Syllabus
EPP 604 Spring 2020 Advanced Topics in Bioinformatics, Genetics, and Genomics
University of Tennessee, Knoxville

Computational genomics journal club specifically focused on transcriptome data and analysis tools.

Course sections:	EPP 604-001
Meeting Time:	Tuesday 3:40-4:30
Meeting Place:	Plant Biotechnology Building, Room 410
Course Credit Hours:	1
Couse website:	https://github.com/mestato/EPP604/wiki/

Instructors

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Assistant Professor — Office: PBB 154
Entomology and Plant Pathology — Office hours: after class and by appointment

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The instructor reserves the right to revise, alter or amend this syllabus as necessary. Students will be notified by email of any such changes.

I. Course Description

This one hour computational genomics journal club will specifically focused on reading peer-reviewed literature articles addressing transcriptomic data and analysis tools. Transcriptomic data may encompass next-generation sequencing of total RNA, mRNA, small RNA, RNA ends (i.e. degradome), ribosome profiling, metatranscriptomics, etc.

II. Value Proposition

RNA-based sequence data is a prevalent and powerful tool in molecular biology, with exciting new techniques emerging every year, including profiling of total RNA, mRNA, small RNA, RNA ends (i.e. degradome), ribosome activity, and multispecies total RNA (metatranscriptomics). Transcriptome profiling is an effective and promising tool for generating biological research discoveries, but it requires understanding of specific laboratory and data analysis procedures. This course will provide students the opportunity to explore transcriptomics in all its modern forms. Further, students will develop skills in reading, evaluating, understanding and criticizing peer-reviewed literature. Students will also practice oral presentation skills.

III. Student Learning Outcomes/Objectives

A. Students will have a working knowledge of transcriptomics profiling methods and resulting scientific discoveries derived from peer-reviewed literature
B. Students will be able to effectively communicate and critically assess peer-reviewed literature

IV. Learning Environment

Class meets Tuesday 3:30-4:30 in PBB 410 and will consist of presentations and discussion.

A classroom is a collaborative environment, and both the instructor and the students have a shared responsibility to ensure a successful learning experience. Students should be prepared for all classes, be respectful of others, actively contribute to the learning activities in class, and abide by the UT Honor Code. The instructors will be

prepared for all classes, evaluate learners fairly and equally, be respectful of all students, create and facilitate meaningful learning activities, and follow University codes of conduct.

V. Course Communication

Communication will be face to face during class meetings. Outside of class, the instructor and TAs will utilize email and the course website to communicate course information, such as additional readings, changes to the syllabus, answering questions relevant to all students, etc. All students are responsible for checking their university email accounts and reading all emails regarding the class.

VI. Texts/Resources/Materials

The course website will be used to distribute reading materials, presentations, and relevant links (https://github.com/mestato/EPP604/wiki/). There is not a required textbook to purchase. Readings for each class period can be found on the course website.

VII. Required Equipment

Students are required to bring their own laptops (and power cord if needed) to class on the day they are presenting or to provide the instructor their presentation ahead of class.

VIII. Course Evaluation

The final grade for each student will be on an A-F scale:

A	94-100 points
A-	90-93 points
B+	87-89 points
B	84-86 points
B-	80-83 points
C+	77-79 points
C	74-76 points
C-	70-73 points
F	below 70 points

Points will be accrued through:

Presenting assigned article(s)	
Oral presentation of article(s)	20 points
Leading discussion of the article(s)	20 points
Engaging in discussion throughout the semester	60 points
Taking course evaluation	5 extra credit points
Science Fair Judge	5 extra credit points

Details (and how to be successful in this class):

Selecting an article

- The article should utilize transcriptomics as a primary methodology
- The article needs to be a peer-reviewed publication.
- The article should be no more than 5 years old (except with permission of instructor)
- The article should have a high impact – while this is largely subjective, a high h-index or publication in a high impact journal may be indicative of high scientific impact
- Ask the instructor about the appropriateness at least 2 weeks ahead of time
- Email the article to the class at least 1 week ahead of time (by the previous class)

Oral presentation

- Spend about 20 minutes on the presentation. Do not go over or under by more than 5 minutes.
- Explore the article with a clear, easy to understand presentation appropriate for all audience members

