## Syllabus – CS 2130 – Computational Structures

### Instructor:
Alison Sunderland  
Email: [alisonsunderland@weber.edu](mailto:alisonsunderland@weber.edu) (slow), Canvas email is preferred for course related matters.  
Phone: 801-395-3592  
Office: Davis Campus, D2-308K  
Office Hours: Tues/Thur 1:30pm – 3:30pm and 9:30pm – 10:30pm

### Required Texts:
We will also be using a zyBook  
1. Sign up at [zyBooks.com](https://zyBooks.com)  
2. Enter zyBook code: WEBERCS2130SunderlandSpring2017  
3. Click 'Subscribe'  

*The materials may be supplemented with additional web links*

### Course Fees
Course fees for the Computer Science major are designed to cover the costs of lab equipment maintenance and replacement including desktop and server computer systems and software; consumable materials and supplies; and support for lab aides, student tutors, and online instructional resources.

### Course Description:
An overview of the fundamentals of algorithmic, discrete mathematics applied to Computing using a contemporary programming language. Topics include sets, functions, sequences, recursion, properties of integers, propositional logic, digital logic, predicate logic, counting rules, discrete probability, random variables, Boolean matrices, relations, directed graphs, trees, languages, regular expressions, finite state machines, and grammars.  
Prerequisite: CS 1400.

### Learning Outcomes:
Upon successful completion of this course, the student shall be able to:  
- Apply mathematical reasoning in order to read, comprehend, and construct mathematical arguments.  
- Apply combinatorial analysis to solve counting problems.  
- Manipulate discrete structures, including sets, permutations, relations, graphs, trees, and finite state machines.  
- Select and validate computing algorithms, and construct computer programs implementing those algorithms.  
- Develop and construct mathematical models for application to other fields of study.

### Canvas:
This online course is hosted in Canvas. To log on to the course once it has been made available, go to [http://canvas.weber.edu](http://canvas.weber.edu), and follow the login instructions. You will need your WSU wildcat name and password to log in. You should have already received this information from the admissions department. If you still have problems getting into the course, please email me and I will see if I can resolve the issue. If you are unfamiliar with Canvas, there are [Canvas Getting Started guides](https://canvas.weber.edu) available.

### Announcements
I use Canvas Announcements to communicate with the class as a whole. Make sure to set up your Canvas profile to receive Announcements in a timely manner.
• click on Profile on the top right hand corner of the page.
• add one or more Ways To Contact, preferably the email you check daily or your active cell phone number
• click on Notifications on the left side of the page
• under Announcement set at least one contact method to ASAP

You are responsible for the information contained in all Announcements.

**Davis Campus Student Service:**

**Students with Disabilities:** Any student requiring accommodations or services due to a disability must contact Services for Students with Disabilities (SSD) in room 221 of the Student Services Center. SSD can also arrange to provide course materials (including this syllabus) in alternative formats if necessary. You can also call 801-395-3524 or visit [WSU SDD](#) for more details.

**Medical Services:** The Student Health Center provides quality, cost-effective health services including outpatient medical care for common illnesses and injuries, disease prevention activities, and health promotion. For more information, contact the Student Health Center: 801-395-3521, Davis Campus Room D2 - 220, or [online](#).

**ADDITIONAL SERVICES INCLUDE:**

Most services in D2, Room 262.

Call for appointments/information: 801-395-3460

<table>
<thead>
<tr>
<th>CAREER SERVICES</th>
<th>COUNSELING &amp; PSYCHOLOGICAL SERVICES</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTERNATIONAL STUDENT SERVICES</td>
<td>MULTICULTURAL STUDENT SERVICES</td>
</tr>
<tr>
<td>NONTRADITIONAL STUDENT SERVICES</td>
<td>VETERANS SERVICES</td>
</tr>
<tr>
<td>VETERAN'S UPWARD BOUND ADVISING AND TUTORING</td>
<td>WILDCARD AND ED PASS</td>
</tr>
<tr>
<td>WOMEN'S SERVICES</td>
<td></td>
</tr>
</tbody>
</table>

**CS Network Account Logons:**

**Athena (Windows):** Students taking CS classes are given access to the CS network which includes access to a Windows server (Athena) and a Unix server (Icarus). Computers in the CS labs and in the CS classrooms require the CS logon.

To log into the CS network:

**Username:** an upper or lower case W followed by your W# (Example: w12345678)

**Password:** the last 4 digits of you W# followed by cs! (Example: 5678cs!)

Students can access the Computer Science department’s Windows server either in our labs or through terminal server. To log into Athena, use Remote Desktop and type athena.cs.weber.edu:53243

To access data from the local computer on Athena, click Options-> Local Resources and make sure the Disk Drives box is checked

**When accessing Athena from a computer outside the CS network** (your home computer or laptop), the username should be preceded by a cs\ (Example: cs\W1234567)

Network accounts should be created for the students automatically. If you have any problems logging into the system, please contact [PatrickBeck@weber.edu](mailto:PatrickBeck@weber.edu) for technical assistance.
Allocated Time: Anticipate spending two to three hours of study per week for each credit hour of a university course. Computer and programming classes typically require time in the upper range.

