CSC 7300
Section 001
Bioinformatics I: Biological Databases and Data Analysis
Spring/Summer 2017
318 State Hall
W F 02:30 P.M. – 4:00 P.M.

Instructor:
Name: Diana Diaz
Office location: 5057 Woodward Ave Suite 3.211
Email: dmd@wayne.edu

Office Hours: W 12:30 PM- 2:30 PM

Course Description:
Concepts of bioinformatics; tools for storing and analysis of bioinformatics data.

Supplementary information for the course is available at http://blackboard.wayne.edu. Log on with your Access ID for class notes, lecture slides, class announcements, the course syllabus, and other information for the course. You will submit your assignments and project and check grades there too.

Credit Hours:
4 Credit Hours (Lecture: 3; Lab: 1)

Perquisite:
MAT 2010.

Co-requisites:
CSC 7301 Bioinformatics I Laboratory.

Text(s) Book:

Computer Programs:
The software is R-Studio and R. Both are freely available online from:
https://www.rstudio.com/ and https://cran.r-project.org/

Course contents:

1. Basic concepts of molecular biology
2. Basic DB querying
3. Elements of statistics
4. Classical approaches to data analysis
5. Biological databases and analyses tools
7. Biological pathway databases

Laboratory:
There will be 12 lab assignments. The goal is to illustrate the concepts discussed in class.

Course Learning Objectives:

Upon successful completion of this class, the student will be able to:

1. Differentiate the different types of biological data
2. Pre-process a biological dataset using R
3. Identify differentially expressed genes using R
4. Perform basic analysis to gene expression data using R

Assessment:

Presentation (1 x 200 = 200 points) 20%
Quizzes (20 x 10 = 200 points) 20%
Project (1 x 600 = 600 points) 60%

Grading Scale:

The grades for the course will be based upon the percentages given below

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<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>90 - 100%</td>
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<tr>
<td>A-</td>
<td>87 - 89%</td>
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<tr>
<td>B+</td>
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<td>B</td>
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<td>B-</td>
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<td>C+</td>
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<td>C</td>
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<td>D</td>
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<td>F</td>
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Grading Policies:

1. The lab section is associated with the lecture, but both are graded separately.
2. All assignments must be submitted by the blackboard. No email or hard copy is accepted.
3. Grades will be posted on Blackboard.
4. After 7 days from posting a grade on Blackboard, it will become final.
5. All students are requested to access their Wayne State e-mail account regularly. You may be contacted when important matters arise. If you have any questions about the course or need assistance, please contact the instructor and/or the TA in person during office hours or by e-mail at any time.

Religious Holidays:

Because of the extraordinary variety of religious affiliations of the University student body and staff, the Academic Calendar makes no provisions for religious holidays. However, it is University policy to respect the faith and religious obligations of the individual. Students with classes or examinations that conflict with their religious observances are expected to notify their instructors well in advance so that mutually agreeable alternatives may be worked out.

Student Disabilities Services:

- If you have a documented disability that requires accommodations, you will need to register with Student Disability Services for coordination of your academic accommodations. The Student Disability Services (SDS) office is located in the Admany Undergraduate Library. The SDS telephone number is 313-577-1851 or 313-202-4216 (Videophone use only). Once your accommodation is in place, someone can meet with you privately to discuss your special needs. Student Disability Services’ mission is to assist the university in creating an accessible community where students with disabilities have an equal opportunity to fully participate in their educational experience at Wayne State University.
- Students who are registered with Student Disability Services and who are eligible for alternate testing accommodations such as extended test time and/or a distraction-reduced environment should present the required test permit to the professor at least one week in advance of the exam. Federal law requires that a student registered with SDS is entitled to the reasonable accommodations specified in the student’s accommodation letter, which might include allowing the student to take the final exam on a day different than the rest of the class.

Academic Dishonesty - Plagiarism and Cheating:

Academic misbehavior means any activity that tends to compromise the academic integrity of the institution or subvert the education process. All forms of academic misbehavior are prohibited at Wayne State University, as outlined in the Student Code of Conduct (http://www.doso.wayne.edu/student-conduct-services.html). Students who commit or assist in committing dishonest acts are subject to downgrading (to a failing grade for the test, paper, or other course-related activity in question, or for the entire course) and/or additional sanctions as described in the Student Code of Conduct.
• **Cheating:** Intentionally using or attempting to use, or intentionally providing or attempting to provide, unauthorized materials, information or assistance in any academic exercise. Examples include: (a) copying from another student’s test paper; (b) allowing another student to copy from a test paper; (c) using unauthorized material such as a "cheat sheet" during an exam.

• **Fabrication:** Intentional and unauthorized falsification of any information or citation. Examples include: (a) citation of information not taken from the source indicated; (b) listing sources in a bibliography not used in a research paper.

• **Plagiarism:** To take and use another’s words or ideas as one’s own. Examples include: (a) failure to use appropriate referencing when using the words or ideas of other persons; (b) altering the language, paraphrasing, omitting, rearranging, or forming new combinations of words in an attempt to make the thoughts of another appear as your own.

• **Other** forms of academic misbehavior include, but are not limited to: (a) unauthorized use of resources, or any attempt to limit another student’s access to educational resources, or any attempt to alter equipment so as to lead to an incorrect answer for subsequent users; (b) enlisting the assistance of a substitute in the taking of examinations; (c) violating course rules as defined in the course syllabus or other written information provided to the student; (d) selling, buying or stealing all or part of an un-administered test or answers to the test; (e) changing or altering a grade on a test or other academic grade records.

**Course Drops and Withdrawals:**
There will be no in-completes given for the course. In the first two weeks of the (full) term, students can drop this class and receive 100% tuition and course fee cancellation. After the end of the second week there is no tuition or fee cancellation. Students who wish to withdraw from the class can initiate a withdrawal request on Pipeline. You will receive a transcript notation of WP (passing), WF (failing), or WN (no graded work) at the time of withdrawal. No withdrawals can be initiated after the end of the tenth week. Students enrolled in the 10th week and beyond will receive a grade. Because withdrawing from courses may have negative academic and financial consequences, students considering course withdrawal should make sure they fully understand all the consequences before taking this step. More information on this can be found at: [http://reg.wayne.edu/pdf-policies/students.pdf](http://reg.wayne.edu/pdf-policies/students.pdf)

**Student services:**
- The Academic Success Center (1600 Undergraduate Library) assists students with content in select courses and in strengthening study skills. Visit [www.success.wayne.edu](http://www.success.wayne.edu) for schedules and information on study skills workshops, tutoring and supplemental instruction (primarily in 1000 and 2000 level courses).
- The Writing Center is located on the 2nd floor of the Undergraduate Library and provides individual tutoring consultations free of charge. Visit [http://clasweb.clas.wayne.edu/writing](http://clasweb.clas.wayne.edu/writing) to obtain information on tutors, appointments, and the type of help they can provide.
**Class recordings:**
Students need prior written permission from the instructor before recording any portion of this class. If permission is granted, the audio and/or video recording is to be used only for the student’s personal instructional use. Such recordings are not intended for a wider public audience, such as postings to the internet or sharing with others. Students registered with Student Disabilities Services (SDS) who wish to record class materials must present their specific accommodation to the instructor, who will subsequently comply with the request unless there is some specific reason why s/he cannot, such as discussion of confidential or protected information.

**Other issues**
- Foods and drinks are not allowed during the lecture or lab hours.
- Cell phones and other two-way communication devices: Students are expected to turn off their devices or turn them to the silent mode when they come to the lecture or to the lab. If a device is used in any way in the lab, you will receive a verbal warning first and then you will be asked to leave immediately.