

**VICTORIA UNIVERSITY OF WELLINGTON
SCHOOL OF BIOLOGICAL SCIENCES**

**COURSE OUTLINE: Genes & Genomes
(BIOL 340/BMSC 340 - 2013)**

[COORDINATOR

Name Dr Darren Day
Room: KK802
Phone: 463 6087
Office Hours 9am - 5pm
Email: Darren.Day@vuw.ac.nz]

For assistance or advice on any aspect of the course contact Dr Darren Day, (Kirk 802, ext 6087) or Dr Peter Ritchie (Kirk 622) extension 8105

LECTURES:

Monday	10:00 – 10:50	Room: COLT122
Wednesday	14:10 – 15:00	Room: COLT122
Thursday	08:00 – 08:50	Room: COLT122
Friday	14:10 – 15:00	Room: COLT122

Attendance of all lectures is mandatory. Selected students will present scientific papers to the class for study. This material and any readings may be examined in the end of year exam or in term test.

TUTORIALS: None

LABS: Trimester 1 First 3 weeks. Students will sign up for and attend one stream only EITHER on Tuesday OR Thursday.

Tuesday	10:00 – 12:50	Room: KK701
Tuesday	14:10 – 17:00	Room: KK701
Thursday	10:00 – 12:50	Room: KK701
Thursday	14:10 – 17:00	Room: KK701

The bioinformatics are in the weeks of March 25th and April 1st.

Tuesday	10:00 – 12:50	Room: MY221 OR KK218
Tuesday	14:10 – 17:00	Room: MY221 OR KK218
Thursday	10:00 – 12:50	Room: MY221 OR KK218
Thursday	14:10 – 17:00	Room: MY221 OR KK218

EXAMINATION: Will be scheduled in the period 10th June – 3rd July

COURSE DESCRIPTION

The course consists of 4 major sections of material, which describe differing aspects of modern molecular biology. The major themes and topic areas covered are

described below. Greater emphasis will be placed on some of the mentioned areas. Material is taught from a variety of textbooks, but a significant part of the material is based upon review articles from scientific journals and research articles. The course aims to foster in students the ability to extract and interpret research articles from scientific journals.

Section 1: Students will study yeast genetics and molecular biology in the context of their use in chemical genetics. Emphasis will be placed on the use of chemical genetics and related approaches for the discovery of biological interactions and networks

Section 2: The second section has an emphasis on the comparative approach. Topics covered included genome complexity, mutations, gene families, transposition, comparative genomics and, mitochondrial genetics and epigenetic inheritance.

Section 3: This section describes in detail the experimental basis for our current models of DNA replication in both eukaryotes and prokaryotes and discusses the enzymes involved in DNA replication. The lectures then describe genetic recombination and gene conversion, and the models that have been proposed to account for these processes. The role of recombination in DNA replication is covered, along with some detail of the enzymology of recombination proteins. This material leads into the biochemical basis of mutations and DNA repair mechanism in eukaryotes and prokaryotes.

Section 4:

This section describes the biology of RNA. An overview of transcriptional regulation is given followed by a more detail description of mRNA processing, stability and splicing. This leads into lectures covering RNAi, small regulatory RNAs, riboswitches, ribozymes, and antisense approaches for studying cellular systems. The course finishes with a series of lectures on developmental biology and a discussion of genes involved in controlling development.

ASSESSMENT

The course is assessed by a 60% final examination at midyear, and in-term assessments of a terms test worth 10% and by two laboratory reports worth 30% (20% for PCR, 10% for bioinformatics)

Terms test 15th April

Terms Requirements:

The requirement for gaining terms is obtaining an average mark of at least 45% for the two lab reports and in terms test with no single mark being less than 35%. Terms may be granted to students who do not make these requirements after discussion with the course coordinator Dr Day.

Requirement for Passing the Course:

Greater than 50% total marks in-term plus final exam, and a final exam mark of not less than 45%.

Lecture Schedule:

Paul Atkinson	4 weeks, March 4th – April 5th
Peter Ritchie	4 weeks April 8th – June 7th*
Darren Day	4 weeks, April 8th – June 7th*

*Dr Day and Dr Ritchie will alternate teaching in blocks of about 8 lectures each.

Textbooks: The recommended text is Molecular Biology of the Gene by Watson, Baker, Bell, Gann, Levine, Losick. Other useful texts include, Genes VIII by Lewin, and Molecular Cell Biology, by Lodish et al. No one text adequately covers all the course material. Advanced material will be taught with reference to published manuscripts. Some of the lecture notes may be made available on Blackboard at the completion of topics

Additional Information: Any additional information about this course will be communicated during lectures and will be posted on Blackboard. Relevant journal articles, or links to them will be made available via Blackboard subject to copyright.

Revision exercises and tutorials: There are no scheduled tutorials. Revision exercises and examination technique will be discussed in lectures at relevant times.

Workload: Four lectures per week, approximately 6 hours lecture revision weekly, and 3 hours additional reading of journal articles and alternative texts. Laboratory write ups and analysis should take about 8hrs.

