



MACQUARIE
UNIVERSITY

Department of Biological Sciences
Faculty of Science
Macquarie University

BIOL260
THE SCIENCE OF SEX

3 cp

X2: external or online mode
Semester 2, 2012

<http://ilearn.mq.edu.au>

Unit Staff

Convenor/lecturer/tutor:

Dr. Kate Barry
Rm: E8A 111
Phone: 9850 6276
Fax: 9850 8245
Email: kate.barry@mq.edu.au

Lecturers:

Prof. Michael Gillings	(michael.gillings@mq.edu.au)
Assoc Prof. Marie Herberstein	(marie.herberstein@mq.edu.au)
Dr. Andrew Barron	(andrew.barron@mq.edu.au)
Mr. Vince Repaci	(vincenzo.repaci@mq.edu.au)
Dr. Anne Wignall	(anne.wignall@mq.edu.au)
Dr. Julia Cooke	(julia.cooke@mq.edu.au)
Dr. Graham Pyke	(graham.pyke@austmus.gov.au)
Dr. Nik Tataranic	(n.tataranic@unsw.edu.au)

Tutors:

Mr. Vince Repaci	(vincenzo.repaci@mq.edu.au)
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9850-8331: E8A264

Pre-requisites

12 credit points

Unit changes

The major assessment is now a poster presentation done in pairs. The weekly tutorial questions will be used as an early diagnostic tool for writing problems so that students (particularly ESL students) can seek the relevant help. The midsemester test is now 2 online quizzes, and the tutorial discussion and questions will follow the new textbook.

External students now have the option of completing the unit online (except for the final exam), which means students attend on-campus sessions by logging in remotely via Skype. This offering is only currently available to students living outside of Sydney.

Unit description

This unit is designed to appeal to a broad diversity of students, from those studying science to those in anthropology, arts, communication, education, psychology, sociology, etc. Indeed, we hope it will engage all students with an active interest in being alive! A scientific background is not required for students taking this unit, but we hope to introduce students to a scientific approach to understanding sex. Topics related to sex pervade our culture, media, politics, relationships and everyday life. Despite this, many of us have never had the opportunity to learn why sex evolved. What are the real differences between males and females? What is the chemistry that makes partners attractive? Why are the sexual strategies and behaviours of different species so diverse? What hormones control our maturation, cycles and pregnancy? The unit takes a broad approach, using examples (some quite bizarre) from the animal and plant worlds. At the same time, we cover in depth the sexual biology and behavioural science of our own intriguing species.

Unit Objectives

1. Introduce biological terminology, particularly in relation to reproduction
2. Define asexual and sexual reproduction, and present ideas about the evolution and maintenance of sexual reproduction
3. Present and discuss human, animal and plant mating systems as well as the sexual strategies used by various species
4. Explain the processes of evolution, adaptation and behaviour relative to intra-species interactions such as communication and reproduction
5. Become familiar with current sexual selection research

Learning outcomes*

By the end of this unit you should be able to:

1. Understand and use correct biological terminology
2. Explain the difference between asexual and sexual reproduction, and have an understanding of why sexual reproduction has evolved
3. Identify the various animal (and plant) mating systems and the strategies used by males and females from each
4. Recall specific examples of species from each of the mating systems presented during lectures
5. Outline and understand evolutionary processes, especially in relation to sexual selection (rather than natural selection)
6. Read and understand scientific papers in the sexual selection literature
7. Work in pairs to give a poster presentation that succinctly summarises information on a sexual selection topic

*More specific learning outcomes are also available on the iLearn website

Graduate capabilities

An aim of this unit is to enhance and develop the following capabilities in all students:

1. Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

2. Critical, Analytical and Integrative Thinking

We want our graduates to be capable of reasoning, questioning and analyzing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

3. Problem Solving and Research Capability

Our graduates should be capable of researching; of analyzing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

4. Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

5. Socially and Environmentally Active and Responsible

We want our graduates to be aware of and have respect for self and others; to be able to work with others as a leader and a team player; to have a sense of connectedness with others and country; and to have a sense of mutual obligation. Our graduates should be informed and active participants in moving society towards sustainability.

6. Capable of Professional and Personal Judgement and Initiative

We want our graduates to have emotional intelligence and sound interpersonal skills and to demonstrate discernment and common sense in their professional and personal judgement. They will exercise initiative as needed. They will be capable of risk assessment, and be able to handle ambiguity and complexity, enabling them to be adaptable in diverse and changing environments.

Unit completion requirements

1. Students must attempt all of the assessment tasks and attend at least half of the tutorials.
2. Students must receive a final mark of >50%.

UNIT SCHEDULE

Website

Lecture graphics and iLectures will be available on iLearn <http://ilearn.mq.edu.au>

iLearn™ is a web-based computer mediated communication package and can be accessed by most web browsers from inside or outside the University. iLearn and student email will be the principle method of communication in this subject.

We expect you to use iLearn for:

- Regularly checking subject announcements;
- Discussing lectures and tutorials with lecturers and other students;
- Downloading lecture materials;
- Downloading reference materials;
- Completing/submitting assessment tasks;
- Checking your grades.

