APPLIED PHYSICS LIST OF CLASSES OPTIONS for

Computational Methods of AP
and
Experimental Methods of AP

Note:

The following list is not comprehensive. It is continually being updated with the help of Applied Physics students.

Since syllabi of classes can change, it is **the student's responsibility to confirm** with the respective instructor that an

- **The Computational method of AP class option has a significant, hands-on computational component,**
- **The Experimental Method of AP class option has a significant, hands-on laboratory component.**

Classes not yet listed require approval from the Director of Graduate Studies.

Computational Methods of Applied Physics approved course options

- **Chemistry**
  - [CHEM 448](#): Computational Chemistry

- **Chemical Engineering**
  - [CHEM ENG 451](#): Applied Molecular Modeling

- **Applied Math**
  - [ES_APPM 446](#) - 2: Numerical Solution of Partial Differential Equations

- **Materials Science**
  - [MAT_SCI 458](#): Atomic Scale Computational Materials Science

- **Mechanical Engineering**
  - [MECH_ENG 417](#): Multiscale Modeling and Simulation in Mechanics I
  - MECH_ENG 418: Multiscale Modeling and Simulation in Mechanics II
    (not offered in FY19-20)
  - MECH_ENG 423: Introduction to Computational Fluid Dynamics
    (offered in alternating years, will be offered again in Fall 2020)
  - [MECH_ENG 426-1](#) or [2](#): Advanced Finite Element Methods

- **Electrical Engineering**
  - [ELEC_ENG 435](#): Deep Learning Foundations from Scratch
  - [ELEC-ENG 463](#): Adaptive Filtering and Estimation
    (Must complete computational project for approval.)
  - [ELEC_ENG 475-0 Machine Learning: Foundations, Applications, and Algorithms](#)
    Course cross-listed with DATA-SCI 423
  - [ELEC_ENG 495-0-77](#)Optimization techniques for machine learning and deep learning (Note: there are different classes listed under EECS 495; approval is for this specific one.)
  - [ELEC_ENG 495-0-78](#) Deep learning from scratch
    (Note: there are different classes listed under EECS 495; approval is for this specific one.)

- **Physics**
  - [PHYS 430](#): Nonlinear Dynamics And Chaos
  - [PHYS 441-0](#): Statistical Methods for Physicists and Astronomers
  - [PHYS_465](#): Advanced Topics in Nonlinear Dynamics
    (not offered in FY19-20)

- **Computer Science**
  - [COMP_SCI 449: Deep Learning](#)

Experimental Methods of Applied Physics approved course options

- [MECH_ENG 433](): Advanced Mechatronics

- [MAT_SCI 460](): Electron Microscopy

- [MAT_SCI 461:]() Diffraction Methods in Material Science

- [MAT_SCI 465:]() Advanced Electron Microscopy & Diffraction

- [MAT_SCI 466:]() Analytical Electron Microscopy

- [ELEC_ENG 495](): Cardiovascular Instrumentation