

## **BIOD30 Plant Research and Biotechnology: Addressing Global Problems**

Winter 2017 Course Syllabus Dr. Clare Hasenkampf

### **WELCOME TO BIOD30!**

The knowledge you learn in this course is valuable for understanding the relationship of basic research to applications that help society. Students who make a strong effort can expect to become better problem solvers and critical readers of scientific literature, and can also expect to develop the ability to identify what intellectual resources and techniques are required to attack a particular problem. BIOD30 can also help you be a better science-literate citizen in a complex world. If you keep up with the learning activities of this course it also can be fun!

### **INTERACTION TIMES AND COMMUNICATION METHODS**

The two meetings per week for this class are both essential and participation and attendance is required; either session might be lecture-like or tutorial-like. Class meets 3-5 on Tuesday (in MW 130) and Thursday (IC120). Tuesday and Thursday class meetings start in the first week of classes and occur every week.

Office hours are Wednesdays 4-6 in SY246

Please address all questions to Dr. Hasenkampf at [hasenkampf@utsc.utoronto.ca](mailto:hasenkampf@utsc.utoronto.ca). Please use your U of T email account. Allow 2 working days for a response (but often response times will be quicker than that).

Dr. Patti Stronghill will be the TA for the course.

This course is about reading the primary literature in Plant Science and developing strategies and skills to fully appreciate the research undertaken by these plant scientists. There is no textbook; readings will be placed on the blackboard site. To accomplish this, the first week will be an overview, then we will have three guest speaker cycles; prior to each speaker's presentation we will read the articles and develop the background knowledge necessary to appreciate and critique their work. Toward the end of the course students will give presentations on an area of plant biotechnology of their choice.

**First Research Presentation Cycle Jan 12, 17,19,24, 26 and 31<sup>st</sup>** featuring the research of Professor Jacqueline Monaghan from Queen's University; her presentation is on Jan 26<sup>th</sup> and is titled, "Mechanisms regulating immune signaling and homeostasis in plants"

**Second Research Presentation Cycle February 2,7,9,14,16 and 28<sup>th</sup>** featuring the research of Dr. Keshav Dahal from University of Toronto Scarborough; his presentation is on **Feb 16<sup>th</sup>** and is titled, "Improving Crop Productivity under Future Sub-optimal Growth Conditions"

**Third Research Presentation Cycle March 2,7,9,14,16 and 28<sup>th</sup>** featuring the research of Professor Dario Bonetta, University of Ontario Institute of Technology; his presentation is on March 16<sup>th</sup> and is entitled "TBA"

### **LEARNING GOALS FOR STUDENTS**

LO1: Students will be able to identify distinctive features of plants and plant cells and systems that allow them to be used for translational research that addresses global problems.

LO2: Students will be able to identify essential features of testable hypotheses and develop skill in developing and assessing experiments that test hypotheses.

LO3: Students will improve their ability to analyze complex problems by identifying the key terms, concepts and techniques they need to solve a specific problem and gain experience in how to develop strategies/experiments to address these problems.

LO4: Students will improve their skill in scientific communication with peers and professional scientists and in presenting and defending hypotheses.

LO5: Students will learn to efficiently find and use library and internet resources and cite articles correctly.

LO6: Students will become more proficient at working collaboratively as part of a team to accomplish personal and group learning goals. This includes learning to distribute a task's workload equitably and to give each other constructive active feedback in a professional and constructive manner.

LO7: Students will practice their leadership skills within the context of team discussions and assignments.

LO8: Students will practice communicating as a professional in all correspondence for this course including: emails to team mates, TAs and instructor, organization of project notes, and oral and written assignments.

### **DATES, DEADLINES AND ACTIVITIES ON THESE DATES**

January 3, 5 Review of macromolecules, respiration and photosynthesis, Dr. Hasenkampf

*For class on Jan 10: read articles on 1) 'How to Read Scientific Articles' 62123 and 62124  
2) 'Team Effectiveness' 62334 and 3) Current Challenges ....Plant Biotechnology 63127 for the following week.*

*For class on Jan 12 - read Dr. Monaghan's first research article assignment 63129, complete the ANT 'article notetaking template', and take the online quiz on first reading assignment before Jan 12th class meeting.*

January 10 Plant Biotechnology perspective, team work exercises, critical Reading of Scientific Articles and concept mapping and visit by Ms Maggie Roberts re: critical reading of literature and concept mapping.

January 12 First Dr. Monaghan research paper assignment: Have read article, taken online quiz, bring completed article notes to class (using the ANT article note taking template).  
Visit by librarian Sarah Guay on using library resources.

