

**UNIVERSITY OF MICHIGAN-DEARBORN**  
**COLLEGE OF ENGINEERING AND COMPUTER SCIENCE**

**PRE-REQUISITE COURSES and CONCURRENT PRE-REQUISITE COURSES**  
*for Undergraduate CECS Courses*

CECS Student Records and Advising Office -- Revised April 8, 2014 (printed April 8, 2014)

**COMPUTER AND INFORMATION SCIENCE**

<b>HRS</b>	<b>COURSE</b>	<b>PRE-REQ COURSES</b>	<b>At Least Concurrently</b>
3	CIS 125	-----	-----
4	CIS 150 = IMSE/CCM 150	-----	MATH 115
4	CIS 200 = IMSE 200	CIS 150 (or IMSE/CCM 150) and MATH 115	CIS 275
3	CIS 205 [Old 105] = IMSE 255 (No credit for CIS majors or minors)	MATH 105 or ENGR 100	-----
4	CIS 275	MATH 115	CIS 200
3	CIS 285	CIS 200 and CIS 275	-----
2	CIS 290	CIS 200 or equivalent	-----
3	CIS 294	CIS 200 or equivalent	-----
3	CIS 296	CIS 200 or equivalent	-----
3	CIS 297	CIS 200	-----
4	CIS 306	CIS 275	-----
4	CIS 310	MATH 115, CIS 200, CIS 275	-----
4	CIS 350 = IMSE 350	MATH 115, CIS 200, CIS 275	-----
4	CIS 3501	MATH 115, CIS 200, CIS 275	CIS 285
4	CIS 375	COMP 270 [or equivalent] and <i>either</i> a) CIS/IMSE 350 or CIS 3501 <i>or</i> b) both ECE 370 and ECE/MATH 276	-----
4	CIS 376	CIS 375	-----

	Course	Pre-requisite Courses	At least Concurrently
4	CIS 381 = IMSE 381	MATH 115, knowledge of programming, and Junior standing	-----
4	CIS 387 XL: ECE 387	CIS 200 or ECE 270	CIS 310, or ECE 370, or ECE 372
3	CIS 390	Either (CIS 350, or CIS 3501, or IMSE 350) or (both ECE 370 and ECE/MATH 276)	-----
1-3	CIS 391	Either (CIS 350, or CIS 3501, or IMSE 350) or (both ECE 370 and ECE/MATH 276)	-----
4	CIS 400 = IMSE 400	Either (CIS 350, or CIS 3501, or IMSE 350) or (both ECE 370 and ECE/MATH 276)	-----
3	CIS 405	CIS 350	-----
4	CIS 421	<i>either</i> (CIS 350, or CIS 3501, or IMSE 351) <i>or</i> (both ECE 370 and ECE/MATH 276)	-----
3	CIS 423	CIS 421 or equivalent	-----
4	CIS 425	CIS 375	CIS 421
4	CIS 427 XL: IMSE 453	IMSE 317 and <i>either</i> a) CIS 350 or CIS 3501 or IMSE 351 <i>or</i> b) both ECE 370 and ECE/MATH 276	-----
3	CIS 428	CIS 427	-----
3	CIS 435	-----	CIS 375 or CIS 553
3	CIS 437	CIS 427	-----
3	CIS 447	-----	CIS 450
4	CIS 450 = IMSE 450, = ECE 478	IMSE 317 and <i>either</i> a) both CIS 310 and (CIS 350 or CIS 3501 or IMSE 350) <i>or</i> b) ECE 370 and ECE/MATH 276	-----
3	CIS 451 = IMSE/CCM 451	MATH 217 or 227, and <i>either</i> a) CIS 350 or CIS 3501 or IMSE 350 <i>or</i> b) both ECE 370 and ECE/MATH 276	-----