<table>
<thead>
<tr>
<th>Assignments</th>
<th>Total / 100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classwork</td>
<td>5%</td>
</tr>
<tr>
<td>zyBook Participation</td>
<td>5%</td>
</tr>
<tr>
<td>Homework Assignments:</td>
<td>15%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>30%</td>
</tr>
<tr>
<td>Computer Programs</td>
<td>25%</td>
</tr>
<tr>
<td>Exams</td>
<td>20%</td>
</tr>
</tbody>
</table>

Classwork: Classwork is made up of individual and/or group work complementing the material covered in class. Classwork is completed during class and submitted online or on paper at the end of class.

zyBook Participation: zyBook participation involves Participation Activities and Challenge Activities. To receive credit, the Participation Activities must be completed before class begins. The Challenge Activities may be completed up to 2 class periods after class ends. You will receive full credit for completing 90% or more of the zyBook activities in a module and partial credit for completing 70% - 89% of the activities. Completing less than 70% of the activities will result in no credit for the module.

Homework Assignments: All homework will be due 2 class periods after it is assigned (except the last 2). If you want to argue points on any assignment, you have 2 weeks after it is returned to you. Homework can be submitted online or on paper during class.

Quizzes / Exams: Quizzes and Exams will be taken in class. Quizzes will be taken during the first 30 minutes of class (additional time is allowed for specific quizzes). The lowest quiz will be dropped. You will have 2 hours in class for the exams.

Quizzes and Exams are open book, open notes. Unless specified, you are allowed access to the text book, your zyBook, your notes, your previous assignments / quizzes, and a 4 function calculator. You are not allowed access to your neighbor, the internet (other than listed above), your smart phone, smart watch, or smart pacemaker, or your professional Discrete Math textbook author BFF.

Computer Programs: Programs can be written in Java, C, C++, or Python. Programs must be entirely a student’s own work. You are allowed to discuss program requirements but not program implementation with other students. Programs are due at midnight on the due date.
Late Policy

Late assignments will be accepted within the first five days following its original due date. The grade for a late assignment will be automatically reduced by 10% of the original point value for each day it is late. Assignments will not be accepted after five days. **Classwork and Quizzes cannot be made up.**

Military Deployment

During deployment, military personnel will be excused from the classwork and will not be penalized for late zyBook participation or homework assignments. Submit a copy of the deployment letter, indicating the dates, before the deployment begins.

Cheating:

Academic honesty is highly valued at Weber State University and within this class. A student must always submit work that represents his or her original words or ideas. If any words or ideas are used that do not represent the student's original words or ideas, the student must cite all relevant sources. The student should also make clear the extent to which such sources were used. Words or ideas that require citations include, but are not limited to, all hardcopy or electronic publications, whether copyrighted or not, and all verbal or visual communication when the content of such communication clearly originates from an identifiable source.

Individuals involved in any acts of cheating or plagiarism will be given a failing grade for the course. In addition, names of these individuals will be submitted for disciplinary action by the department and the university.

Academic dishonesty in an online learning environment involves any and all of the following:

- Having a tutor or friend complete a portion of your assignments
- Having a reviewer make extensive revisions to an assignment
- Copying work directly from another student
- Using information from online information services without proper citation

If detail source code is duplicated from another's program into yours, it will be deemed as cheating and severe action will be taken against persons who knowingly have participated. Source code that doesn't match the output results may also be deemed as cheating which may result in severe penalties.

CS Department policy dictates that any verifiable evidence of student academic cheating, as defined and determined by the instructor, will result in: 1) an automatic failing grade for the class and 2) a report to the Dean of Students that will include the student's name and a description of the student's dishonest conduct.

Students are expected to be familiar with the WSU Student Code and abide by it. The Code may be reviewed **online**, (pay specific attention to Section 4D). All necessary steps will be taken to enforce the Student Code to guarantee fairness to all students.

Disclaimer

The instructor reserves the right to amend the syllabus in any way deemed necessary.

<table>
<thead>
<tr>
<th>Letter Grades:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total &gt;= 94%</td>
<td>... A</td>
<td></td>
</tr>
<tr>
<td>90% &lt;= Total &lt; 94%</td>
<td>... A-</td>
<td></td>
</tr>
<tr>
<td>87% &lt;= Total &lt; 90%</td>
<td>... B+</td>
<td></td>
</tr>
<tr>
<td>84% &lt;= Total &lt; 87%</td>
<td>... B</td>
<td></td>
</tr>
<tr>
<td>80% &lt;= Total &lt; 84%</td>
<td>... B-</td>
<td></td>
</tr>
<tr>
<td>77% &lt;= Total &lt; 80%</td>
<td>... C+</td>
<td></td>
</tr>
</tbody>
</table>
Non-passing grade for CS majors:

- $74\% \leq \text{Total} < 77\%$...
  - $\text{C}$
- $70\% \leq \text{Total} < 74\%$...
  - $\text{C-}$
- $67\% \leq \text{Total} < 70\%$...
  - $\text{D+}$
- $64\% \leq \text{Total} < 67\%$...
  - $\text{D}$
- $60\% \leq \text{Total} < 64\%$...
  - $\text{D-}$
- $\text{Total} < 60\%$...
  - $\text{E}$

Incompletes can only be given in extraordinary circumstances.

