APP PHYS 401-1 and 402-1

LIST OF SUBSTITUTE CLASSES

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 a
- APP PHYS 401-1 substitute has a significant, hands-on computational component,
- APP PHYS 402-1 substitute has a significant, hands-on laboratory component.

Classes not yet listed require approval from the Director of Graduate Studies.
APP PHYS 401-1 Computational Methods of Applied Physics

- CHEM 448: Computational Chemistry
- CHEM ENG 451: Applied Molecular Modeling
- EECS 496 Machine Learning: Foundations, Applications and Algorithms
  (Note: there are different classes listed under EECS 496; approval is for this specific one.)
  http://www.mccormick.northwestern.edu/eecs/courses/descriptions/396-496-11.html
- EECS 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.)
  http://www.mccormick.northwestern.edu/eecs/courses/descriptions/395-495-44.html
- EECS 495-0-78 Deep learning from scratch
  (Note: there are different classes listed under EECS 495; approval is for this specific one.)
  http://www.mccormick.northwestern.edu/eecs/courses/descriptions/395-495-45.html
- EECS 463: Adaptive Filters
  http://www.ece.northwestern.edu/%7Emh/463/course_des
  (Must complete computational project for approval.)
- ES_APPM 446 - 2: Numerical Solution of Partial Differential Equations
  http://www.esam.northwestern.edu/courses/descriptions/446-2-numerical-solution-of-
  partial-differential-equations.html
- MAT_SCI 458: Atomic Scale Computational Materials Science
  http://matsci.northwestern.edu/courses/descriptions/458.html
- MECH_ENG 417: Multiscale Modeling and Simulation in Mechanics I
  http://www.mccormick.northwestern.edu/mechanical/courses/descriptions/417-
- MECH_ENG 418: Multiscale Modeling and Simulation in Mechanics II
  http://www.mccormick.northwestern.edu/mechanical/courses/descriptions/418-
  multiscale-modeling-and-simulation-in-mechanics-II.html
- MECH_ENG 423: Introduction to Computational Fluid Dynamics
  http://www.mccormick.northwestern.edu/mechanical/courses/descriptions/423-
  introduction-to-computational-fluid-dynamics.html
- MECH_ENG 426-1 or 2: Advanced Finite Element Methods
  http://www.mccormick.northwestern.edu/mechanical/courses/descriptions/426-1-
  advanced-finite-element-methods-I.html
  http://www.mccormick.northwestern.edu/mechanical/courses/descriptions/426-2-
  advanced-finite-element-methods-II.html
- PHYS 430: Nonlinear Dynamics And Chaos
  http://www.physics.northwestern.edu/graduate/doctorate/catalog.html
APP PHYS 402-1 Experimental Methods of Applied Physics

- MECH_ENG 433: Advanced Mechatronics
  http://www.mccormick.northwestern.edu/mechanical/courses.descriptions/433-advanced-mechatronics.html

- MAT_SCI 460: Electron Microscopy
  http://matsci.northwestern.edu/courses.descriptions/460.html

- MAT_SCI 461: Diffraction Methods in Material Science
  http://matsci.northwestern.edu/courses.descriptions/461.html

- MAT_SCI 465: Advanced Electron Microscopy & Diffraction
  https://www.mccormick.northwestern.edu/materials-science/courses.descriptions/465.html

- MAT_SCI 466: Analytical Electron Microscopy
  http://matsci.northwestern.edu/courses.descriptions/466.html