University of Nevada, Reno

Course Syllabus

1. Course:
   - **CS 709a -- Topics in Advanced Computer Science - Algorithms and Complexity**
2. Catalog Description:
   - (a) Algorithms and complexity, (b) software project management and development, (c) discrete systems simulation.
3. Course Objective:
   - Students will demonstrate an understanding of the fundamental principles of spatial data structures and algorithms and demonstrate an ability to design, implement, and apply them to a variety of problems.
4. Course Prerequisite:
   - (CS 308) Data Structures.
5. Prerequisites by Topic:
   - A Good working knowledge of programming.
   - The ability to program on a Unix system
6. Texts:
   - Required:
     - *Foundations of Multidimensional and Metric Data Structures* by Hanan Samet -- Morgan Kaufmann, ISBN 0-12-369446-9
7. Term Specific Information:
   - Instructor: **Dr. Daniel S. Coming**
   - Office: **DRI - CRVB 204, 673-7628**
   - email: **dan.coming@dri.edu**
   - Instructor's Office Hours:
     6:45 - 7:45 pm Th - SEM 248, other times by appointment
   - Class Hours: 4:00 - 6:45 pm Th - SEM 257
8. Paper Presentations
   - Each student will present an instructor-approved research paper demonstrating novel application of spatial data structures and/or algorithms. Papers may come from reputable journals or conference proceedings from many application areas. If you have difficulty finding journals or conference proceedings for an application area, see me for help. You

will still have to find a paper within said publication on your own.

9. Project
    - The class project consists of three programming assignments. Each project builds upon the previous project, and together, the class's projects will form a shared library for the final project.
    - **Start the programming assignments early!** Completing the course project is a large, complex, and rewarding task, which is made much easier by giving adequate forethought to design. The course schedule allows ample time to complete the assignments -- take advantage of it. Programs will be evaluated for correctness, organization, documentation, and a brief presentation to the class.
    - Documentation and structuring should be incorporated into programs from the beginning. Neither the instructor, teaching assistants, or readers will help with incomprehensible programs.
    - Programming assignments may be done individually or in teams of two. Teamwork imposes burdens of communication and coordination, but has the benefits of more thoughtful designs and cleaner programs. Team programming is also the norm in the professional world.
    - Every team (including teams of one) must be registered. To register a team, send mail to the instructor listing the names and complete email addresses of team members. Only one mail message per team is needed. Students on a team are expected to participate equally in the effort and to be thoroughly familiar with all aspects of the joint work. Both members bear full responsibility for the completion of the assignments. Partners turn in one solution for each programming assignment; each member receives the same grade for the assignment. Teams may dissolve only between assignments.
    - Programming assignments are due at 11:59pm on the date specified. Programming assignments will be turned in electronically; the exact method will be announced with the first assignment. All programming will be done in ANSI C or C++ using your individual accounts. You may use any computing facilities available to you, but you may find it easiest to use the systems provided by the college.

10. Final Project
    - The final project will be the culmination of what you should have learned in this course. You need to identify a research application of interest to yourself, and use the class's spatial data structure / algorithm library to solve a problem in that application. Grading will be similar to other class projects, with the additional grading criteria of performance evaluation. Documentation of the final project must be in the format of a research paper. Details regarding contents and length will be provided when the final project is assigned. Extra credit may be given for novel extension of the library.

11. Examinations
    - There will be a midterm examination covering the theoretical material from the first half of the course. It will most likely be held the week of March 9. The final exam schedule for this class is TBD and will consist of a complete demonstration of your final project.

12. Handouts
    - In addition to being passed out in class, handouts will be available on-line on the class home page.

13.Reading

- The material presented in class will correspond roughly but not exactly to the material covered in the readings.

14.Academic Dishonesty

- You should carefully read the section on Academic Dishonesty found in the UNR Student Handbook (copies of this section are on-line) Your continued enrollment in this course implies that you have read it, and that you subscribe to the principles stated therein.
- In this class we will experiment with a variation of the standard policy. In this class, it is permissible to talk to other students about assignments, to discuss particular solutions, and even to receive partial solutions (including code) from others. However, *all assistance must be cited in the assignment write-up*. Also, *all assistance given must be cited* If you receive any assistance from anyone other than the course staff or your partner on an assignment, you must acknowledge in the write-up for that assignment who gave assistance and what assistance was given. Grading will take into account how much help a student received from others (the more help, the lower the grade). Failure to acknowledge sources is plagiarism and will be treated as a serious breach of academic honesty. This syllabus was adapted from Fred Harris's Spring 2009 CS460 Syllabus. No assistance may be given or received on the midterm examination.

15.Assessment and Grading Scheme:

- Your grade will depend upon your performance in the course -- there is no predetermined curve. It is impossible to pass the course without doing the programming assignments. The relative weight of the components of your grade will be approximately:

Section	
Paper Presentation	15%
Class Projects	45%
Final Project	20%
Midterm Exam	15%
Class Participation	5%

Note: I will be using a +/- grading system.

16.Late Policy

- There is a 0.5% penalty for each hour, or partial hour, that a programming assignment is late. Late written assignments will receive no credit but must be turned in.

17.Disability Statement:

- If you have a disability for which you will need to request accommodations, please contact me or someone at the Disability Resource Center (Thompson Student Services - 107), as soon as possible.

18.Important Dates: (Tentative -- Subject to Change)

- Midterm Exam -- TBA
- Final Exam Period -- TBA