	Course	Pre-requisite Courses	At least Concurrently
3	CIS 452	CIS 451	-----
3	CIS 456	CIS 350	-----
4	CIS 467 XList ECE 467	CIS 387 or ECE 387	CIS 427 or ECE 471
3	CIS 474 = IMSE 457 = ECE 474	Either (CIS 350, or CIS 3501, or IMSE 350) <i>or</i> (both ECE 370 and ECE/MATH 276)	-----
3	CIS 475	CIS 376	-----
3	CIS 476	CIS 375	-----
3	CIS 479 = ECE 479	Either (CIS 350, or CIS 3501, or IMSE 350) <i>or</i> (both ECE 370 and ECE/MATH 276)	-----
3	CIS 487	_____	CIS 375
3	CIS 488	CIS 487	_____
3	CIS 490	Either (CIS 350, or CIS 3501, or IMSE 350) <i>or</i> (both ECE 370 and ECE/MATH 276) [CIS 490 are special topics courses; refer student to department]	-----
1-4	CIS 491	Senior standing and permission	-----
1-4	CIS 492	Senior standing and permission	-----
1-4	CIS 493	Permission	-----
1-4	CIS 494	Permission	-----
4	CIS 495	CIS 375, Senior standing	-----
2	CIS 4951	CIS 375	-----
2	CIS 4952	CIS 4951	-----
4	CIS 496	CIS 376 and CIS 476	-----
2	CIS 4961	CIS 376	-----
2	CIS 4962	CIS 4961	CIS 476

Course	Pre-requisite Courses	At least Concurrently
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**BIOENGINEERING**

4	BENG 325	ENGR 216, ME 230, and either ME 265 or ME 345	-----
4	BENG 351 XL ECE 351	MATH 216, BIO 103, BIO 140, ECE 305, and either ENGR 216 or ECE 270	-----
3	BENG 364 XL IMSE 317	MATH 116	-----
4	BENG 370	Either ME 265 or ME 345, and MATH 216	-----
4	BENG 375	BIOL 140 and ENGR 250	-----
3	BENG 425	Either BENG 325 or ME 375	-----
3	BENG 451	Either BENG 325 or ME 325, and Either BENG 375 or BENG 381, Or permission of instructor	-----
4	BENG 460	BENG 375, and either ME 325 or BENG 325, and either ME 349 or BENG 351	-----
4	BENG 4671	BENG 325, BENG 351, BENG 370 BENG 375, and BENG 364	-----
3	BENG 470	BENG 370	-----
3	BENG 475	BENG 370 and BENG 375	-----
3	BENG 481	Either ME 325 or BENG 235 and Either BENG 370 or ME 345	-----

**ENGINEERING CORE**

2	ENGR 100	-----	-----
2	ENGR 126	-----	-----
2	ENGR 216	ENGR 100	ENGR 126 MATH 216 MATH 217 or 227

	Course	Pre-requisite Courses	At least Concurrently
3	ENGR 250	CHEM 144 [or equivalent] (not open to seniors in Engr)	MATH 115 and CHEM 146 [or equivalent]
4	ENGR 350	CHEM 144, PHYS 151, junior standing	
3	ENGR 400	Senior standing	

### ELECTRICAL AND COMPUTER ENGINEERING

4	ECE 210	MATH 116	PHYS 151
4	ECE 270	ENGR 100	-----
4	ECE 273	ENGR 100	-----
4	ECE 276 = Math 276	MATH 116	-----
4	ECE 300 ECE Students Only	ECE 210 and MATH 216	MATH 217 or 227
4	ECE 305 [Not for ECE majors]	PHYSICS 151 and (MATH 205 or 215)	MATH 217 or 227
4	ECE 311	ECE 210 and CHEM 144 [or equivalent]	COMP 270 [or equivalent]
3	ECE 314	ECE 311 and ECE 317	-----
3	ECE 316	ECE 210 and ECE 273	COMP 270 [or equivalent]
4	ECE 317 [No credit for ECE 317 or 3801 if 3171 is taken]	MATH 216	ECE 311 MATH 217 or MATH 227
4	ECE 3171 [No credit for ECE 317 or 3801 if 3171 is taken]	MATH 216	ECE 311 MATH 217 or MATH 227
4	ECE 319	ECE 311	-----
3	ECE 321	-----	ECE 311
4	ECE 329	MATH 105 & junior or senior standing or permission of instructor	-----
4	ECE 347	ME 265, MATH 216, MATH 217	-----
4	ECE 3641	ECE 3731	-----
4	ECE 365	ECE 305 or ME 345	-----
4	ECE 370	ECE 270	ECE 273
3	ECE 371	ECE 274 or ECE 370	-----
4	ECE 372	COMP 270 [or equivalent] and <i>either</i> both ECE 270 and ECE 273 <i>or</i> CIS 310 alone	-----