*For the class on Jan 17<sup>th</sup> get your presentation ready (if you have one);*

*For the class on Jan 19<sup>th</sup> class read second primary research article assignment 63131 and 63134, take online quiz, and bring completed ANT notes to class Jan 19<sup>th</sup>.*

January 17<sup>th</sup> Student presentations on key techniques and terms used for research paper assignment 1.

January 19<sup>th</sup> Second Dr. Monaghan research paper assignment: Have read articles, taken online quiz, bring completed ANT notes to class.

*For the class on Jan 24<sup>th</sup> get your presentation ready (if you have one).*

*For the class on Jan 26<sup>th</sup> review your ANT sheets and notes from student presentations. Think about what questions you may have for Professor Monaghan, suggestions etc.*

January 24<sup>th</sup> Student presentations on key techniques and terms used for research paper assignment 1.

January 26<sup>th</sup> Professor Monaghan's presentation and Q&A.

*For January 31<sup>st</sup> Complete your summary of Dr. Monaghan's body of work and concept map, bring your residual questions to class.*

*For February 2<sup>nd</sup> class - read Dr. Dahal's first primary research article assignment(# provided later), complete the ANT 'article notetaking template', and take the online quiz on first reading assignment before Feb 2<sup>nd</sup> class meeting.*

January 31<sup>st</sup> 'Monaghan' summary assignment due; Class debrief on Professor Monaghan's presentation and Plant Immunity Concept Map

February 2 First Dr. Dahal research paper assignment: Have read article, have taken online quiz, bring completed ANT notes to class.

*For the class on Feb 7<sup>th</sup> get your presentation ready ( if you have one);*

*For the class on Feb 9<sup>th</sup> class read second Dahal research article (# provided later), take online quiz, and bring completed ANT notes to class Jan 19<sup>th</sup>.*

February 7<sup>th</sup> Student presentations on key techniques and terms used for research paper assignment 1.

February 9<sup>th</sup> Dr. Dahal's Second research paper assignment: Have read articles, have taken online quiz, bring completed ANT notes to class.

*For the class on Feb 14<sup>th</sup> get your presentation ready (if you have one).*

*For the class on Feb 16<sup>th</sup> review your ANT sheets and notes from student presentations. Think about what questions you may have for Dr. Dahal, suggestions etc.*

February 14<sup>th</sup> Student presentations on key techniques and terms used for research paper assignment 1.

February 16<sup>th</sup> Dr. Dahal's presentation and Q&A.

### **February 21, 23 Reading Week get your presentation topics selected**

*For Feb 28<sup>th</sup> Complete your summary of Dr. Dahal's body of work and concept map, bring your residual questions to class. Bring your team's Plant Biotechnology Topic and the selected review article and two primary research articles to class.*

*For March 2<sup>nd</sup> class - read Dr. Bonetta's first primary research article assignment, complete the ANT 'article notetaking template', and take the online quiz on first reading assignment before March 2<sup>nd</sup> class meeting.*

February 28<sup>th</sup> Summary assignment due; Class debrief on Dr. Dahal's presentation and Concept Map. Team's bring their Plant Biotechnology topic selection to class with one review article and two research papers that will be considered.

March 2 First Professor.Bonetta research paper assignment: have read article, have taken online quiz, bring completed ANT notes to class.

*For the class on March 7<sup>th</sup> get your presentation ready ( if you have one);*

*For the class on March 9<sup>th</sup> class read Dr. Bonetta's second research article assignment, take online quiz, and bring completed ANT notes to class March 9<sup>th</sup>.*

March 7<sup>th</sup> Student presentations on key techniques and terms used for research paper assignment 1.

March 9<sup>th</sup> Dr. Bonetta's second research paper assignment: Have read articles, have taken online quiz, bring completed ANT notes to class.

*For the class on March 14<sup>th</sup> get your presentation ready (if you have one).*

*For the class on March 16<sup>th</sup> review your ANT sheets and notes from student presentations. Think about what questions you may have for Professor Bonetta, suggestions etc.*

March 14<sup>th</sup> Student presentations on key techniques and terms used for research paper assignment 1.

March 16<sup>th</sup> Professor Bonetta's presentation and Q&A.

*For March 21<sup>st</sup> Complete your summary of Dr. Bonetta's body of work and concept map, bring your residual questions to class.*

March 21<sup>st</sup> Summary assignment due; Class debrief on Dr. Bonetta's presentation and Concept Map

March 23<sup>rd</sup> No class, students preparing their oral and written summary and concept map of a Plant Biology research/ Biotechnology topic of their choosing.

March 28, 30 Student team oral presentations.

## MARKING SCHEME

Part 1		
Research article Reading Assignment Quizzes	6 quizzes, two pts each	12 pts
Research article Reading Article summary sheet	6 summaries, 3 pts each	18 pts
Part 2		
Class Presentation on key article techniques & definitions	6 presentations, 2pts each	12 pts
Research presentation summary and analyses,	3 summaries 6 pts each	18 pts
Team plans for their presentation (topic and selected articles)		1 pt
Team oral presentations on a plant biology research topic (2-3 articles)		4 pts
Individual article summaries (same articles as oral presentation), analysis and concept map		10 pts
Part 3		
Comprehensive exam (open book allowed materials include one's own submitted work, and Dr. H's posted lecture slides (not her notes) and assigned reading articles.		25 pts
Some of you may be taking this course credit/no credit. That is fine, you are welcome in this course. But please realize that everyone's learning in this course is interconnected to the work done by other students. The more different students there are that take the readings and work seriously, the more learning will occur. <b>Therefore to pass this course a student must pass Part 1 and Part 2, in addition to having an overall passing grade on the combined work of Parts 1,2 &amp; 3.</b>		

## COMMUNICATION INFORMATION

Course announcements, communications and lecture notes will be available on the BIOD30 Blackboard course site. Be sure you have a Utorid and know how to access the Blackboard sites.

Check the Blackboard site regularly for important, time-sensitive announcements.

Normally, students will be required to submit their major assignments to Turnitin.com for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their writings to be included

as source documents in the Turnitin.com reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of the Turnitin.com service are described on the Turnitin.com web site. The TA will give you instructions on how to submit your assignment to TurnItIn in advance of the submission deadline.

Course evaluations for this course and all UTSC courses will be done on-line; please participate. Your assessments and insights are important to me in particular and the university in general!

## ABSENCE POLICY

If you are prevented from attending or completing a course requirement due to any illness or other circumstance of a grave nature, contact Dr.Hasenkampf by email within three days of the missed requirement, clearly stating the reason. This explanation should be accompanied by a completed 'Verification of illness or injury'- form or other official documentation of the grave circumstance. These documents will be used to determine eligibility to recover any lost marks.

The 'verification of illness or injury' form can be found at

<http://www.illnessverification.utoronto.ca/getattachment/index/Verification-of-Illness-or-Injury-form-Jan-22-2013.pdf.aspx>

A copy of the form is provided on the last page of the syllabus. Acquaint yourself with its content such that in case of an emergency you can obtain the essential information required, even in the absence of the official form.

Remember this course is about **learning**. When you are well, work hard and engage! If you are sick, take care of yourself, do what you can from home and get back into the swing of the course once you are well. Feel free to contact me for help strategizing for getting caught up.

The University of Toronto is dedicated to fostering an academic community in which the learning and scholarship of every member may flourish, with vigilant protection for individual human rights, and a resolute commitment to the principles of equal opportunity, equity and justice. The instructor and Teaching Assistants of BIOD30 fully endorse this policy.

## ACADEMIC INTEGRITY

The University treats cases of cheating and plagiarism very seriously. The University of Toronto's *Code of Behaviour on Academic Matters* (<http://www.governingcouncil.utoronto.ca/policies/behaveac.htm>) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences.

Potential offences in papers and assignments include using someone else's ideas or words without appropriate acknowledgement, submitting your own work in more than one course without the permission of the instructor, making up sources or facts, obtaining or providing unauthorized assistance on any assignment. On tests and exams cheating includes using or possessing unauthorized aids, looking at someone else's answers during an exam or test, misrepresenting your identity, or falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes.

Please avoid academic dishonesty, have confidence in your own ability to learn and grow academically by doing your own thinking and writing! I know you can learn a lot about genetics and yourself in this course.

## ACCESSABILITY

Students with diverse learning styles and needs are welcome in this course! In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or the AccessAbility Services Office as soon as possible. I will work with you and AccessAbility Services to ensure

you can achieve your learning goals in this course. Enquiries are confidential. The UTSC AccessAbility Services staff (located in SW302) are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations (416) 287-7560 or [ability@utsc.utoronto.ca](mailto:ability@utsc.utoronto.ca).

**OTHER PLANT SCIENCE SEMINARS ON CAMPUS** (optional but might provide ideas for your presentations)

- 1) Professor Eduardo Blumwald. Modifications of Source-Sink Relationships, Chloroplast Turnover and Stress Tolerance in Crop Plants Thursday, January 12, 2017 noon-1:00pm in IC 318 refreshments served
- 2) **Breaking codes and getting the message through: calcium signals and sensors in plants.** Professor Wayne Snedden. Jan 20<sup>th</sup> 12-1 in SW403.