

## Physics Dual Major for CEAS Students

Required courses for the physics dual major	Course(s) in CEAS degree programs that will satisfy requirement	Credits	Programs in CEAS that require this course
Physics 209, Physics I (Calculus Treatment)	Physics 209	4	All Engineering Majors
Physics 210, Physics II (Calculus Treatment)	Physics 210	4	All Engineering Majors
Physics 214, Lab Physics I (Calculus Treatment)	Physics 214	1	Biomedical, Electrical, Materials, Mechanical
Physics 215, Lab Physics II (Calculus Treatment)	Physics 215	1	Biomedical, Electrical, Materials, Mechanical
Physics 370, Analytical & Numerical Methods in Physics	Civ Eng 280, CompSci 240, CompSci 250, or MechEng 101	3	All majors require at least one of these
Physics 317, Thermodynamics	MechEng 301	3	Biomedical, Civil, Industrial (tech elec), Materials, Mechanical
Physics 411, Mechanics	Civ Eng 202 <b>and</b> Civ Eng 203 or Civ Eng 201	4	Biomedical, Civil, Industrial, Materials, Mechanical
Physics 309, Modern Physics	None	3	Major dependent-see advisor
Physics 325, Optics (Studio)	Upper level engineering technical elective with consent of Physics Department	4	All Engineering Majors
Physics 420, Electricity and Magnetism I	None	3	Major dependent-see advisor
Physics 422, Electricity and Magnetism II	None	3	Major dependent-see advisor
Physics 441, Introduction to Quantum Mechanics I	None	4	Major dependent-see advisor
Physics 442, Introduction to Quantum Mechanics II	None	3	Major dependent-see advisor
Physics 400 Level Lab (select from 406, 408, 409, 670) Physics 391 with consent of Physics advisors	Independent study research/lab experience with consent of physics department	3	All Engineering Majors

- Math 234 or Electrical Engineering 234 is a co-requisite for Physics 309.
- Math 321, Vector Analysis, must be completed. It serves as a co-requisite to Physics 441 and as a prerequisite for Physics 420 & 422.
- Some of the upper level courses that are required in the physics dual major, but are not required in CEAS programs, can be applied toward technical elective credits in some of the CEAS programs.

**For more information on the physics major requirements, please contact:**

[physics-ugadvisor@uwm.edu](mailto:physics-ugadvisor@uwm.edu)

**For more information on how to blend the physics and CEAS major requirements, please contact:**

CEAS Advising Office, ceas-adv@uwm.edu, 414-229-4667, EMS E386

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