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

- **Applied Math**
  - ES_APPM 446 - 2: Numerical Solution of Partial Differential Equations
- **Chemistry**
  - CHEM 448: Computational Chemistry
- **Chemical Engineering**
  - CHEM ENG 451: Applied Molecular Modeling
- **Civil and Environmental Engineering**
  - CIV_ENG 495-1: Granular Materials for Geosystem Engineering
- **Computer Science**
  - COMP_SCI 449: Deep Learning
- **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.)
- **Materials Science**
  - MAT_SCI 458: Atomic Scale Computational Materials Science
  - MAT_SCI 465: Advanced Electron Microscopy & Diffraction
- **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
- **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)

Experimental Methods of Applied Physics approved course options

- MECH_ENG 433: Advanced Mechatronics
- MAT_SCI 460: Electron Microscopy (offered every other year)
- MAT_SCI 461: Diffraction Methods in Material Science
- MAT_SCI 466: Analytical Electron Microscopy
- ELEC_ENG 495: Cardiovascular Instrumentation