

Physics Distributive Major Concentration in Computational Methods

List of Required Courses

Physics: 2110, 2120, 3005, 3010, 3030, 3550, 3700, 3800 and 4000

Math: 1910, 1920, 2110, 3120, 3130, 3450, 4450, 4460, and 4670

Computer Science: 1010, 2010, 3005, and 3250

Description of Program

This unique concentration exists at few universities in the nation. Computational methods combine the application of numerical methods, models, and algorithms in the context of solving problems that are intractable by traditional methods. It is distinct from computer science, which is the study of computers and computation, and it is different from theory and experiment, the traditional forms of science, in that it seeks to gain understanding principally through the analysis of mathematical models. This concentration will prepare students for a career in modern industry, a government organization such as NASA, or for graduate studies in fields such as structural analysis, molecular modeling, network modeling or computational fluid dynamics.

Recommended 4-Year Schedule

Freshman

Physics 2110, University Physics I	5	Physics 2120, University Physics II	5
Math 1910, Calculus & Analytic Geom. I	5	Math 1920, Calculus & Analytic Geom.	5
CSci 1010, Intro to Programming I	3	CSci 2010, Intro to Programming II	3
English 1010, English Comp. I	3	English 1020, English Comp. II	3
Freshman Experience	1		
	17		16

Sophomore

Physics 3005, Theoretical Methods	4	Physics 4000, Computational Methods	3
Physics 3700, Modern Physics	4	Physics 3550, Experimental Methods	3
Math 2110, Calculus III	3	Comm 1010, Fund. of Public Speaking	3
Social/Behavioral Science Elective	3	Humanities Elective	3
		Elective	3
	14		15

Junior

Physics 3800, Quantum Mechanics	3	Physics 3030, Electricity & Magnetism	3
Math 3120, Differential Equations I	3	Math 3130, Differential Equations II	3
Math 3450, Linear Algebra	3	CSci 3250, Data Struc. And Algor. Anal.	3
CSci 3005, Object-Oriented Prog.	3	Liberal Arts	3
History 2010, American History I	3	History 2020, American History II	3
	15		15

Senior

Math 4450, Mathematical Models	3	Physics 3010, Intermediate Mechanics	3
Math 4670, Numerical Analysis	3	Math 4460, Applied Mathematics	3
English 2030, Trad. in World Literature	3	Humanities Elective	3
Social/Behavioral Science Elective	3	Elective	3
Elective	3	Elective	1
	15		13