

Ph. D. in Engineering
Engineering Physics Track
Recommended Plan of Study (09/2007)

Degree Codes: ES PhD ENGR

Contact: Prof. Neven Simicevic

General Core Courses

Take all three of the following: (9 SCH)

PHYS 510/ENGR 641	Mathematical Methods for Scientists and Engineers (<i>Fall</i>)
STAT 505	Statistics for Engineering and Science (<i>Winter</i>)
MATH 574	Numerical Solutions to PDEs (<i>Spring</i>)

Disciplinary (Physics) Core Courses

Take all five of the following: (15 SCH)

PHYS 511	Electromagnetic Theory (<i>Spring</i>)
PHYS 512	Solid State Physics (<i>Fall</i>)
PHYS 521/MEEN 571	Theoretical Mechanics (<i>Winter</i>)
PHYS 522:	Quantum Mechanics (<i>Spring</i>)
PHYS 533	Statistical Mechanics (<i>Winter</i>)

Qualifying Examinations

ENGR 685	Doctoral Qualifying Examination
ENGR 686	Oral Comprehensive Examination

Doctoral Seminar: 3 SCH

All students are automatically enrolled in the Doctoral Seminar course (ENGR 610) each Fall quarter. 3 SCH of the seminar may be counted towards the degree.

Recommended Elective courses*

(Students can take up to two Doctoral level Special Topics courses - either PHYS 557 or ENGR 657 - as part of the elective course work for the degree, for a total of 6 SCH.)

Choose seven of the following: (21 SCH)

BIEN 557	Special Topics – BioMEMS
BIEN 557	Special Topics – Protein Engineering
CHEM 502	Selected Topics in Organic Chemistry – Principles of Polymers
CHEM 523	Nanofabrication by Self-Assembly
ENGR 566	Quality in Engineering
ENGR 592	Engineering Computational Methods
ELEN 533	Optoelectronics
ELEN 535	Advanced Topics in Microelectronics
MATH 655	Mathematical Modeling
MEEN 549	Computational Fluid Dynamics
MEMT 508	Finite Element Methods

* Courses not listed are also acceptable, provided they are approved by the Advisory Committee.

MEMT 511	Modern Engineering Materials
MEMT 565	Continuum Mechanics
MSE 501	Microsystem Principles
MSE 502	Microfabrication Principles
MSE 503	Microfabrication Applications and Device Fabrication
MSE 504	Advanced Materials For Micro/Nano Devices And Systems
MSE 505	Nanotechnology Principles
MSE 506	Micro/Nano Scale Materials, Measurements, and Analysis
PHYS 515	Detectors for Particle & Nuclear Physics (<i>proposed</i>)
PHYS 523	Classical Theory of Fields
PHYS 524	Quantum Theory of Fields
PHYS 531	Theories of Physics I
PHYS 532	Theories of Physics II
PHYS 540	Computational Methods in Physics Modeling and Simulation I
PHYS 541	Computational Methods in Physics Modeling and Simulation II

Research and Dissertation 18 hours of research and dissertation

PHYS 651(prop.)/ENGR 651 Research and Dissertation

Total: 48 SCH of courses + 18 SCH of Research & Dissertation = 66 SCH.

Research and Dissertation Minimum 18 hours (ENGR 651).
3, 6 or 9 hours per quarter. Maximum total allowed is 30 hours.

Total: 48 SCH of courses + 18 SCH of Research & Dissertation = 66 SCH.