	Course	Pre-requisite Courses	At least Concurrently
4	ECE 3731	<i>Either</i> ECE 270 and ECE 273, <i>or</i> CIS 310 alone	-----
4	ECE 375	ECE 270 and ECE 273	ECE/MATH 276, ECE 372
3	ECE 385	CHEM 144 [or equivalent]	ECE 311
4	ECE 387 XList CIS 387	ECE 270 or CIS 200	ECE 370, or ECE 372, or CIS 310
3	ECE 3801 [not for credit for EE majors] [No credit for ECE 317 or 3801 if 3171 is taken]	ECE 210 and MATH 216	-----
1-3	ECE 390	Permission of instructor	-----
3	ECE 411	ECE 301 and ECE 311	-----
3	ECE 413	ECE 273 and ECE 311	-----
4	ECE 414	-----	ECE 311 and either ECE 3171 or 317
4	ECE 415	ECE 385 and ECE 3171 (or 317)	-----
3	ECE 420	ECE 319	-----
3	ECE 428	ECE 270	-----
4	ECE 431	ECE 311 and ECE 373 [or 372]	ECE 493
6	ECE 432	ECE 311 and ECE 373 [or 372]	ECE 493
4	ECE 433	ECE 311 and ECE 370	-----
4	ECE 434	ECE 370	-----
4	ECE 435	ECE 372	-----
4	ECE 436	ECE 311	-----
4	ECE 4361	ECE 311	-----
4	ECE 438	ECE 311 or ECE 370	-----
3	ECE 443	ECE 3171 or 317	-----
4	ECE 4431	ECE 3171 or 317	-----
4	ECE 4432	ECE 3171 or 317	-----

	Course	Pre-requisite Courses	At least Concurrently
4	ECE 446 (Grad Credit for Non-ECE only)	-----	ECE 311 and ECE 3171 or 317
4	ECE 450	IMSE 317 and either ECE 3171 or 317	-----
3	ECE 451	ECE 311	-----
3	ECE 452	ECE 300 (or 301)	-----
3	ECE 454	ECE 450 or ECE 471	-----
3	ECE 456	ECE 311 and ECE 321	-----
4	ECE 460	ECE 3171 or 317	-----
4	ECE 464	ME 265 and either ECE 300 [or 301] or ECE 365 Knowledge of computer programming	-----
4	ECE 4641	ECE 3641	-----
4	ECE 465	ECE 460	-----
4	ECE 467 XList CIS 467	ECE 387 or CIS 387	ECE 471 or CIS 427
4	ECE 470	ECE 373 (or 372)	-----
4	ECE 471	ECE 372 and IMSE 317	-----
4	ECE 473	ECE 372	-----
3	ECE 474 = CIS 474/IMSE 457	ECE 370	-----
4	ECE 475	ECE 375	-----
3	ECE 476	ECE 375 or equiv.	-----
4	ECE 478 = IMSE/CIS 450	ECE 370, IMSE 317, or equivs.	-----
3	ECE 479 = CIS 479	ECE 370	-----

