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

- **Electrical Engineering**
  - 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.)
  - ELEC_ENG 475-0 Machine Learning: Foundations, Applications, and Algorithms
    Course cross-listed with DATA-SCI 423
  - ELEC_ENG 435: Deep Learning Foundations from Scratch
  - ELEC-ENG 463: Adaptive Filtering and Estimation
    (Must complete computational project for approval.)

- **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

- **Physics**
  - PHYS 430: Nonlinear Dynamics And Chaos
  - PHYS 465: Advance Topics in Nonlinear Dynamics
    (not offered in FY19-20)
  - PHYS 441-0: Statistical Methods for Physicists and Astronomers
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