

### Visual, Literary & Performing Arts / Individuals & Society / Natural World [VLPA/I&S/NW].....[75 credits]

75 credits are required by Arts & Sciences, of which at least 20 credits

must be completed in each of the following areas:

- Visual, Literary, and Performing Arts (VLPA)
- Individuals and Society (I&S)
- The Natural World\* (NW)

\*Note that Industrial Engineering required courses already satisfy all credits of Natural World.

**Beyond the IE requirements, 45 additional VLPA and I&S credits must be completed.**

Questions regarding this requirement should be addressed to a departmental advisor.

### General Engineering/Computing Courses.....[33 credits]

CSE142	[4cr]	Computer Program for Engrs I <i>[pr: Pre-Calc]</i>
❖CSE 143	[5cr]	Computer Program for Engrs II <i>[pr: CSE 142]</i>
MSE 170	[4cr]	Fund of Material Science <i>[pr: CHEM 152]</i>
AA 210	[4cr]	Engineering Statics <i>[pr: MATH 126, PHYS 121]</i>
EE 215	[4cr]	Fund of EE <i>[pr: PHYS 122, MATH 126]</i>
CEE 220	[4cr]	Intro to Mechanics of Material <i>[pr: AA 210]</i>
ME 230	[4cr]	Kinematics & Dynamics <i>[pr: AA 210]</i>
IND E 250	[4cr]	Fund of Engineering Economy

### Industrial Engineering Core Courses.....[24 credits]

AU IND E 410	[4cr]	Appl of Linear Program <i>[pr: MATH 308, CSE 142]</i>
WI IND E 411	[4cr]	Nonlin & Stoch Models <i>[pr: IND E 315 &amp; 310]</i>
WI IND E 316	[4cr]	Design of Experiments <i>[pr: IND E 315]</i>
AU IND E 337	[4cr]	Intro to Manufacturing
WI IND E 494	[4cr]	Design/Manuf Frm <i>[pr: TC 333, INDE 337]</i>
SP IND E 495	[4cr]	IE Senior Design <i>[pr: IND E 351 &amp; 494]</i>

### ACMS Operations Research Core Courses.....[15 credits]

MATH 310	[3cr]	Mathematical Reasoning
❖ MATH 394	[3cr]	Probability I <i>[pr: MATH 126]</i>
❖ MATH 395	[3cr]	Probability II <i>[pr: MATH 394]</i>
<i>At least 6 credits from the following:</i>		
❖ MATH 407	[3cr]	Linear Optimization <i>[pr: MATH 308]</i>
❖ MATH 408	[3cr]	Nonlinear Optimization
❖ MATH 409	[3cr]	Discrete Optimization

### Industrial Engr. Technical Electives.....[20 add'l credits]

❖ 17 cr. of IE Tech. Electives are earned from completing ACMS Operations Research Core Courses, and CSE 143.  
Complete **AT LEAST** one course from **EACH** of the following 4 categories:

A. Operations Research:

IND E 412	[4cr]	Integer and Dynamic Programming <i>[pr: IND E 411]</i>
IND E 424	[4cr]	Simulation <i>[pr: IND E 337 &amp; 411; 411 may be taken concurrently]</i>

B. Statistics:

IND E 321	[4cr]	Statistical Quality Control <i>[pr: IND E 315]</i>
IND E 426	[4cr]	Reliability Engineering & System Safety <i>[pr: IND E 315]</i>

C. Production/Operations:

IND E 430	[4cr]	Manufacturing Scheduling & Inventory <i>[pr: IND E 337 &amp; 411, both of which may be taken concurrently]</i>
IND E 439	[4cr]	Plant Layout & Material Handling <i>[pr: IND E 410; which may be taken concurrently]</i>

D. Design:

IND E 351	[4cr]	Human Factors
IND E 455	[4cr]	User Interface Design

### Free Electives...[as required to reach 225 total credits]

### Total credits required for double degree...minimum 225\*

\*The total number of credits a student earns will vary in relation to Foreign Language, ACMS Operations Research Core Courses, and Industrial Engineering Technical Elective requirements.

❖ *Counts as Industrial Engineering Technical Elective*