

University of San Diego Shiley-Marcos School of Engineering  
Industrial & Systems Engineering Degree Checklist (2020/21 catalog)

Complete	Core Curriculum	Course that Satisfies Requirement	Units
	First Year Writing (CFYW)	FYW 150	3
	Mathematical Reasoning (CMRP)	MATH 150	
	Second Language Competency		3 to 9
	Lower-Division Theological and Religious Inquiry (FTRI)		3
	Upper-Division Theological and Religious Inquiry (FTRI)		3
	Philosophical Inquiry (FPHI)		3
	Ethical Inquiry (FETI)	PHIL 332, 338, 342, or 345	3
	Scientific and Technological Inquiry (ESTI)	ENGR 101	
	Historical Inquiry (EHSI)		3
	Social and Behavioral Inquiry (ESBI)		3
	Literary Inquiry (ELTI)		3
	Artistic Inquiry (EARI)		3
	Diversity, Inclusion, Social Justice (FDD1)	ENGR 103	
	Diversity, Inclusion, Social Justice (FDD2 or FDG2)		
	Advanced Writing (CADW)	ISYE 305	
	Oral Communication (CORL)	ISYE 305	
	Quantitative Reasoning (CQUR)	ISYE 330	
	First Year Integration (CINL)	LLC course	
	Advanced Integration (CINT)	ISYE 492	
	<b>Math/Science Courses</b>	<b>Prerequisites/(Corequisites)</b>	
<b>**Students must complete a minimum of 34 units of required Math, Science, and Engineering Core to take ISYE 220, ISYE 310, ISYE 340, ISYE 305.</b>	CHEM 151/151L - General Chemistry +lab		4
	MATH 150 - Calculus I	by placement test	4
	MATH 151 - Calculus II	MATH 150 [C- or better]	4
	MATH 310 - Applied Math for Science and Engineering I	MATH 151 [C- or better]	3
	MATH Elective (MATH 250, MATH 262 or other approved by Chair)	MATH 151 [C- or better]	3
	PHYS 270/270L - Mechanics +lab	MATH 150 [C- or better]	4
	PHYS 271/271L - Electricity & Magnetism +lab	PHYS 270/L [C- or better], MATH 151[C- or better]	4
	<b>Engineering Core Courses</b>	<b>Prerequisites/(Corequisites)</b>	<b>26</b>
	ENGR 101 - Intro to Engineering	(MATH 150)	3
	ENGR 102 - Electromechanical System Design	ENGR 101, ENGR 121/COMP 110, MATH 150	3
	ENGR 103 - User-Centered Collaborative Design	ENGR 101, MATH 150	3
	COMP 110 or ENGR 121- Computational Problem Solving	(MATH 150)	3.5
	MENG 311 or ENGR 311- Materials Science	MATH 151, CHEM 151/151L	3
	MENG 210 - Statics	MATH 150, PHYS 270	3
	ENGR Elective (MENG 260 or ELEC 201)	MENG260:MATH151,PHYS 270;ELEC201:MATH310,PHYS271;GENG 288;(MATH 310),PHYS 271	3 or 4
	<b>ISyE Required Courses</b>	<b>Prerequisites/(Corequisites)</b>	<b>21</b>
	ISyE 220 - Engineering Economics	** (ISYE 330)	3
	ISyE 305 - Professional Practice	** FYW 150, (ISYE 310)	3
	ISyE 310 - Work Analysis w/ Lab	** (ISyE 330)[C- or better]	4
	ISyE 320 - Intro to Systems Engineering	ISYE 330[C- or better], ISyE 305, ISYE 220	3
	ISyE 330 - Engineering Probability/Statistics	MATH 151	3
	ISyE 335 -6 sigma - Process Improvement Methods	ISYE 310, ISYE 330 [C- or better]	4
	ISyE 340 - Operations Research I	** MATH 310 or 320	3
	ISyE 350 - Manufacturing Processes w/ Lab	ENGR 311 or MENG 311, and MENG 210	4
	ISyE 420 - Simulation of Production and Service Systems w/ Lab	ENGR 121 or COMP 110, and ISYE 440	4
	ISyE 430 - Design/Analysis of Experiments	ISYE 335	3
	ISyE 440 - Operations Research II	ISYE 340, ISyE 330 [C- or better]	3
	ISyE 460 - Operations & Supply Chain Mgmt.	ISYE 220, ISYE 340	3
	ISyE 470 - Facilities Planning	ISYE 340, ISyE 310	3
	ISyE 492 - Senior Design	ISYE 220, 310, 320, 335, 350, 420, 470	3
<b>Complete</b>	<b>ISyE Elective Courses</b>		<b>46</b>
	ISYE Program Elective I*		3
	ISYE Program Elective II*		3
	ISYE Program Elective III*		3
	ISYE Program Elective IV*		3
	ISYE Program Elective V*		3
	Free Elective		3
	Free Elective		3
	Free Elective		3
	Free Elective		3
<b>Total ISyE Degree Units</b>			<b>147</b>

