

Current as of: 2018

**DEPARTMENT OF INDUSTRIAL AND OPERATIONS ENGINEERING  
MASTER'S COUNSELING INFORMATION**

**1. MS/MSE Degree Requirements**

- **At least 30 credit hours** of University of Michigan graduate courses
  - Courses eligible for graduate credit can be found at the follow Rackham website:  
[https://secure.rackham.umich.edu/academic\\_information/programs](https://secure.rackham.umich.edu/academic_information/programs)  
*Exceptions:* Certain courses on the Rackham list are not eligible for IOE graduate credit. (See discussion of Forbidden Courses below)
  - Of the 30 credit hours, **at least 18 hours** in graduate IOE courses
  - Of the 30 credit hours, **at least 14 credit hours of 500-level-and-above** courses, including at **least 12 credit hours of IOE 500-level-and-above** courses  
*Exceptions:* IOE 590 (Masters Directed Study) may be used for at most 3 credit hours of the required 12 credit hours of IOE courses at the 500 level or above. Other directed study courses, courses graded S/U, and one- and two-credit seminar classes may not be used to satisfy 500 level requirements.
- **No more than 6 credit hours** in directed study or project-based courses
- **At least 1 courses (equal or greater than 3 hours)** outside the IOE Department (cognate course)  
*Exception:* Any course that is cross-listed with the IOE Department may not be counted as a cognate course
- **Overall & IOE cumulative grade point averages** of B or better

**2. Deficiency Removal**

Area	Not for Program Credit (You must receive at grade of "C" or better in order to remove the deficiency)	For Program Credit (Recommended only if student claims prior experience)
Probability	IOE 316 Math 425/STAT 425 EECS 301	Math 525 / Stat 525 EECS 501
Statistics	IOE 366 Stat 400, 412, 426	IOE 466, 570 Stat 500 Biostat 650
Computer Programming	Engin 101 IOE 373 EECS 183	EECS 484 SI 506
Linear Algebra	Math 417, 419	Math 420
English	Courses in ELI	

3. **Forbidden courses:** Currently not approved for graduate Credit as of 2018:

**GRADUATE CREDIT FOR IOE CLASSES**

All IOE courses at the 400-level and above are eligible for IOE graduate credit with the exception of the following courses:

Forbidden in all cases -- IOE: 422, 424, 441, 447, 461, 481, 490, and 499. **These courses are either: 1) specifically designed for IOE undergraduates, or 2) offered as electives for IOE undergraduates and "service" courses to graduate students from other units. The rigor level of these courses is below the level required for an IOE graduate course.**

Forbidden in some cases -- IOE 491: Because 491 is the default course number assigned to "new" IOE courses that will be given permanent course numbers at the 200, 300, and 400-levels, prior approval is required from the IOE Graduate Program Advisor to receive graduate credit for IOE 491. **A list of pre-approved 491 classes will be available in the Graduate Program Office during the registration period for each term.**

Forbidden for Masters students – IOE: 800, 801, 802, 899. These courses may not be counted toward the 30-credit minimum required for the Masters degree.

**GRADUATE CREDIT FOR NON-IOE CLASSES**

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Guiding Principles:

1. Courses in subject areas that are NOT offered by the IOE Department: All courses that are eligible for Rackham credit are eligible for IOE graduate credit. This includes most “400-level-and-above” offered at the University of Michigan. Exceptions are listed below.
2. Courses in subject areas covered by the IOE Department (e.g., probability, statistics, operations management, information systems, etc.): All courses that are eligible for Rackham credit are eligible for IOE graduate credit, provided that the rigor level of the courses meets or exceeds the similar “first level” graduate course offered by the IOE Department. (For example, 400 and 500-level introductory courses in statistics and computing are not eligible for IOE graduate credit since this topic is covered in the IOE undergraduate curriculum.)
3. Transfer Credit: Courses taken at other universities must be acceptable to Rackham for transfer credit. If the course is eligible for Rackham credit, principles #1 and 2 (above) will be used to determine if the course is eligible for IOE credit.

Graduate Credit for Courses at the U of M Business School:

1. 400-level classes: Accounting 471 is approved for IOE graduate credit. All other 400-level courses are not approved for graduate credit. Exceptions require prior written approval by the IOE Graduate Program Advisor. No approvals will be granted after the end of the drop-add period for the term when the course is offered.
2. 500-level and above courses: Courses that are not on the forbidden list may be counted for graduate credit; however, 1-credit seminar classes will not be counted toward the 14 credits at the “500-level and above” requirement.

Forbidden Business School Courses:

MO: 501 (allowed for graduate credit, but may not be counted as 500-level)

TO 501, 502, 503, 511, 512, 513, 551, 552, 561, 563, 566, 567, 568, 569, 572, 573, 601 and 616

Note: A student who takes IOE 440 or TO 605 may receive graduate credit for only 1 of those courses.

Forbidden Classes in Economics, Engineering, Entrepreneurship, Manufacturing, Math, Statistics, Biostatistics, Public Policy, and Information:

ENTR 599 section 019 forbidden for graduate credit (Other sections are allowed for graduate credit, but may NOT be counted as 500-level)

ECON: 404, 405, 500

ENGINEERING: 401, 480, 600 (CPT)

EECS: 402

MATH: 412, 417, 419, 422, 425, 431, 486, 489, 497, 498

MANUFACTURING: 401. (Note: MFG 503 is allowed for graduate credit, but may not be counted as 500-level because it is a project course.)

STAT: All 400-level classes are forbidden with the exception of STAT 406, 430, 466, 470, 480

BIOSTAT: 503, 510, 523, 553, 600, 601, 602, 625

PUBLIC POLICY: 513, 529

INFORMATION: 528, 543                      RACKHAM: 998 (CPT)

HMP 680

3. **Special topic courses** with a regular lecture format taught under IOE 591 are considered regular lecture courses (not

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directed study courses) in verifying requirements.

4. **Drop/Adds:** Faculty advisor approval during first three weeks. After three weeks, instructor, faculty advisor, and graduate program advisor approval required.
5. **Linear Algebra Deficiency:** If student intends to take IOE 510, and has not had any linear algebra, he/she should be reminded of prerequisite: Math 417 or 419 (No graduate credit); or Math 420 (graduate credit).