How do you log in?

The URL for the iLearn login page is: <http://ilearn.mq.edu.au/>. Use your Macquarie OneID to login. If you are having problems logging in after ensuring you have entered your username and password correctly, you should contact Student IT Help, Email: help@mq.edu.au, Phone: (02) 9850 4357 (in Sydney) or 1 800 67 4357 (toll-free outside Sydney).

Timetable

Stream 1

OnCampus Session 1	Aug 4 th 9am – 3pm, E8A120 (red lab)
OCS 2	Sept 15 th 9am – 3pm, E8A120 (red lab)
OCS 3	Oct 27 th 9am – 3pm, E8A120 (red lab)

Stream 2 (will only run if Stream 1 is full)

OCS 1	Aug 5 th 9am – 3pm, E8A120 (red lab)
OCS 2	Sept 16 th 9am – 3pm, E8A120 (red lab)
OCS 3	Oct 28 th 9am – 3pm, E8A120 (red lab)

LECTURE SCHEDULE

	LECTURER	TOPIC
1.	Mike	Why have sex?
2.	Mike	Sex determination
3.	Mike	Gonad development
4.	Mike	Internal reproductive 'plumbing'
5.	Mike	External genitalia/secondary characters
6.	Mike	Hormones, cycles, puberty, pregnancy
7.	Mike	Sperm, eggs, fertilisation, contraception
8.	Mike	Sexual arousal, Viagra and orgasm
9.	Mike	Sexually transmitted disease
10.	Andy	Sexual diversity I
11.	Andy	Sexual diversity II
12.	Marie	Human mating strategies I
13.	Marie	Human mating strategies II
14.	Vince	MHC and MCC
15.	Marie	Sperm wars
16.	Kate	Intro to animal reproduction
17.	Kate	Animal mating systems
18.	Kate	Sexual selection & sex roles
19.	Kate	Mate comp & alternative strategies
20.	Kate	Mate choice
21.	Kate	Sexual signals - chemical
22.	Anne	Sexual signals - vibratory
23.	Kate	Multiple mating
24.	Kate	Sperm competition
25.	Kate	Cryptic female choice
26.	Kate	Genitalia
27.	Kate	Sexual conflict
28.	Nik	Sexually antagonistic co-evolution
29.	Kate	Sexual cannibalism
30.	Graham	Plant reproduction I
31.	Graham	Plant reproduction II
32.	Julia	Sexual deception in orchids
33.	Jane	Love in the sea
34.	Phil	Love in the orchard
35.	Marianne	Love in social insects
36.	Simon	Love in the bird world
37.	Martin	Love in the lizard world
38.	Kate	Summary

TUTORIAL SCHEDULE

OCS	Activity	Topics
1	Intro to the unit & bio/evol concepts	Why have sex?
1	Textbook reading & questions	Human Reproductive Systems
1	Textbook reading & questions	Sexual Arousal; Fertilisation, Development & Birth
1	Textbook reading & questions	Sexually Transmitted Diseases
1	Q & A session	
2	Textbook reading & questions	Sexual Orientation, Identity & Behaviour
2	Textbook reading & questions	Animal Mating Systems
2	Textbook reading & questions	Sexual Selection
2	Q & A session	
3	Sci publication reading & questions	Sexual Conflict
3	Textbook reading & questions	Plant Reproduction
3	Poster session	
3	TEDs, Exam info	

*Weekly questions can be found on iLearn and must be submitted BEFORE the tutorial

Additional Optional Reading (all available from the library)

Andersson M (1994) Sexual Selection

Arnqvist G & Rowe L (2005) Sexual Conflict

Eberhard WG (1996) Female Control: sexual selection by cryptic female choice

Simmons LW (2001) Sperm Competition and its evolutionary consequences in the insects

ASSESSMENT IN THIS UNIT

Task	Weight	Due Date	Learning Outcomes	Graduate Capabilities	Brief Description
Science skills quiz	1%	30/07-31/08			Quiz to test your basic science skills
Quiz 1	10%	03-09/09	1,2	1,2	A test on knowledge of lecture content up to and including lecture 15
Major assessment	0% 15% 5% 10%	31/08 15/10 27/10 27/10	5-7	1,2,3,4,5,6	1-page summary done in pairs Poster done in pairs 2-min oral presentation done in pairs 1-pg outline of individual contributions
Quiz 2	10%	29/10-04/11	1,2	1,2	A test on knowledge of lecture content from lecture 16-32
Tutorial discussion & qu's	9%	30/07 - 09/11	1-6	1,2,4,5,6	Tutorial attendance, participation and questions are assessed
Final exam	40%	TBA	1-5	1,2,3	A test on knowledge of all lectures

Science skills quiz (1%)

Multiple-choice quiz. 12 questions, 30 mins. The test will be open from **9am 30th July 2012** until **8pm 31st August 2012** and will test your ability in various science skills eg. referencing, plagiarism, basic writing, library searches. You have 3 attempts to acquire >80% in this quiz (required to gain access to online quiz 1).

