Data and algorithms are at the core of practically everything you can do with a computer. This course will focus on understanding some of the most essential aspects of algorithms: the relationship between the input and output, guaranteeing correctness of the result, and assessing scalability using asymptotic runtime analysis.

Fundamental to all of this is the recognition that any problem of interest has (in principle) infinitely many possible inputs, and so no suite of unit tests can be complete enough to guarantee correctness for all of them. To be sure a given piece of code does what it is supposed to, a mathematical proof is required.

The term “data structure” usually refers to data (the information used, processed, or generated by algorithms), together with a set of algorithms that are somehow relevant to the data. Understanding how this information is to be stored and operated on are crucial, both for the one implementing the data structure (obviously), and to the end user.

During the course, you will learn both high-level characteristics and implementation details for many important and useful data structures.

**Outside of Class:** My office hours are “drop in,” Wednesdays 1:00-2:50, and at other times by appointment, in Travelstead B31. Office hours are subject to change; I will generally send out an email announcement beforehand. The best way to make an appointment is to email me in advance to schedule a time. My email address is hayes@cs.unm.edu.

**Homework:** Homework will be assigned on a regular basis, and is to be turned in on time. You are expected to solve the homework on your own, but may work together occasionally, as long as each student writes (not copies!) his own solution. If you do collaborate to solve part of an assignment, this must be acknowledged on your paper. Similarly, you are expected to solve the problems without using the library or internet, but if you do get an idea from such a source, you must acknowledge the source in your writeup.

If you have great difficulty with the homework, please let me know right away.

**Tests:** There will be two in-class examinations, on Thursday, October 5 (the week before Fall Break), and Thursday, December 7 (the week before Finals Week). There will be no exam during Finals Week.

Each exam will cover all course material covered up to that point. In particular, the second exam will include material covered on the first exam. Therefore, it is very important that you study your first exam and learn the correct way to solve all the problems!

There will be no make-up exams under any circumstances.

Absences will be excused only in cases of extreme human tragedy.
**Grading:** Grades will be determined using the following weights:

- 20% First in-class exam
- 30% Second in-class exam.
- 40% Homework
- 10% Instructor Discretion

I use the discretionary portion of the grade to reward students who show exceptional motivation and participation in the class, and also to reweight the grade components if I feel it has worked out unfairly to a particular student. For most students, this 10% will have no effect on their grade.

**UNM Policies:**

**Copyright Issues**

All materials in this course fall under copyright laws and should not be downloaded, distributed, or used by students for any purpose outside this course. (http://www.unm.edu/counsel/general/copyright.htm)

**Students with Disabilities**

The American with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodations of their disabilities. If you have a disability requiring accommodation, please contact me immediately to make arrangements as well as Accessibility Services Office in 2021 Mesa Vista Hall at 277-3506 or http://as2.unm.edu/index.html. Information about your disability is confidential.

**Academic Misconduct**

You should be familiar with UNMs Policy on Academic Dishonesty and the Student Code of Conduct (http://pathfinder.unm.edu/policies.htmstudentcode) which outline academic misconduct defined as plagiarism, cheating, fabrication, or facilitating any such act.

You are expected to solve all assigned homework problems on your own. If you choose to work together, you must write up your solutions individually (not copied!) and include a disclaimer telling me whom you worked with and the nature of your collaboration. All work you turn in must be your own!