

GENS4015

Brave New World

School of Physics

Faculty of Science

T1, 2020

1. Staff

Position	Name	Email	Consultation times and locations	Contact Details
Course Convenor	Dr Maria Cunningham	Maria.cunningham@unsw.edu.au	Consultation times: by arrangement via email Room 139 Old Main Building	(02) 9385 5662
Teaching Support Officer	Zofia Krawczyk-Bernotas	z.krawczyk-bernotas@unsw.edu.au	School of Physics office G06, Old Main Building	(02) 9385 5969

2. Course information

Units of credit: 6

Pre-requisite(s): Nil

Teaching times and locations: online

<http://timetable.unsw.edu.au/2020/GENS4015.html>

2.1 Course summary

This wholly Internet-delivered course aims to give a big picture overview of the physical sciences at the dawn of the 21st century and beyond. The most common interface between the general public and science is often through science fiction; hence, science fiction is used as a teaching aid to stimulate student interest and as a starting point from which to communicate the science, and its likely future development. This course also examines the interaction between science and society, encouraging students to consider how culture influences science and vice versa. This course aims to provide students with the level of scientific and technological literacy required to take an informed part in debate on important scientific issues.

No prior scientific or mathematical knowledge is assumed. In fact, we aim to provide you with this basic knowledge in this course.

The areas covered are: the physics of space and time; astronomy; space travel and exploration; astrobiology: life in the Universe; computers & robotics, artificial intelligence & human intelligence; the future of the human race; the future of planet Earth, including an examination of the physics of climate change; a brief look at the place of physics in popular culture is included.

Note: Students enrolled in a Faculty of Science program should not take this course.

2.2 Course aims

The aims of this course are to:

- give a big picture overview of the physical sciences in the first decades of the 21st century and beyond;
- use science fiction movies and literature as a starting point for communicating science and its likely future development;
- provide students with the level of scientific and technological literacy required to take an informed part in debate on important scientific issues;
- examine the interaction between science and society, encouraging students to consider how culture influences science and vice versa
- allow students to develop skills in communicating science to the general public.

The areas covered are: the physics of space and time; astronomy; space travel and exploration; astrobiology: life in the Universe; computers & robotics, artificial intelligence & human intelligence; the future of the human race; the future of planet Earth, including an examination of the physics of climate change; a brief look at the place of physics in popular culture is included

2.3 Course learning outcomes (CLO)

At the successful completion of this course you (the student) should be able to:

1. Read popular science news and articles such as those in daily newspapers and in magazines such as New Scientist, and critically evaluate the scientific content
2. Have the scientific and technological literacy to inform themselves of the science involved in topical issues, such as climate change and stem cell research
3. Communicate their own understanding of science to others in clear language.

2.4 Relationship between course and program learning outcomes and assessments

Course learning outcomes 1-3 are assessed in the 4 assessment tasks. These assessments are largely of a critical-thinking nature designed to determine students' ability to deploy acquired knowledge to new situations, which is a key graduate attribute for successful physics-trained graduates.

3. Strategies and approaches to learning

3.1 Learning and teaching activities

Assumed Knowledge

Nil prior knowledge assumed, but an enthusiasm to understand everyday science and technology and the wish to communicate your understanding to others will be a big advantage in undertaking this course.

Timetable

Lectures:

Weeks: 1-10

Location: Wholly online, work through as you wish during each week of Session. Expect to spend around 3 hours per week working on lectures, and a total of 12 hours per week when including assessment tasks, averaged over the whole Session. This is the usual expected course load for a 6 Unit-of-Credit subject

Tutorials:

Weeks: 2-9

Location: Wholly online

3.2 Expectations of students

Students are expected to read all allocated readings and lectures each week.

Students are also expected to take part on online discussions from Weeks 1 to 9.

Students should check the GenS4015 Moodle page several times a week and make sure they are keeping up with the course.

The Moodle page is divided into weekly Topics, from weeks 1 to 10. You should read all information under the topic for the current week of semester.

There is a News section at the top of the Moodle page. Please check this regularly for course updates.

Academic misconduct will not be tolerated in any form in this course. Substantiated instances of cheating, plagiarism or copying answers may result in a failure grade or significant deduction of marks. Please <https://student.unsw.edu.au/plagiarism> if you are in any way unsure of what constitutes plagiarism. Assignments in this class are to be done independently.