\* Students have the option to obtain a Sustainability Concentration as part of ISyE BS/BA degree by completing 12 units of sustainability-related classes (can also be counted as ISyE program electives). Refer to USD 2019-20 Undergraduate Catalog (pages 353-354 for more details).

\* Students must select 15 units of ISyE program electives. Nine units of these electives must be upper division within the school of engineering. Three of the remaining six units must be upper division. The currently approved engineering upper division electives include ISYE 380, ISYE 385, ISYE 410, ISYE 450, ISYE 480, NAVS 301, and ISYE 494 special topics courses. Consult with the ISyE chair for other approved electives.

First Year			
Fall		Spring	
ENGR 101: Introduction to Engineering	3	ENGR 102: Electromechanical System Design	3
MATH 150: Calculus I	4	PHYS 270/270L: Mechanics +lab	4
COMP 110: Computational Problem Solving	3.5	MATH 151: Calculus II	4
Core Curriculum	3	CHEM 151/L: Chem +lab	4
Core Curriculum	3	Core Curriculum	3
Total Hours		16.5	Total Hours 18
Second Year			
Fall		Spring	
ENGR 103: User-Centered Design	3	ISYE 330: Engineering Prob./Statistics	3
PHYS 271/L: Intro to Electricity & Magnet. +lab	4	MATH Elective	3
MATH 310: Applied Math for Engineers	3	MENG 210: Statics	3
Core Curriculum	3	ENGR Lower Division Elective	3
Core Curriculum	3	Core Curriculum	3
Total Hours		16	Total Hours 15
Third Year			
Fall		Spring	
ISYE 220: Engineering Economics	3	ISYE 320: Intro to Systems Engineering	3
ISYE 310: Work Analysis & Design	4	ISYE 335: 6sigma -Process Improvement Methods	4
ISYE 340: Operations Research I	3	ISYE 350/L: Manufacturing Processes w/Lab	4
ISYE 305: Professional Practice	3	ISYE 440: Operations Research II	3
MENG/ENGR 311: Materials Science	3	ISYE Program Elective I	3
Total Hours		16	Total Hours 17
Fourth Year			
Fall		Spring	
ISYE 420: Simulation	4	ISYE 492: Senior Design Project	3
ISYE 430: Design of Experiments	3	ISYE 460: Operations & Supply Chain Mgmt.	3
ISYE 470: Facilities Planning	3	ISYE Program Elective III	3
PHIL 332/338/342/345: Ethics (Core Curr.)	3	Core Curriculum	3
ISYE Program Elective II	3	Core Curriculum	3
Total Hours		16	Total Hours 15
Final Semester			
Fall		Spring	
Core Curriculum	3	ISYE Program Elective Courses	
ISYE Program Elective IV	3	ISYE 380: Sustainability and Engineering	3
ISYE Program Elective V	3	ISYE 385: Technology, Environment & Society	3
Free Elective	3	ISYE 410: Human Factors (Spring)	3
Free Elective	3	ISYE 450: Manufacturing Systems (Fall)	3
Free Elective	3	ISYE 494: Data Science / Analytics	3
Free Elective	3	ISYE 494: ISYE Special Topics Course	3
Total Hours		18	<u>Sustainability Concentration (12 units total)</u>
		ISYE 380: Sustainability and Engineering	3