---

**Tentative Schedule – CS2130 DAV TR Spring 2017**

<table>
<thead>
<tr>
<th>Textbook Section</th>
<th>zyBook Section</th>
<th>Quiz/Exam</th>
<th>Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tuesday and Thursday 7:30pm – 9:20pm</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Davis Campus, Room 225</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Jan 9 – Apr 25 (Finals Week)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MODULE 1: Chapter 1 – Fundamentals & Chapter 5 – Functions**

- **Introductions, Sec 1.1 – Sets**
  - **zyBook Section**: Sec 3.1 – 3.2
- **Sec 1.2 – Sets**
  - **zyBook Section**: Sec 3.3 – 3.4
  - **Program**: Program #1
- **Sec 5.1, 5.2 - Functions**
  - **zyBook Section**: Sec 4.1 - 4.6
  - **Program**: Program #2
- **Sec 1.3 - Sequences and Recursive Functions**
  - **zyBook Section**: Sec 8.1 - 8.2
  - **Quiz**: Quiz1 (1.1, 1.2)
  - **Program**: Program #3
- **Sec 1.4 - Integer Division and Number Bases**
  - **zyBook Section**: Sec 9.1 – 9.6
  - **Program**: Program #4

**MODULE 2: Chapter 2 - Logic & Chapter 6 - Order Relations and Structures**

- **Sec 2.1 - Propositional Logic**
  - **zyBook Section**: Sec 1.1 – 1.2
  - **Quiz**: Quiz2 (5.1,5.2,1.3)
  - **Program**: Program #5
- **Sec 2.2 - Propositional Logic**
  - **zyBook Section**: Sec 1.3 – 1.4
  - **Program**: Program #5
- **Sec 6.5 Digital Logic**
  - **zyBook Section**: Sec 5.3 – 5.4
  - **Program**: Program #6
- **Sec 6.6 - Digital Logic**
  - **zyBook Section**: Sec 5.5 – 5.6
  - **Quiz**: Quiz3 (1.4, 2.1)
  - **Program**: Program #6
- **Exam on sections up to 2.2 (inclusive)**
  - **Exam**: Exam #1

**MODULE 3: Chapter 3 – Counting**

- **Sec 3.1 - Counting Rules**
  - **zyBook Section**: Sec 10.1 – 10.4
  - **Program**: Program #7
- **Sec 3.2 - Counting Rules**
  - **zyBook Section**: Sec 10.5 – 10.10
  - **Program**: Program #7
<table>
<thead>
<tr>
<th>Module</th>
<th>Chapters</th>
<th>Sections</th>
<th>Quizzes</th>
<th>Program</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MODULE 4: Chapter 4 – Relations and Digraphs &amp; Chapter 7 – Trees</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sec 1.5 - Matrix Operations and Boolean Matrices</td>
<td>Sec 6.6</td>
<td>Quiz5 (3.1, 3.2)</td>
<td>Program #9</td>
<td></td>
</tr>
<tr>
<td>Sec 4.2 - Relations and Digraphs</td>
<td>Sec 6.1 – 6.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sec 4.3 – Relations - Paths</td>
<td>Sec 6.4</td>
<td>Quiz6 (3.4, 1.5)</td>
<td>Program #10</td>
<td></td>
</tr>
<tr>
<td>Sec 4.4 – Relations - Properties</td>
<td>Sec 6.7 – 6.8</td>
<td></td>
<td>Program #11</td>
<td></td>
</tr>
<tr>
<td>Sec 4.5 – Relations – Equivalence</td>
<td>Sec 6.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sec 4.8 – Relations – Closure</td>
<td>Sec 6.9 – 6.10</td>
<td>Quiz7 (4.2, 4.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sec 7.1 – Trees</td>
<td>Sec 14.1 – 14.3</td>
<td></td>
<td>Program #12</td>
<td></td>
</tr>
<tr>
<td>Sec 7.3 – Tree Searching</td>
<td>Sec 14.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sec 7.5 – Spanning Trees</td>
<td>Sec 14.5 – 14.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Exam on sections 6.5 – 4.8 (inclusive)</strong></td>
<td></td>
<td></td>
<td></td>
<td>Exam #2</td>
</tr>
<tr>
<td><strong>MODULE 5: Chapter 10 – Languages and Finite State machines</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sec 1.3 - Languages and Regular Expressions</td>
<td>Sec 7.6</td>
<td>Quiz8 (7.1, 7.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sec 10.1 – Grammars</td>
<td>Sec – none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sec 10.3 - Finite State Machines</td>
<td>Sec 7.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sec 10.4 - Finite State Machines</td>
<td>Sec – none</td>
<td>Quiz9 (7.5, 1.3, 10.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sec 10.5 - Finite State Machines</td>
<td>Sec 7.5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comprehensive Final Exam**

*in class*

**Thur 4/27 7:00 – 8:50**

*Subject to change at instructor’s discretion*