ACMS 20210, *Scientific Computing*, Spring 2011
Course Information

- **Textbook:** "Engineering problem solving with C++" by Delores M. Etter and Jeanine A. Ingber, Prentice Hall 2008. ISBN-13: 978-0-13-601175-0, ISBN-10: 0-13-601175-6.

- **Class time and place**: MWF 9:35am-10:25am, DBRT 131.

- **Instructor:** Yongtao Zhang (*yzhang10@nd.edu*)
  Office location: HAYE 242
  Office phone: (574) 631-6079
  Office hours: Tue 2:30pm-3:30pm, Thursday 2:30pm - 4:30pm, or by appointment

- **TA-1:** Tanya Salyers (salyers.2@nd.edu)
  Office location: HAYE 215
  Office phone: (574) 631-3107
  Office hours: Thursday 4:00pm – 8:00pm, or by appointment

- **TA-2:** Hannah Bloink (hbloink@nd.edu)
  Help session: Thursday 7pm – 9pm
  Location: 125 Hayes-Healy

- **Class website:** *http://www.nd.edu/~yzhang10/acms20210/index.html*
- **Homework and Projects:** Homework problems will be assigned each week on the web and collected electronically. A few computer projects will be assigned in the semester. Homework and Projects assignments should be submitted **before the due time.** You may submit a correction before that time, this will automatically replace your old submission. We will lock the homework folder after the due time. You will not be able to submit your homework once the homework folder is locked. You may keep backup copies on flash disks (although the OIT backs up the UNIX machines), but the only copies left on networked machines must be in your homework directory. Networked machines include any machine in a University lab and any machine in your room connected to the network. You are encouraged to work on homework and project problems in groups, but the assignments must be turned in individually. Remember that you will not learn anything by simply copying another student's work. The main purpose of homework and project assignments is to help you learn the material. Experience shows that students who take their homework seriously do very well in the course because they have a better understanding of the material.

- **Exams:** There will be one midterm exam and the final exam. Midterm exam will be the in-class exam on **Wednesday, March 9**. The final exam will be on **Wednesday, May 11, from 8:00am – 10:00am**. A student who misses an examination will receive **zero points** for that exam unless he or she has written permission from the Vice president for residential life. If you have a valid excuse (illness, excused athletic

absence etc) for missing an exam, please see me ASAP (preferably before the exam) and a makeup exam will be scheduled.

- **Grades:** homework and projects 150 points, midterm exam 100 points, final exam 150 points. The total course points are 400. Cutoffs for major grades (A, B, C, D, F) will be assigned for each exam and announced in class so students have some indication of their level of performance. Your final grade will be assigned on the basis of your total score out of 400.

- **Honor Code:** Both examinations, homework and projects are conducted under the honor code. While cooperation in small groups in doing homework and projects is permitted (and strongly encouraged), copying is not. Exams are to be done completely by yourself with no help from others.

Tentative Syllabus

1. Introduction on computing, account setup and basic Unix/linux commands.
2. Simple C++ programs.
   - Program structure
   - Data types
   - C++ operators
   - Input and Output
   - Basic mathematical functions
3. Control structures
   - Conditional Expressions
   - if/else statement, switch statement
   - while loop, do/while, for loop, break and continue statements
4. Working with data files
   - File stream
   - Read file
   - Write file
   - Error Checking
5. Functions
   - Programmer-defined functions
   - Parameter passing
   - Applied problems
6. One dimensional arrays
7. Two dimensional arrays and matrices
8. An introduction to Classes and Pointers