- Provide sufficient background for the audience to understand the article
- Cover the methods and results as well as future implications
- Cover the strengths and weaknesses of the paper

Leading discussion

- After we go through each student's question or point (see below), be prepared with a few more thought-provoking questions to generate discussion
- Make sure everyone in the room has time to express an opinion and no individual person dominates the discussion. Try a web search on "how to moderate a panel" or "how to moderate a discussion" to get some tips.
- If there is silence before the end of class and no one has come up with anything else to say, this is a problem! We want to utilize the entire class period to explore the topic, so you may bring up additional conversational points outside the scope of the paper, such as if anyone in the class has used similar techniques and how they compare, what follow up studies are needed, your own experience, etc.

Engaging in discussion

- Read each article and spend time thinking about it well before the class. Each student will be asked one by one to say something about the article – to either provide a comment or to ask a question of the group. These should be criticisms or technological considerations or other items to generate discussion. Comments like "this was well written" or "I like this article" are not sufficient for credit.
- Don't be afraid to speak up or worry about saying something incorrect. Each student comes to the class with different areas of research and background. This is what makes the discussion interesting and helps to see concepts from a different perspective.
- 5 points for each class period that you provide an appropriate comment/question about the article.

IX. Attendance

Attendance is the responsibility of each student. Your discussion grade will suffer if you miss class frequently. Absences due to special circumstances should be discussed with the instructor prior to the absence via email or in person.

XI. Course Feedback

A final course evaluation will be provided to each student at the end of the course through the Student Assessment of Instruction System (SAIS). Each student will receive an email toward the end of the semester providing a link to the survey. 5 extra credit points will be awarded for sending a screenshot of the completion screen of the survey.

Course Schedule

January

14 – Syllabus review

21 – Class – Presenter TBD

28 - Class – Presenter TBD

February

4 – Class – Presenter TBD

11– Class – Presenter TBD

18 – Class – Presenter TBD

25 – Class – Presenter TBD

March

3– Class – Presenter TBD

10– Class – Presenter TBD

17– SPRING BREAK

24 – Class – Presenter TBD

31 – Class – No class!

April

7– Class – Presenter TBD *

14– Class – Presenter TBD

21– Class – Presenter TBD

No exam.

* Meg out of town.

! Both instructors unavailable

UNIVERSITY POLICIES

Academic Integrity:

"An essential feature of the University of Tennessee, Knoxville is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. As a student of the university, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity."

University Civility Statement:

Civility is genuine respect and regard for others: politeness, consideration, tact, good manners, graciousness, cordiality, affability, amiability and courteousness. Civility enhances academic freedom and integrity, and is a prerequisite to the free exchange of ideas and knowledge in the learning community. Our community consists of students, faculty, staff, alumni, and campus visitors. Community members affect each other's well-being and have a shared interest in creating and sustaining an environment where all community members and their points of view are valued and respected. Affirming the value of each member of the university community, the campus asks that all its members adhere to the principles of civility and community adopted by the campus: http://civility.utk.edu/.

Disability Services:

"Any student who feels s/he may need an accommodation based on the impact of a disability should contact Student Disability Services in Dunford Hall, at 865-974-6087, or by video relay at, 865-622-6566, to coordinate reasonable academic accommodations.

Your Role in Improving Teaching and Learning Through Course Assessment:

At UT, it is our collective responsibility to improve the state of teaching and learning. During the semester, you may be requested to assess aspects of this course either during class or at the completion of the class. You are encouraged to respond to these various forms of assessment as a means of continuing to improve the quality of the UT learning experience.

Key Campus Resources for Students:

- Center for Career Development (Career counseling and resources; HIRE-A-VOL job search system)
- Course Catalogs (Listing of academic programs, courses, and policies)
- Hilltopics (Campus and academic policies, procedures and standards of conduct)
- OIT HelpDesk **(865)** 974-9900
- Schedule of Classes/Timetable
- Student Health Center (visit the site for a list of services)
- Student Success Center (Academic support resources)
- Undergraduate Academic Advising (Advising resources, course requirements, and major guides)
- University Libraries (Access to library resources, databases, course reserves, and services)