

BIOL 524 / BIOL 468 / BIOL 680G High Throughput Instrumentation

Winter 2017

COURSE OUTLINE

Course Code: BIOL 524 5, BIOL 486 51, BIOL 680 51 2164

Class: Tuesdays 17h00 – 19h45, Room GE 110.00

Instructor: Dr. David Kwan (david.kwan@concordia.ca)

Office hours: Email instructor for appointment between 15:45 – 16h45 on Tuesdays

Course description: This course will introduce a broad range of topics on high throughput approaches in biology and biotechnology. Technologies covered in the course will include next-generation sequencing, microarrays, mass spec proteomics, automated liquid handling, microfluidics, and flow cytometry. Class time will be divided into a lecture component introducing the different high-throughput technologies at a basic conceptual level and a demonstration component in which practical use of specific instruments will be shown to the class. Evaluation will include quizzes, two in-class exams, written assignments, and oral presentations. For written assignments and oral presentations students will be asked to find articles on research involving high-throughput approaches in biology and to critically evaluate and present the work. Students are encouraged to develop critical skills in reading, commenting and presenting primary scientific literature in both written and oral format. The course emphasizes the students' initiative, collaboration and active learning. Students are encouraged and expected to develop the capacity to provide constructive feedback to each other and to actively participate to the course through discussions, content and various educational experiences.

Course material: There is no required text for the course. General background information can be obtained from any up to date molecular biology textbook (e.g. Molecular Biology of the Cell, Alberts, and Molecular Biology of the Gene, Watson) or various online sources. Documents will be posted online or sent by email on a regular basis. Part of the course interaction will occur through the Moodle online course (document uploads, discussions and answer to questions on forums). As such, students are expected to check their email messages and log on to the course Moodle website on a regular basis. Since access to PubMed and scientific journals is critical, it is recommended for students who plan to work on their assignments off campus to get their Concordia Library PIN in order to log on to CLUES.

Grading and evaluation

Contribution to grade	Activity	Description	Format
5%	Quizzes (6)	Six quizzes, each covering one of the topics discussed in class	In-class, multiple choice, short answer
12%	1 st exam	Covering next-gen sequencing, microarrays, mass spec proteomics	In-class, multiple choice, short answer
12%	1 st oral presentation (group)	A presentation on one of the general HT approaches introduced in the first half of the course, focusing on applications as well as basic concepts/principles	20 minute (powerpoint, keynote, etc.)
16%	1 st written report	A written report on a paper describing research that applies one of the first three HT technologies introduced in class	3-5 pages of text plus figures and references
15%	2 nd exam	Covering all of the HT technologies discussed in class	In-class, multiple choice, short answer
15%	2 nd oral presentation (individual)	A talk presenting the paper on which either the first or second report was written	20 minute (powerpoint, keynote, etc.)
20%	2 nd written report	A written report on a paper describing research that applies to one of the final three HT technologies introduced in class	3-5 pages of text plus figures and references
5%	Participation	In class participation, preparedness, contribution to discussions, etc.	

Marking scheme: A+ 90-100, A 85-89, A- 80-84, B+ 77-79, B 74-76, B- 70-73, C+ 67-69, C 64-66, C- 60-63, D+ 57-59, D 54-56, D- 50-53, F < 50

ACADEMIC INTEGRITY AND ACADEMIC CODE OF CONDUCT: Any form of cheating or plagiarism found will be reported and the appropriate sanctions applied. This course, like all other courses offered at Concordia University, follows the “Academic Integrity and the Academic Code of Conduct.” Students must inform themselves on these codes of conduct:

<http://registrar.concordia.ca/calendar/17/17.10.html>

<http://provost.concordia.ca/academicintegrity/misconduct/>

<http://provost.concordia.ca/academicintegrity/plagiarism/>