

# Syllabus for Programming Techniques. Fall 2005.

**Course Number:** CS 324, Section: 01, CRN: 24518, Credits: 3

**Prerequisites:** CS 223\*.

**Meetings:** Monday, Wednesday, and Friday – 3:10-4:00PM @ 113 Roberts Hall

**Course Web page:** <http://www.cs.montana.edu/courses/324/>

*\* If you have not completed this course you must get a prerequisite waiver form signed by your advisor, CS Department Head, and the Dean of College of Engineering. Good luck on that one.*

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## **Lecturer: Dr. Rafal A. Angryk**

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- ◇ Phone: (406) 994-4440 (My Office), 994- 4780 (CS Office)
- ◇ Fax: (406) 994-4376 (CS Office)
- ◇ Home Page: <http://www.cs.montana.edu/angryk/>
- ◇ Consultations on the class-related issues:
  - Right after each class in a classroom
  - Office hours:
    - Monday, Wednesday, and Friday 12:00-1:00 PM
    - Tuesday 11:00-12:00 PM
  - By individual appointment (Please, call or e-mail me first!)

## **Teaching Assistant: Anthony Arnone**

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  - ◇ Home Page: <http://www.cs.montana.edu/~arnone/>
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## **Books:**

- ◇ **Textbook:** Kenneth Berman, Jerome Paul, *Algorithms: Sequential, Parallel, and Distributed*, ISBN: 0-534-42057-5, Publisher: Thomson, 2005.

**Make sure to bring your textbooks to the class.**

- ◇ Book you may want to read to extend the course material\*:
  - Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, *Introduction to Algorithms*, ISBN: 0262032937, Publisher: The MIT Press, 2001.

*\*Some readings from this book may be required. I do not think it is necessary to buy the book though.*

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## **Course description**

This course is designed to provide students with understanding of the complexity and efficiency of multiple algorithms that may be useful in their future professional life. Applicability of different program design techniques will be discussed. Chosen topics of

probabilistic algorithms, advanced graph problems, as well as certain distributed and parallel algorithms will be introduced. Students will gain hands on experience through programming assignments.

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### Course content

- ◇ **Part 1.** Good Practices of Programming – different topics will be spread out through the whole course.
  - ◇ **Part 2.** Major Algorithmic Strategies – solid review based on the study of different examples.
  - ◇ **Part 3.** Probabilistic and Randomized Algorithms.
  - ◇ **Part 4.** Examples of Parallel and Distributed Algorithms – we will see how much time is still left...
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### Course outcomes

At the end of the course, students should be able to:

- ◇ Design and build computer programs in solid, professional style
  - ◇ Understand major algorithm design strategies and apply them successfully to solve problems in their professional lives.
  - ◇ Understand basics of parallel and distributed systems.
  - ◇ Correctly design and analyze parallel, distributed, and probabilistic algorithms.
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### Contributions of all grades to the final course grade:

- ◇ Attendance: Lack of sufficient attendance (9 absences) may result in a grade of “F” for the whole course. Please refer to my class policies for details.
- ◇ Daily Quizzes, Individual Theoretical and Programming Assignments: 40-45% (do not expect linear distribution of points).
- ◇ Tests during the course: 35-40% (3 tests expected: 1<sup>st</sup> – 5-10%, remaining 2 – 15% ea.)
- ◇ Final Exam: 20-25% (covers the whole semester of work: readings, assignments, and lectures)

*Please be aware that Computer Science is a production-oriented discipline. In the field it is not enough for students to try hard, they need to succeed!*

***ALL grades will be based NOT on your efforts but on your achievements.***

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**ATTENTION! You are obligated to get acquainted with my general class guidelines. I consider registration and participation in my class as acceptance of ALL my teaching rules and class policies.**