Math 464—Operations Research and Game Theory
Spring 2006
Fulmer 201; Tu, Th 2:50–4:05 p.m.
Please note that this document has three pages.

Instructor

Name: K. A. Ariyawansa

Office: Neill 225

Office hours: M 11:00–12:00 noon; Tu, Th 10:30–12:00 noon; W 1:00–2:00 p.m.

Telephone: 335-3152

Email: ari@wsu.edu

URL: http://www.wsu.edu:8080/∼ari

Outline of course

The course will consist of two parts.
The first part will be a rigorous treatment of the linear program and methods for its solution. Specifically, the first part will consist of the following topics.

(1) Introduction.

(2) A brief review of some results from linear algebra and convex analysis.

(3) The simplex method.

(4) Starting solutions and convergence.

(5) Duality and sensitivity.

(6) The decomposition principle.

The second part of the course will be on a selected set of applications of the algorithms and results covered in the first part. Specifically, we shall consider problems that arise in the following areas.

(7) Allocation and scheduling.

(8) Approximating data by linear functions.

(9) Integer programming.

Text

The first part of the course will be based on the first 7 chapters of *Linear Programming and Network Flows*, Third Edition, by M. S. Bazaraa, J. J. Jarvis and H. D. Sherali (Wiley, 2005).
Most of the second part of the course would be devoted to topic (9). I shall provide references to topics (7), (8) and (9) as they are treated in class.

Grades

The course grades will be based on homework assignments and a comprehensive, take-home, final examination weighted as follows.

- Homework assignments—70%
- Take-home final examination—30%

The take-home final examination *will be available at 10:00 a.m. on Friday, April 28, 2006 and will be due by 10:00 a.m. on Monday, May 1, 2006* in my mailbox in Neill 103.

Additional comments

- There is a web page for Math 464, which may be accessed from my home page at the URL indicated above. (Follow the link Math 464 under the heading "Teaching Spring 2006".) Homework assignments, the final examination, and other announcements will be posted on this web page for Math 464. *Please check this web page regularly.*

- Assignments will be posted on the Math 464 web page approximately every other Thursday, and will usually be due *at the beginning of class* on the second Tuesday that follows. No late assignments will be accepted. Assignments turned in on a given Tuesday will be graded and returned in class on the following Tuesday.

- The purpose of basing the grades on homework assignments and a take-home final examination (rather than on more time-restrictive tests) is to give you enough time to think about the problems and to learn the material covered in class. *You are therefore expected to provide complete answers to the problems.* Since there are no in-class examinations, the quality and the amount of work expected in the homework assignments and the take-home final examination are higher than in a course with in-class examinations. Clear and logical presentation of your solutions is important.
  I expect individual work in the preparation of solutions to assignments and the take-home final examination.

- The focus of the course will be on algorithms. However, we will also consider modeling and numerical solution of problems, especially in assignments. The problems in the homework assignments and the final examination may involve the manual solution of (small) numerical problems using algorithms studied in class. The purpose of solving these problems is to illustrate properties of various algorithms to be studied in class and not just to obtain numerical answers. *All* the algorithms to be discussed in class will have *finite termination*, and since you will have ample time for the assignments and the take-home examination, you are expected to provide complete, final answers to these numerical problems as well. You are advised to start working on the assignments and the take-home examination as soon as possible (and not to wait until just before the deadlines).

- Reasonable accommodations are available for students who have a documented disability. Please notify the instructor during the first week of class of any accommodations needed for the course. Late notification may cause the requested accommodations to be unavailable. All accommodations must be approved through the Disability Resource Center (DRC) in Administration Annex 206 (Tel. 335-1566).

- Academic dishonesty or cheating of any kind in the course (including plagiarism) will not be tolerated. Anyone caught cheating will be given a grade of F for the entire course. A letter documenting the incident will be written to the Dean of the College and the Vice President for Student Affairs. Plagiarism is defined as the unauthorized use of the language and the thoughts of another person, and the representation of them as ones own (Random House Webster's College Dictionary, 1991).