Online quizzes (20%)

Multiple-choice quizzes. Each 1-hour quiz is completed in iLearn and worth 10%. The first test will be open from **9am 3rd September 2012** until **8pm 9th September 2012** and will test your knowledge of the course content up to and including lecture 15. The second test will be open from **9am 29th October 2012** until **8pm 4th November 2012** and will test your knowledge of the course content from lecture 16 – lecture 32.

Major assessment (30%)

Poster presentation. During the first oncampus session you will be paired with another student. Once in pairs, you will choose one of three scientific papers to base your poster on. Submission of a 1-page summary online by **9am 31st August 2012** is optional but recommended – this will allow tutors to provide feedback before the final due date. The final poster should be submitted online by **9am on 15th October** and an A3 colour hardcopy should be submitted to your tutor at the **third OCS** (15%). You will also present a 2-min talk summarizing the information on the poster during the **third OCS** (5%). Finally, you should submit a 1-page summary outlining how well you think the partnership worked, and also how much each of you contributed etc (10%) - this will allow your tutor to allocate an individual mark as well as a pair mark.

Tutorial participation (9%)

You will be required to read the relevant section/s of the textbook for each topic, complete a series of questions before each OCS and submit them online for marking. Marks are based on attendance, participation and adequate completion of the questions.

Final exam (40%)

3-hour exam. A mixture of multiple choice and short answer questions covering *all* lecture material presented in the unit (tutorial material is not examinable). Exam is conducted under exam conditions and is held during the formal university exam period.

Assignment submission

All of your assessments (tutorial questions, poster presentation summary, poster, and individual contribution summary) must be submitted online in iLearn. Instructions on how to submit assessments in iLearn will be provided at the start of semester. You must also submit a colour hardcopy of the poster to your tutor.

We use turnitin.com to check for plagiarism, so you must upload the poster presentation summary and the text from your actual poster to this website. You can do this directly from the iLearn website.

Extensions and penalties

10% of the mark allocated for each assignment will be deducted per day that any work is submitted late. The deadlines for assignments are not negotiable. Only a medical certificate or a letter with appropriate supporting documents outlining other serious, extenuating circumstances can be used to submit an assignment after the due date without penalty. All applications for special consideration or extension must be sought *before the due date* unless this is absolutely impossible (in which case you have 3 days from the due date). All applications for extensions of deadlines must be submitted to the subject convenor.

Returning assessment tasks

Assessment tasks will be marked by tutors and returned in OCSs. They will then be kept in the convenor's office until the end of year for late pick-up.

Required unit materials

Textbook

Barry & Holwell (2011). *The Science of Sex (second edition)*. McGraw-Hill Publishers, Sydney.

This textbook was available for the first time in 2007 and the second edition was released in 2011. The textbook was designed specifically for BIOL260, and you can purchase the book at the University Coop Bookshop for around \$70. Much of the lecture material corresponds with chapters in the text, and the tutorial readings and questions are taken directly from this book. There are also 3 copies of each edition held in the reserve section of the library.

Software

If you are completing the unit online (i.e. not physically attending the OCSs), you will need to download the latest version of Skype (www.skype.com) to participate in OCSs remotely. It is often best to buy a headset for skype calls to reduce feedback, but this may not be necessary if your computer has a good internal microphone & speakers. Once you have downloaded the software, add 'science.sex' as a contact. Email the convenor if you have any questions.

POLICIES

Macquarie is developing a number of policies in the area of learning and teaching. Approved policies and associated guidelines and procedures can be found at Policy Central: <http://www.mq.edu.au/policy/>

There you will find the University's policy and associated procedures on:

- Assessment
- Academic honesty (plagiarism)
- Special consideration

Plagiarism

Plagiarism involves using the work of another person and presenting it as one's own. Copying out part of any document, audio-visual material or computer-based material, is only acceptable if you use quotation marks, and you must still acknowledge the source of the information (you should always try and restate the information in your own words though, because you will be marked down for overuse of quotations).

Any of the following acts constitutes plagiarism unless the source of each quotation or piece of borrowed material is clearly acknowledged:

- using or extracting another person's concepts, experimental results, or conclusions
- summarising another person's work
- submitting substantially the same final version of any material as another student in an assignment where there was collaborative preparatory work
- submitting the same or substantially the same piece of work for two different tasks (self-plagiarism)

A full outline of the revised University Policy on plagiarism can be found on the official website at http://www.mq.edu.au/policy/docs/academic_honesty/policy.html. The website includes a general discussion of plagiarism, definitions, examples drawn from concrete cases, procedures that will be followed by the University in cases of plagiarism, and recommended penalties. Students are expected to familiarise themselves with the website.

Feedback and unit evaluation

In this unit you will receive a range of verbal and written feedback on your assessment tasks and work in class or online. To monitor how successful we are in providing quality teaching and learning, the Department of Biological Sciences also seeks feedback from students. One of the key formal ways students have to provide feedback is through unit and teacher evaluation surveys (TEDs). The feedback is anonymous and provides the Department with evidence of aspects that students are satisfied with and areas for improvement. Students previously enrolled in this unit have contributed to its development through the suggestion of discussion-orientated tutorial tasks, an early diagnostic assessment task, and a greater number of guest lectures.