Extensions and penalties: For work that arrives late, the following penalty will be applied: 5% immediately, then 5% for every subsequent 24 hours including weekends.

Communication of additional information: Any changes or additions to this Course Outline will be discussed and agreed with the class, and conveyed through Blackboard or via email to all students enrolled in the course.

Academic integrity and plagiarism:

Academic integrity means that University staff and students, in their teaching and learning are expected to treat others honestly, fairly and with respect at all times. It is not acceptable to mistreat academic, intellectual or creative work that has been done by other people by representing it as your own original work.

Academic integrity is important because it is the core value on which the University's learning, teaching and research activities are based. Victoria University's reputation for academic integrity adds value to your qualification.

The University defines plagiarism as presenting someone else's work as if it were your own, whether you mean to or not. 'Someone else's work' means anything that is not your own idea. Even if it is presented in your own style, you must acknowledge your sources fully and appropriately. This includes:

- Material from books, journals or any other printed source
- The work of other students or students or staff
- Information from the internet
- Software programs and other electronic material
- Designs and ideas
- The organisation or structuring of any such material

Find out more about plagiarism, how to avoid it and penalties, on the University's website:
www.victoria.ac.nz/home/studying/plagiarism.html

Student work provided for assessment in this course may be checked for academic integrity by the electronic search engine <http://www.turnitin.com>. Turnitin is an online plagiarism prevention tool which compares submitted work with a very large database of existing material. At the discretion of the Head of School, handwritten work may be copy-typed by the School and subject to checking by Turnitin. Turnitin will retain a copy of submitted material on behalf of the University for detection of future plagiarism, but access to the full text of submissions is not made available to any other party.

GENERAL UNIVERSITY POLICIES AND STATUTES

Students should familiarise themselves with the University's policies and statutes, particularly the Assessment Statute, the Personal Courses of Study Statute, the Statute on Student Conduct and any statutes relating to the particular qualifications being studied; see the *Victoria University Calendar* or the University's policy website,

<http://www.victoria.ac.nz/home/about/policy>

Student and staff conduct

The Statute on Student Conduct together with the Policy on Staff Conduct ensure that members of the University community are able to work, learn, study and participate in the academic and social aspects of the University's life in an atmosphere of safety and respect. The Statute on Student Conduct contains information on what conduct is prohibited and what

steps are to be taken if there is a complaint. For information about complaint procedures under the Statute on Student Conduct, contact the Facilitator and Disputes Advisor or refer to the statute on the Victoria policy website at:

<http://www.victoria.ac.nz/home/about/policy>

The Policy on Staff Conduct can be found at:

<http://www.victoria.ac.nz/home/about/policy>

Academic grievances

If you have any academic problems with your course you should talk to the tutor or lecturer concerned; class representatives may be able to help you in this. If you are not satisfied with the result of that meeting, see the Head of School or the relevant Associate Dean; The VUWSA Student Advocate is available to assist in this process. If, after trying the above channels, you are still unsatisfied, formal grievance procedures can be invoked. These are set out in the Academic Grievance Policy which is published on the Victoria website at:

<http://www.victoria.ac.nz/home/about/policy>

There is also a leaflet explaining the grievance process available from the AVC(Academic) website at:

<http://www.victoria.ac.nz/home/about/avcacademic/Publications.aspx#grievances>

Students with Impairments

Refer to the [Meeting the Needs of Students with Impairments Policy](http://www.victoria.ac.nz/home/about/policy), available on the University's policy website. <http://www.victoria.ac.nz/home/about/policy>

The University has a policy of reasonable accommodation of the needs of students with impairments. The policy aims to give students with disabilities the same opportunity as other students to demonstrate their abilities. If you have a disability, impairment or chronic medical condition (temporary, permanent or recurring) that may impact on your ability to participate, learn and/or achieve in lectures and tutorials or in meeting the course requirements, please contact the course coordinator as early in the course as possible. Alternatively, you may wish to approach a Student Adviser from Disability Support Services (DSS) to discuss your individual needs and the available options and support on a confidential basis. DSS are located on Level 1, Robert Stout Building:

telephone: 463-6070

email: disability@vuw.ac.nz

The name of your School's Disability Liaison Person is in the relevant prospectus or can be obtained from the School Office or DSS.

Student Support

Staff at Victoria want students to have positive learning experiences at the University. There are a number of support services available to help you directly if your academic progress is causing concern or if there are elements in your life that are affecting your ability to study. These include:

- Your course coordinator or programme director;
- Staff in your Faculty Student Administration Office Student Dedicated learning support through Student Learning Support Service; Kaiwawao Māori ;Maanaki Pihipitinga; Disability Support Services and Victoria International;
- Wider holistic support through the Health Service; Counselling Service; Financial Support and Advice; Accommodation Service and Career Development and Employment. Find out more at www.victoria.ac.nz/st_services/ or email student-services@vuw.ac.nz;

- VUWSA employs a Student Advocate who deals with academic problems and provides support, advice and advocacy services, as well as training and supporting class representatives and faculty delegates. The Education Office is located on the ground floor, Student Union Building. Email education@vuwsa.org.nz or tel. 463-6716 or 463-6984.