	Course	Pre-requisite Courses	At least Concurrently
4	ECE 480	ECE 3171 or 317 and (MATH 217 or 227)	-----
4	ECE 488	ECE 270 and senior standing	-----
3	ECE 4881	ECE 270 or equivalent	-----
	[No credit for both 488 and 4881]		
1-3	ECE 490 Selected Topics	Permission	-----
1-4	ECE 491 (may be repeated)	Permission, senior standing	-----
1-4	ECE 492 (may be repeated)	Permission, senior standing	-----
2	ECE 493	Permission, senior standing	-----
3	ECE 4951	ECE 311 and ECE 372	-----
6	ECE 498	ECE 311 or ECE 316, and ECE 373	-----
2	ECE 4981	ECE 372, either ECE 3171 or 317, and senior standing, and one course from ECE 414, 415, 450, 460, 480, 4951	-----
2	ECE 4982	ECE 372, ECE 375, senior standing, and one course from ECE 471, 473, 475, 478	-----
2	ECE 4983	ECE 4981 and senior standing	-----
2	ECE 4984	ECE 4982 and senior standing	-----
3	ECE 4985	COMP 270 [or equivalent], ECE 3171 (or 317), ECE 372, senior standing, and one from: ECE 414, 415, 450, 460, 480, 4951	-----
3	ECE 4986	COMP 270 [or equivalent], ECE 3171 (or 317), ECE 372, ECE 375, senior standing and one from: ECE 471, 473, 475, or 478	-----



Course	Pre-requisite Courses	At least Concurrently
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**INDUSTRIAL & MANUFACTURING SYSTEMS ENGINEERING**

4	IMSE 150 = CIS/CCM150	-----	MATH 115
4	IMSE 200 = CIS 200	IMSE/CIS/CCM 150 MATH 115	CIS 275
3	IMSE 255 = CIS 205	ENGR 100	-----
4	IMSE 3005	MATH 217 or MATH 227	IMSE 317
3	IMSE 317	MATH 116	-----
3	IMSE 334	Junior Standing	-----
4	IMSE 350 = CIS 350	IMSE/CIS 200 and IMSE/CIS 275 MATH 115	-----
3	IMSE 351 = CIS 351	IMSE 255 or IMSE/CIS 150	-----
3	IMSE 352 = CIS 352	IMSE/CIS 200 CIS 175	-----
3	IMSE 356	IMSE 150 or IMSE 255	-----
4	IMSE 381 = CIS 381	MATH 115, Junior Standing, and knowledge of programming	-----
4	IMSE 382 Cross-listed with ME 381	ENGR 250 and either ME 265 or ME 260	-----
3	IMSE 390	Permission	-----
3	IMSE 391	Permission	-----
1-3	IMSE 398	Permission	-----
4	IMSE 400 = CIS 400	CIS 350	-----
3	IMSE 421	Junior Standing & Knowledge of Prob & Stats	-----
3	IMSE 437	Junior Standing	-----
4	IMSE 4425	IMSE 317	-----

	Course	Pre-requisite Courses	At least Concurrently
4	IMSE 450 = CIS 450 = ECE 478	IMSE 317 and <i>either</i> a) CIS/IMSE 350 or CIS 3501 <i>or</i> b) both ECE 370 and ECE/MATH 276	-----
3	IMSE 451 = CIS 451	MATH 205 or MATH 215, MATH 217 or MATH 227, CIS 350 or IMSE 351	-----
4	IMSE 453 XL: CIS 427	IMSE 317 and <i>either</i> a) CIS 350 or CIS 3501 or IMSE 351 <i>or</i> b) both ECE 370 and ECE/MATH 276	-----
4	IMSE 4545	IMSE 255 or CIS 205	-----
4	IMSE 456	Either a) CIS 350, or CIS 350A, or IMSE 351 <i>or</i> b) both ECE 370 and ECE/MATH 276	-----
3	IMSE 457 = ECE 474, = CIS 474	IMSE/CIS 350	-----
4	IMSE 4585	IMSE 317	IMSE 3005
4	IMSE 4675	IMSE 317	-----
4	IMSE 4745	IMSE 317, IMSE 3005 or IMSE 300, and COMP 270 [or equivalent]	IMSE 421
4	IMSE 4795	IMSE 317 and COMP 270 [or equivalent]	-----
3	IMSE 481	IMSE 382 or ME 381, IMSE 467, COMP 270 [or equivalent]	-----
4	IMSE 4815	IMSE 382, COMP 270 [or equivalent]	IMSE 4675
4	IMSE 4825	ME 265	-----
4	IMSE 4835	IMSE 382	-----
3	IMSE 484	IMSE 382 or ME 381	-----
3	IMSE 486	IMSE 382	-----
3	IMSE 488	IMSE 382	-----

