Welcome to Algorithms.

In many ways, this course is the most important one in the Computer Science major. We have built you up in previous courses, teaching you to plan out and to construct programs. In courses after this one, we will teach you specific applications such as databases and artificial intelligence. All of this revolves around the construction, analysis, and use of algorithms.

An algorithm is a recipe; it is step-by-step procedure for calculating something. Of course, not all algorithms are created equal. Some are so useful that no one seriously considers any alternatives, some excel under particular circumstances, and some are so bad so as to be the punchline of particularly obscure jokes. You are here in this class so that you will be able to tell one from another.

You will be able to understand, implement, and use the following tools:

- Formal analysis of algorithms.
- Advanced data structures.
- Advanced searching.
- Dictionary algorithms.
- Graph algorithms.

The class web page will be located at [http://cs.pugetsound.edu/~aasmith/cs361/](http://cs.pugetsound.edu/~aasmith/cs361/). Valuable info and links will be posted there.

The text we will use is “Algorithms (4th Ed.)” by Sedgewick and Wayne. The authors have also created valuable online resources, that you can access via the class web page.

You should have already taken CSCI 261 (Computer Science II), CSCI 281 (Architecture, may be concurrent), and MATH 210 (Math of Computer Science), or their equivalents. Calculus is also recommended.

There will be several assignments over the course of the class—usually one every other week. Most will be programming assignments, but some will be written work. You are free to talk to others in the class about them, but I expect what you finally turn in to be 100% your own work. Assignments will be penalized by 20% for each working day (or fraction thereof) they are late, down to 40%. However, you will have five “extension days” during the semester to extend a deadline by one working day. They will be used automatically, unless you specify otherwise.

Note that these assignments will be substantially harder than the ones you may have had in previous classes. If you even remotely enjoy sleeping, do not wait until the night before they’re due to start them.
Most of you will probably do your work in Java, since that’s probably the language with which you are most comfortable. I’d also encourage you to teach yourself Python this semester, since it is a very useful language. However you may use any procedural or object-oriented language you wish.

You all should be aware of the Honor Code at the college. Please do not cheat—it will not go well for you. **Any suspected cheating will be immediately reported.**

Exams are closed book, and will be cumulative. They will be given in the evenings (or some other time when we can have two uninterrupted hours). You are allowed a calculator (or your phone, so long as it is in “airplane mode”) and one two-sided, letter-sized page of notes. They will be graded on a curve, with the highest score considered to be 100%.

**Grading**

Final grades will be determined as follows:

<table>
<thead>
<tr>
<th></th>
<th>Homeworks</th>
<th>Midterm 1</th>
<th>Midterm 2</th>
<th>Final</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>35%</td>
<td>20%</td>
<td>20%</td>
<td>25%</td>
</tr>
</tbody>
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In particular, notice how heavily weighted assignments are. **Missing assignments is the easiest way to get a lower grade.** Please be sure you do them, and on time. In addition, class participation and effort may help bump you up, if your final grade is borderline.

**Attendance**

I will not be keeping attendance (except on the first day). However, odds are that your attendance will correlate highly with your final grade.

**Miscellany**

If there are any special holy days that you will be taking off, please let me know as soon as you can so that we can work around them.

Consider getting a flu shot. **This is especially true this year. You don’t want to worry that you might have been infected with covid.**

Please remember to be kind to one another. With covid, we are in an entirely unprecedented situation. Also please remember that you are all here to learn. None of you are masters of this material yet, and there’s no need to make things difficult for others.

**Required Boilerplate UPS Info**

**Student Accessibility and Accommodation:** If you have a physical, psychological, medical or learning disability that may impact your coursework, please contact Peggy Perno, Director of Student Accessibility and Accommodation, 105 Howarth, 253.879.3399. She will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

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**Bereavement:** Students are normally eligible for, and faculty members are expected to grant, three consecutive weekdays of excused absences, without penalty, for the death of a family member, including parent, grandparent, sibling, or persons living in the same household. Should the student feel that additional days are necessary, the student must request additional bereavement leave from the Dean of Students or the Deans designee. In the event of the death of another family member or friend not explicitly included within this policy, a bereaved student may petition for grief absence through the Dean of Students office for approval. To request bereavement leave, a student must notify the Dean of Students office by email, phone, or in person about the death of the family member. When bereavement leave is approved, the Dean of Students office will notify the student and the Office of Academic Advising. In turn, Academic Advising will notify the students instructors and advisor of the dates of the excused absences for bereavement leave. When the student returns from leave, the student must submit to the Dean of Students office an obituary notice, a funeral or memorial program, or other documentation regarding the death of a family member. While this policy excuses a student from class attendance, the student remains responsible for missed academic work. Therefore, the student is to seek the advice of each instructor to consider the options and to establish a plan to compensate for coursework missed during bereavement leave. For more information, please contact the Dean of Students office.

Finally...if there’s anything else I can do to help you, please let me know. I’m willing to go out of my way to make this a valuable class for you, but I can’t do that unless you talk to me.