CS 325 – Analysis of Algorithms

Catalog Description: Recurrence relations, combinatorics, recursive algorithms, proofs of correctness.

Credits: 4

Prerequisites: CS 261, (MTH 231 or CS225)

Courses that require this as a prerequisite: CS 420, CS 475, CS 480

Structure: Three 50-minute lectures per week

Instructors: Glencora Borradaile

Course Content:
- Recursive algorithms
- Using difference equations
- Inductive proofs of correctness
- Timing of algorithms
- Search of algorithms
- NP completeness
- Divide and conquer algorithms
- Heuristics for hard problems

Learning Resources:
- Dasgupta, Papadimitriou,Vazirani. *Algorithms* (required)
- Kleinberg and Tardos. *Algorithmic Design* (reference)
- Cormen, Leiserson, Rivest, Stein. *Algorithms* (reference)

Measurable Student Learning Outcomes:
At the completion of the course, students will be able to…
1. **Use** O, Ω, Θ and simple recurrences to analyze the time complexity of iterative and recursive algorithms.* (ABET Outcomes: A, B, J)
2. **Prove** the correctness of algorithms. (ABET Outcomes: A, J)
3. **Implement** recursive, iterative and heuristic algorithms.(ABET Outcomes: C, J)
4. **Prove** that a problem is NP-complete using reductions. (ABET Outcomes: A, B, J)

Students with Disabilities:
Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 737-4098.

Link to Statement of Expectations for Student Conduct, i.e., cheating policies
http://oregonstate.edu/admin/stucon/achon.htm