Course Syllabus
FW4099 or 5510 – Bioinformatics Programming and Skills
School of Forest Resources and Environmental Science

Instructor Information
Instructor: Hairong Wei, PhD, Assistant Professor
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Office Hours: TR 4:00 pm – 5:00 pm or by appointment

Course Information
Course Number: FW4099 or FW5510
Course Name: Bioinformatics Programming and Skills
Prerequisites: No
Course Web: http://forest.mtu.edu/classes/fw4099/index.html

Course Description/Overview
This course is designed for students in biology and other disciplines like computer science and mathematics to develop the most fundamental but useful Perl programming skills that are required for doing bioinformatics.

Course Learning Objectives
The most useful skills for a bioinformatician include: (1). working knowledge of biology and its applications; (2). proficiency in computer languages; (3). skills in data mining; (4). skills in data visualization; (5). experience with systems biology tools; (6). experience in using bioinformatics resources. (7). automation—pipeline development. The combination of above-mentioned skills will make students to be competitive for employment opportunities and help them to initiate their career. In this course, we attempt to provide students with the opportunities to learn skills (1), (2), (6) and (7).

Upon completion of this course, students will be able to:

• Prepare large-scale expression and sequence data for bioinformatics analyses
• Write programs to manipulate files and directories
• Extract useful information from text files
• Learn genomics resource and how to annotate genes
• Do R programming
• Develop software

Course Textbook (Item 1 or 2. Item 3 is optional)
1. Professional Perl Programming, by Peter Wainwright
2. Learning Perl, Randal Schwartz, Tom Phoenix and Brian d Foy
3. Effective Perl Programming: Writing Better Programs with Perl by Joseph N. Hall and Randal Schwartz

Grading Scheme

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Percentage</th>
<th>Grade points/credit</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90% &amp; above</td>
<td>4.00</td>
<td>Excellent</td>
</tr>
<tr>
<td>AB</td>
<td>85% – 89%</td>
<td>3.50</td>
<td>Very good</td>
</tr>
<tr>
<td>B</td>
<td>80% – 85%</td>
<td>3.00</td>
<td>Good</td>
</tr>
<tr>
<td>BC</td>
<td>75% – 80%</td>
<td>2.50</td>
<td>Above average</td>
</tr>
<tr>
<td>C</td>
<td>70% – 75%</td>
<td>2.00</td>
<td>Average</td>
</tr>
<tr>
<td>CD</td>
<td>65% – 70%</td>
<td>1.50</td>
<td>Below average</td>
</tr>
<tr>
<td>D</td>
<td>60% - 65%</td>
<td>1.00</td>
<td>Inferior</td>
</tr>
<tr>
<td>F</td>
<td>&lt; 60%</td>
<td>0.00</td>
<td>Failure</td>
</tr>
<tr>
<td>I</td>
<td>Incomplete; given only when a student is unable to complete a segment of the course because of circumstances beyond the student’s control. A grade of incomplete may be given only when approved in writing by the department chair or school dean.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>Conditional, with no grade points per credit; given only when the student is at fault in failing to complete a minor segment of a course, but in the judgment of the instructor does not need to repeat the course. It must be made up within the next semester in residence or the grade becomes a failure (F). A (X) grade is computed into the grade point average as a (F) grade.</td>
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</tbody>
</table>

Grading Policy
Grades will be based on the following:
<table>
<thead>
<tr>
<th></th>
<th>6</th>
<th>30%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>6</td>
<td>30%</td>
</tr>
<tr>
<td>Projects</td>
<td>2</td>
<td>24%</td>
</tr>
<tr>
<td>Exams (mid and final)</td>
<td>2</td>
<td>40%</td>
</tr>
<tr>
<td>Class attendance/participation</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td><strong>Total Points</strong></td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

**Late Assignments**

- One day delay: 10% off
- Two-day delay: 30% off
- Three-day delay: 50% off
- Otherwise: 100% off

**Course Policies**

Behavioral standards, attendance, group work/collaboration, safety regulations, etc.

**Collaboration/Plagiarism Rules**

Specific course rules or policies regarding collaboration on graded academic exercises.

**Example:** Cell phones, Blackberries, iPods, PDAs, or any other electronic devises are not to be used in the classroom. However, you can bring your laptop to classes.

**University Policies**

Academic regulations and procedures are governed by University policy. Academic dishonesty cases will be handled in accordance the University's policies.

If you have a disability that could affect your performance in this class or that requires an accommodation under the Americans with Disabilities Act, please see me as soon as possible so that we can make appropriate arrangements. The Affirmative Action Office has asked that you be made aware of the following:

*Michigan Tech complies with all federal and state laws and regulations regarding discrimination, including the Americans with Disabilities Act of 1990. If you have a disability and need a reasonable accommodation for equal access to education or services at Michigan Tech, please call the Dean of Students Office, at 487-2352. For other concerns about discrimination, you may contact your advisor, department head or the Affirmative Action Office, at 487-3310*

**Academic Integrity:**

http://www.studentaffairs.mtu.edu/dean/judicial/policies/academic_integrity.html

**Affirmative Action:**

http://www.admin.mtu.edu/aa0/
Disability Services:
http://www.admin.mtu.edu/urel/studenthandbook/student_services.html#disability

Equal Opportunity Statement: