

Principles of Biology II UA9012L01

NYU London: Spring 2019

Course Information

- Class: Monday 9am-12noon. Location to be announced.
- Recitations; one of the following – Monday 4.30pm-5.30pm; Tuesday 9am-10am; 10.15am-11.15am. Locations to be announced.
- Prerequisites: General Chemistry I and II; Principles of Biology I

Course Overview and Goals

Introductory course for science majors designed to acquaint the student with the fundamental principles and processes of biological systems. Subjects include the basics of chemistry pertinent to biology, biochemistry and cell biology, genetics and molecular biology, anatomy and physiology, neurobiology, ecology, population genetics and history and classification of life forms and evolution.

Upon Completion of this Course, students will be able to:

- An Understanding of the Principles of Biology

Course Requirements

Grading of Assignments

The grade for this course will be determined according to these assessment components:

| Assignments/ Activities | Description of Assignment | % of Final Grade | Due |
|------------------------------------|---|---------------------------------|----------------------------------|
| Participation in class | Alertness, involvement, willingness to contribute and to ask and to answer questions | 10 | |
| Coursework essay | 2000 words based on the first four weeks' lecture class work and on the visit to the Eden Project, Cornwall. | 20 | |
| Verbal presentation | 10 minute verbal presentation in recitation classes, extending class topic of student's choice, together with submission of | | Dates arranged with each student |

| Assignments/ Activities | Description of Assignment | % of Final Grade | Due |
|------------------------------------|---|---------------------------------|------------------------|
| | powerpoint slides, and 1000 word written synopsis. | | in week 2 of semester. |
| Two Midterm exams | Both one hour and fifteen minutes duration. Multiple Choice Questions and Short Written Answers (approx 200 words each answer) | 10% each exam | |
| Final Exam | Two hours and 30 minutes duration. Multiple choice questions, two short written answers (approx 200 words each answer) and two longer essays (approx 350 words each answer) | 30 | |

Failure to submit or fulfill any required course component results in failure of the class

Grades

Letter grades for the entire course will be assigned as follows:

| Letter Grade | Percent | Description |
|---------------------|---------------------------|--|
| A | Example: 93.5% and higher | <p>Excellent work showing a thorough knowledge and understanding of the topics, with excellent use of scientific language, detailed analysis and clear logical explanations, showing insight, independent, original thought and reasoning. Work should reveal a considerable degree of independent reading and research and coursework should include the use of peer reviewed primary reference material.</p> <p>Grading of verbal presentations will also include an assessment concerning preparation, communication with the audience, effective use of any slides/images presented, and ability to answer questions. (Grade A, excellent/very good</p> |
| B | Example: 82.5% - 87.49% | <p>Good work with good general knowledge and understanding of the topics, accurate use of scientific language, good general analysis and coherent explanations showing some independent reasoning, reading and research. Coursework may include the use of some peer reviewed primary reference material.</p> <p>Grading of verbal presentations will also include an assessment concerning</p> |

| Letter Grade | Percent | Description |
|---------------------|---------------------------|--|
| | | preparation, communication with the audience, effective use of any slides/images presented, and ability to answer questions. Grade B, good; C, satisfactory; D adequate in some aspects, not in others; F, unsatisfactory). |
| C | Example: 72.5% - 77.49% | Satisfactory work, broadly correct both factually and analytically, with some explanation and reasoning: the work will typically demonstrate a basic understanding of the topic. Grading of verbal presentations will also include an assessment concerning preparation, communication with the audience, effective use of any slides/images presented, and ability to answer questions. Grade C, satisfactory; D adequate in some aspects, not in others; F, unsatisfactory). |
| D | Example: 62.5% - 67.49 | Passable work, showing a general, superficial knowledge and understanding of the topic, lacking satisfactory use of scientific language or adequate analysis or reasoned explanations. Grading of verbal presentations will also include an assessment concerning preparation, communication with the audience, effective use of any slides/images presented, and ability to answer questions. Grade D adequate in some aspects, not in others; F, unsatisfactory). |
| F | Example: 59.99% and lower | Unsatisfactory work in assessed criteria. Grading of verbal presentations will also include an assessment concerning preparation, communication with the audience, effective use of any slides/images presented, and ability to answer questions. Grade F, unsatisfactory). |

Course Materials

Required Textbooks & Materials

- [Insert textbook or material name]
- **REQUIRED:** Campbell Biology 11th edition text book (Urry, Cain, Wasserman, Minorsky, Reece (either hardback or e-text)
- **ADVISABLE:**
Text book and “Mastering Biology available as a package as follows:
Campbell Biology book, 11th edition (Urry, Cain, Wasserman, Minorsky, Reece) hard back PLUS access to online “Mastering Biology” e-text access package card/code.
OR Campbell Biology book, 11th edition (Urry, Cain, Wasserman, Minorsky, Reece) e-text PLUS access to online “Mastering Biology” e-text access package card/code.
Access package card/code provides online “Mastering Biology” material with practice multiple choice questions and challenge questions for private study to reinforce and to challenge learning.

Optional Textbooks & Materials

- A Study Guide to accompany Campbell text book- provides practice multiple choice questions and challenge questions for private study, but these are less extensive than the “Mastering Biology” package

Resources

- **Access your course materials:** [NYU Classes](http://nyu.edu/its/classes) (nyu.edu/its/classes)
- **Databases, journal articles, and more:** [Bobst Library](http://library.nyu.edu) (library.nyu.edu)
- **NYUL Library Collection:** [Senate House Library](http://catalogue.libraries.london.ac.uk) (catalogue.libraries.london.ac.uk)
- **Assistance with strengthening your writing:** [NYU Writing Center](http://nyu.mywconline.com) (nyu.mywconline.com)
- **Obtain 24/7 technology assistance:** [IT Help Desk](http://nyu.edu/it/servicedesk) (nyu.edu/it/servicedesk)

Course Schedule

| Session/Date | Topic and Reading: Chapters in text book | Assignment Due |
|--------------|--|----------------|
| Session 1: | Bacteria and Archaea (27) Protists (28) | |
| Session 2: | Plant Diversity I: How Plants Colonized Land (29) Plant Diversity II: The Evolution of Seed Plants (30) | |
| Session 3: | Angiosperm Reproduction and Biotechnology (38) Plant Structure, Growth and Development (35) Resource Acquisition and Transport in Vascular Plants (36) | |
| Session 4: | Resource Acquisition and Transport in Vascular Plants (36) Soil and Plant Nutrition (37) Fungi (31) | |

| Session/Date | Topic and Reading: Chapters in text book | Assignment Due |
|------------------|--|----------------------------|
| Session 5: | Midterm exam, 1 hour 15 minutes; multiple choice questions, and two short written answers (approx. 200 words each answer) Overview of Animal Diversity (32), Animal Development (47) | |
| Session 6: | An Introduction to Invertebrates (33) The Origin and Evolution of Vertebrates (34) Course essay topic assigned to students (see note in co-curricular activities). Essay approximately 2000 words. | |
| Session 7: | The Origin and Evolution of Vertebrates (continued) (34) Animal Form and Function (40) | |
| Session 8: | Animal Nutrition (41) Circulation and Gas Exchange (42A) | |
| Session 9: | Circulation and Gas Exchange (42B) Osmoregulation and Excretion (44) | |
| Session 10: | Midterm exam, 1 hour 15 minutes; multiple choice questions, and short written answers (200 words). Animal Reproduction (46), Animal Development (47) | |
| Session 11: | Neurons, Synapses and Signaling (48) Nervous Systems (49) | Course essay 2000 words |
| Session 12: | Sensory and Motor Mechanisms (50) | |
| Session 13: | Hormones and the Endocrine System (45) Plant Responses to Internal and External Signals (39) | |
| Session 14: | The Immune System (43) | |
| Final assessment | FINAL EXAM Two hours and 30 minutes. 9.30am-12noon Multiple choice questions, short written answers (100-150 words) and longer essays (200-250 words). | |

Co-Curricular Activities

- **Mandatory weekend visit** to the Eden Project, Cornwall. This visit extends the work of several class lectures on Ecology. Coursework essay (20%) will be based on class studies and a scientific lecture/tour of the Humid Tropical and the Temperate Biomes at the internationally renowned Eden Project. The essay will be assigned before the visit.
- Travel and accommodation costs are provided. Students required only to purchase their own food.

Classroom Etiquette

- Food & drink, including gum, are not to be consumed in class.
- Mobile phones should be set on silent and in student's bag, and should not be used in class except for emergencies.
- The classroom will be screen-free. Studies have shown that even a phone on the desk can be a distraction and hinder participation. Importantly, studies also show that the action of writing by hand assists in processing, understanding and retaining information. You are welcome to print out the slides from NYU classes in advance and make notes on the copy. The class will encourage involvement and participation and will include discussion. There may be times when we shall require the use of laptops in class and you will be informed in advance. Students who have academic accommodations which state that they may use a laptop in class can, of course, do so. Students who have academic accommodations which state that they may use a laptop in exams may do so in examinations.
- Please kindly dispose of rubbish in the bins provided.

NYUL Academic Policies

Attendance and Tardiness

- Key information on NYU London's absence policy, how to report absences, and what kinds of absences can be excused can be found on our [website](http://www.nyu.edu/london/academics/attendance-policy.html) (<http://www.nyu.edu/london/academics/attendance-policy.html>)

Assignments, Plagiarism, and Late Work

- You can find details on these topics and more on this section of our NYUL [website](https://www.nyu.edu/london/academics/academic-policies.html) (<https://www.nyu.edu/london/academics/academic-policies.html>) and on [the Policies and Procedures section of the NYU website](https://www.nyu.edu/academics/studying-abroad/upperclassmen-semester-academic-year-study-away/academic-resources/policies-and-procedures.html) for students studying away at global sites (<https://www.nyu.edu/academics/studying-abroad/upperclassmen-semester-academic-year-study-away/academic-resources/policies-and-procedures.html>).

Classroom Conduct

Academic communities exist to facilitate the process of acquiring and exchanging knowledge and understanding, to enhance the personal and intellectual development of its members, and to advance the interests of society. Essential to this mission is that all members of the University Community are safe and free to engage in a civil process of teaching and learning through their experiences both inside and outside the classroom. Accordingly, no student should engage in any form of behaviour that interferes with the academic or educational process, compromises the personal safety or well-being of another, or disrupts the administration of University programs or services. Please refer to the [NYU Disruptive Student Behavior Policy](#) for examples of disruptive behavior and guidelines for response and enforcement.

Disability Disclosure Statement

Academic accommodations are available for students with disabilities. Please contact the Moses Center for Students with Disabilities (212-998-4980 or mosescsd@nyu.edu) for further information. Students who are requesting academic accommodations are advised to reach out to the Moses Center as early as possible in the semester for assistance.

Instructor Bio

Valerie Wells is research scientist. Her research is focused on defining differences in the signalling pathways which operate in normal and cancer cells, in order to exploit differences in their genetic makeup which can be targeted to selectively activate programmed cell death in cancer cells while leaving normal cells unharmed. A novel cytokine, beta-GBP (beta-galactoside binding protein), has been identified and cloned and has been found to selectively induce apoptosis in cancer cells and in colon cancer human tumor xenografts in mice. Valerie Wells is currently investigating the molecular signalling pathways activated by GBP leading to programmed cell death.

Recent publications

- Mallucci, L and Wells, V. (2013) The end of Kras, and other, cancers. A new way forward? *Drug Discovery Today* 19, 383-387.
- Mallucci, L., Shi, D., Davies, D., Jordan P., Nicol, A., Lotti, L., Mariani-Costantini, R., Verginelli, F., Wells, V. and Zicha, D. (2012) Killing of Kras mutant colon cancer cells via Rac-independent actin remodeling by the beta-GBP cytokine, a physiological PI3K inhibitor therapeutically effective in vivo. *Mol.Canc.Ther.* 11, 1884-1893.
- Baatar, D., Olkhanud, P. B., Wells, V., Indig, F. E., Mallucci, L. and Biragyn, A. (2009) Tregs utilize beta-galactoside binding protein to transiently inhibit PI3K/p21ras activity of human CD8+ T cells to block their TCR-mediated ERK activity and proliferation. *Brain, Behavior and Immunity* 23, 1028-1037.
- Wells, V. and Mallucci, L. (2009). Phosphoinositide 3-kinase targeting by the beta-galactoside binding protein cytokine negates akt gene expression and leads aggressive breast cancer cells to apoptotic death. *Breast Cancer Research* 11, R2 1-10
- Wells, V., Downward, D. and Mallucci, L. (2007). Functional inhibition of PI3K by the beta-GBP molecule suppresses Ras-MAPK signalling to block cell proliferation. *Oncogene* 26, 7709-7714.
- Mallucci, L. and Wells, V. (2007). Alternative use of signaling by the beta-GBP cytokine in cell growth modulation and cancer control. From surveillance to therapy. In: *Apoptosis, Cell Signaling and Human Diseases*. Ed. R. Srivastava. The Humana Press Inc. Vol. I, 203-216.
- Mallucci, L and Wells, V (2005). GBP: Potential Role in cancer therapy. *Curr. Opin.in Investig. Drugs* 6, 1228-1233
- Ravath, R., Wells, V., Nelson, L., Vettori, D., Mallucci, L., and Chin, K.V. (2005). Circumventing multi-drug resistance in cancer by beta-GBP, an antiproliferative cytokine. *Cancer Res.* 65, 1631-1634.

Recent participation in International conferences

2103 AACR Annual Conference, Washington, USA, April 2013. Killing Kras tumor cells.

2012 AACR Annual Conference, Chicago, USA, April 2012. Killing of Kras mutant colon cancer cells by the beta-GBP cytokine, a physiological PI3K inhibitor therapeutically effective in vivo.

2010 AACR Annual Conference, Washington, USA, April 2010. PI3K inhibition by the beta-GBP cytokine in colon cancer cells. Combined activation of intrinsic and extrinsic apoptosis.

2008 2nd International conference on PI3K Targeting in Cancer, Boston MA, November 12-15 2008. Targeting cancer through PI3K by the beta-GBP cytokine and induction of apoptosis by the activation of alternative pathways.