

Department of Mechanical Science and Engineering

Secondary Field Options in Engineering Mechanics

The seven secondary field options listed below specify required courses and provide a list of approved courses from which the student may choose two. You may alternatively fashion an individualized secondary field option. To do this you will need to meet with Stephanie Ott-Monsivais (1056 Lu MEB) or email mechse-ug-advise@illinois.edu to schedule a meeting to obtain secondary field approval. The only requirements are that the courses be related to mechanics, form a coherent and cohesive group, include at least two engineering courses, and total at least 12 hours of advanced-level* coursework that are distinct from required courses on the Engineering Mechanics flowsheet. Of the required 12 hours, at least 6 hours must be 400-level coursework with a maximum of 6 hours at the 300-level, unless otherwise approved.

<i>Secondary field</i>	<i>Required courses</i>	<i>Approved courses</i>
Biomechanics	MCB 150 —Molecular and cellular basis of life MCB 151 —Molecular and cellular laboratory TAM 461 —Cellular biomechanics	ECE 473/TAM 413 —Fund of engineering acoustics ECE 380/BIOE 380 —Biomedical imaging ME 481 —Whole-body musculoskeletal biomechanics ME 482 —Musculoskeletal tissue mechanics ME 483 —Mechanobiology BIOP 401 —Introduction to biophysics TAM 497 —Independent Study
Computational Mechanics	CS 357 —Numerical methods I ME 471 —Finite element analysis	CS 450 —Introduction to numerical analysis CS 457 —Numerical methods II ME 412** —Numerical thermo-fluid mechanics TAM 497 — Independent Study
Engineering Science and Applied Mathematics	MATH 446 —Applied complex variables or MATH 448 —Complex variables MATH 4xx (excluding MATH 415, MATH 441, and MATH 442)	AE 353 —Aerospace control systems AE 402 —Orbital mechanics CEE 491 —Decision and risk analysis ECE 329 —Introduction to electromagnetic fields ECE 330 – Power circuits and electro-mechanics ECE 473/TAM 413 —Fundamentals of engineering acoustics PHYS 402 —Light TAM 497 — Independent Study
Experimental Mechanics	TAM 456 —Experimental stress analysis ECE 206 —Electric and electronic circuits laboratory	CS 357 —Numerical methods ECE 473/TAM 413 —Fund of engineering acoustics ME 360** —Signal processing PHYS 402 —Light TAM 497 — Independent Study

Continued on next page

Department of Mechanical Science and Engineering

Fluid Mechanics	TAM 435 —Intermediate fluid mechanics ME 410 —Intermediate gas dynamics	AE 412 —Viscous flow and heat transfer CEE 445 —Air quality modeling CEE 451 —Environmental fluid mechanics CEE 453 —Urban hydrology and hydraulics ECE 473/TAM 413 —Fund of engineering acoustics ME 412** —Numerical thermo-fluid mechanics TAM 497 — Independent Study
Mechanics of Materials	TAM 424 —Mechanics of structural metals TAM 428/MSE 456/AE 428 — Mechanics of composites	CEE 310 —Transportation engineering MSE 401 —Thermodynamics of materials MSE 455 —Macromolecular Solids MSE 489 —Materials selection for sustainability NPRE 431 —Materials in nuclear engineering TAM 497 — Independent Study
Solid Mechanics	TAM 424 —Mechanics of structural metals TAM 451 —Intermediate solid mechanics	CEE 360 —Structural engineering CEE 460 —Steel structures I CEE 461 —Reinforced concrete I CS 357 —Numerical methods ECE 473/TAM 413 —Fund of engineering acoustics TAM 497 —Independent Study

*MCB 150/MCB 151 acceptable for Biomechanics Secondary Field

*ECE 206 acceptable for students with Experimental Mechanics Secondary Field

**Engineering Mechanics students will not necessarily have completed the stated prerequisites for these courses. However, EM students normally have sufficient preparation to enroll, with the instructor's permission. Please obtain a MechSE Petition for Pre/Co-Requisite Override form and submit to 1056 Lu MEB before registering for these classes.