PHY 329: Introductory Computational Physics
SYLLABUS

Fall 2018
Unique #: 56165
T-TH 3:30-5:00PM, RLM 5.120

INSTRUCTOR: Prof. Alex Demkov, office RLM 13.206, Phone: (512) 471-8560
E-mail: demkov@physics.utexas.edu
OFFICE HOURS: Monday 2-4 p.m. and by appointment

TA: Ali Hamze, RLM 7.204
OFFICE HOURS: Tuesday 9:30 am – 11:00 am, and by appointment
E-mail: alihamze@utexas.edu

Course web page: https://web2.ph.utexas.edu/classes/demkov/phy329/

Textbook:


Reference Books:


Grading:

Two in-class midterms: 10% each
Two projects: 10% each
A project will be used for a final exam: 30%
Homework: 30%

Homework:
Seven homework assignments will be given. No late homework will be accepted. No late homework will be accepted. No late homework will be accepted. No late homework will be accepted. No late homework will be accepted.

Languages: MATLAB
Syllabus:

The week of August 26  Lecture 1  Introduction
The week of September 2  Lectures 2&3  Roots of Equations
The week of September 9  Lectures 4&5  System of Linear Equations
The week of September 16 Lectures 6&7  Linear System and Matrices
The week of September 23 Lectures 8&9  Matrix Computation
The week of September 30  Lecture 10  Optimization

October 2, First Midterm

The week of October 7  Lectures 11&12  Fitting and Interpolation
The week of October 14 Lectures 13&14  Interpolation and Fourier Transforms
The week of October 21 Lectures 15&16  Numerical Integration & Differentiation
The week of October 28 Lectures 17&18  Numerical Integration & Ordinary Diff. Eq. (ODE)
The week of November 4 Lectures 19&20  ODE I

November 13, Second Midterm

The week of November 11 Lecture 21  ODE II
The week of November 18 Lectures 22  ODE II and Partial Differential Eq. (PDE)
The week of November 25 Lecture 23&24  PDE
The week of December 2 Lectures 25&26  Molecular Dynamics

November 12, Final Project is announced

December, Final Project is due

Projects (announced September 11):

Project 1 due October 9
Project 2 due November 6

Homework:

HW1  roots and optimization
HW2  linear systems
HW3  matrices, eigenvalue problem
HW4  curve fitting
HW5  numerical differentiation and integration
HW6  ordinary differential equations
HW7  partial differential equations