	Course	Pre-requisite Courses	At least Concurrently
3	IMSE 489	Senior Standing	-----
3	IMSE 490	Permission	-----
1-3	IMSE 491	Permission	-----
2	IMSE 4951	-----	ENGR 400
2	IMSE 4952	IMSE 4951	-----
1-3	IMSE 498	Permission of instructor	-----

**MECHANICAL ENGINEERING**

4	ME 230	MATH 116, PHYS 150, CHEM 144 [or equivalent]	-----
4	ME 260	PHYSICS 150	ENGR 250 or ECE 385, and either MATH 205 or 215
4	ME 265 (Non-ME Students)	PHYSICS 150	MATH 205 or 215
4	ME 325	ME 230, ME 260, and either ENGR 216 or ME 215	-----
4	ME 345	MATH 216, ME 260	ENGR 216 or ME 215
3	ME 349	ECE 305 and either ME 345 or ME 265	-----
4	ME 3601	ME 260 and either ENGR 216 or ME 215	-----
3	ME 364	ENGR 216 and ME 260 and either MATH 217 or 227	-----
3	ME 371	ME 320	ECE 305
4	ME 375	ME 325 or ME 320	ECE 305
3	ME 379	ME 325, or ME 320, or ME 3251, or ME 3252; ME 349 or ME 348; COMP 270 [or equivalent]	ME 375 or ME 371

	Course	Pre-requisite Courses	At least Concurrently
4	ME 381 Cross-listed with IMSE 382	ENGR 250 and either ME 260 or ME 265	-----
3	ME 410	ME 345 and either ME 3601 or ME 360	ME 375
4	ME 4191	ME 345 and either ME 3601 or ME 360	-----
4	ME 4201	ME 325 or ME 320	-----
4	ME 4202 = 4202 is equivalent to 4201, that is, students cannot receive credit for both if both are taken.	ME 375	-----
3	ME 4301	ME 325	ME 375
4	ME 4361	ME 325 or ME 320, or ME 3251, or ME 3252	ME 375 or ME 371
4	ME 442 XL: ECE 365	ECE 305, ME 345	-----
4	ME 4461	ME 345	ME 349 or ME 348
4	ME 4471	ME 325 and senior standing	ME 375
4	ME 452	ME 325	ME 375
3	ME 4521	ME 375	
3	ME 460	ME 360 or ME 3601, ME 381	-----
3	ME 467	ME 330, ME 345, ME 360, ME 371	-----
4	ME 4671	ME 345, ME 3601 or ME 360, ME 375 or ME 371	ME 379 or ME 378
1-4	ME 469	ME 4671, permission of ME chair, and permission of instructor	
4	ME 472 XL: ECE 4603	ME 265 (Non-ME Major)	ME 442 or ECE 460
3	ME 481	ME 381	-----
3	ME 483	ME 3601 or ME 360	-----
3	ME 484	ME 381 or IMSE 382	-----

	Course	Pre-requisite Courses	At least Concurrently
1-3	ME 490	Approval of instructor & Permission of Dept.	
1-3	ME 491	Approval of instructor & Permission of Dept.	
1-3	ME 492	Approval of instructor & Permission of Dept.	
3	ME 493	ME 325 and ECE 305	-----
3	ME 496	ME 325 or both ME 320 and ME 330	-----
4	ME 4981	ME 345 and either ME 3601 or ME 360	-----