4. Course schedule and structure

Week	Lectures Topics	Module
Week 1	* Introduction to Brave New World * Introduction to Module 1 *M1: Lecture 1 *M1: Movie - The Dish	M1: Understanding the Universe: Astronomy and the physics of space and time.
Week 2	*M1: Lecture 2 *Movie: 2001 A Space Odyssey *M1: Lecture 3	M1: Understanding the Universe: Astronomy and the physics of space and time.
Week 3	*M2: Lecture 1 *M2: Lecture 2	M2: Exploring the Universe: Space travel, space exploration and astrobiology.
Week 4	*M2: Lecture 3 *M2: movie – Contact *M2: Lecture 3	M2: Exploring the Universe: Space travel, space exploration and astrobiology.
Week 5	*M3 Lecture 1 *M3 Lecture 2 *Movie: The Social Network	M3: The Human Web: Computers, communication and the basic connectedness of the human race.
Week 6	*M3 Lecture 3	M3: The Human Web: Computers, communication and the basic connectedness of the human race.
Week 7	*M4 Lecture 1 *Movie: Avatar, Soylent green	M4: The future of planet Earth: the environment, food supply; the future of the Human race.
Week 8	*M4 Lecture 2 *Movies: Dr Strangelove, The China Syndrome	M4: The future of planet Earth: the environment, food supply, the future of the Human race.
Week 9	*TV Series: The Big Bang Theory *M5 Lecture 1	M5: Physics is fun? A look at physics in popular culture
Week 10	*TV Series: MacGyver *TV Series: Futurama *M5 Lecture 2	M5: Physics is fun? A look at physics in popular culture

5. Assessment

5.1 Assessment tasks

1. Online Discussions/tutorials (25% of total course mark).

- During week 2 through to week 9 of session you will need to contribute weekly to on-line discussions (tutorials).

- There are 7 online tutorials in total, and your contribution will be due by the end of the week in which the tutorial is posted.
- You must submit the two postings that you want marked to your tutor by the **SAME** deadline, via a Moodle message.
- All 7 tutorial discussions will be of equal weight.
- **Feedback:** Marks will be posted for the tutorial discussion posting one week after the close of the tutorial.

2. Online Quizzes (25% of total course mark).

- There will be three online quizzes.
- The quizzes will generally open on 0900 of the Monday of the week they are due, will be open for one week, closing at 2359 hrs on the following Sunday (i.e. just before midnight).
- The quizzes are due:
 - Quiz 1, Due Week 3:
 - Quiz 2, Due Week 6:
 - Quiz 3, Due Week 9:
- **Feedback:** The quizzes are marked automatically, and you will have your results as soon as you submit your attempt.

3. Blog Posting: 300 to 400-word posting on topic chosen from the set of available topics (25% of total course mark).

- Students will have the chance to suggest topics on which they would like to blog.
- To get full marks, students must make a comment on another student's blog posting.
- Assignment opens around Week 3.
- **Assignment due around Week 5.**
- **Comment on another students posting due around Week 6.**
- **Feedback:** You will receive marks and feedback about your assignment within about 1 week of the close of the assignment.

4. Major Research Assignment (25% of total course mark).

- Write 800 to 1000 words on a major review article on any piece of science or technology that interests you.
- You can also talk about the implications for society if you wish.
- Another possibility is to submit a short story, a play, or an artwork.
- **Due end Week 10.**
- **Feedback:** Marks and feedback for this assignment will not be released until after the end of session.

Assessment task	Length	Weight	Mark	Due date <i>(normally midnight on due date)</i>
Assessment 1: Online Discussions / tutorials		25%		End of Weeks 2-9
Assessment 2: Online Quizzes		25%		Weeks 3, 6, 9
Assessment 3: Blog Posting	300-400 words	25%		Assignment: Week 5 Comment: Week 6
Assessment 4: Major Research Assignment	800-1000 words	25%		End of Week 10

Further information

UNSW grading system: student.unsw.edu.au/grades

UNSW assessment policy: student.unsw.edu.au/assessment

5.2 Assessment criteria and standards

Please see Moodle for a marking rubric for each assessment task

5.3 Submission of assessment tasks

As GENS4015 is a wholly online course, you should follow the instructions on the Moodle Website for submitting your assignments online within Moodle.

Marks will be deducted for late assignments, at a rate of 5% of the maximum possible mark for the assignment per day. A weekend will count as two days. An assignment submitted after the solutions have been posted will automatically receive 0%.

5.4. Feedback on assessment

Please see Moodle for details on how feedback will be provided for each assessment task

6. Academic integrity, referencing and plagiarism

Referencing is a way of acknowledging the sources of information that you use to research your assignments. You need to provide a reference whenever you draw on someone else's words, ideas or research. Not referencing other people's work can constitute plagiarism.

Further information about referencing styles can be located at student.unsw.edu.au/referencing

Academic integrity is fundamental to success at university. Academic integrity can be defined as a commitment to six fundamental values in academic pursuits: honesty, trust, fairness, respect, responsibility and courage.¹ At UNSW, this means that your work must be your own, and others' ideas should be appropriately acknowledged. If you don't follow these rules, plagiarism may be detected in your work.

Further information about academic integrity and **plagiarism** can be located at:

- The *Current Students* site student.unsw.edu.au/plagiarism, and
- The *ELISE* training site subjectguides.library.unsw.edu.au/elise

The *Conduct and Integrity Unit* provides further resources to assist you to understand your conduct obligations as a student: student.unsw.edu.au/conduct.

¹ International Center for Academic Integrity, 'The Fundamental Values of Academic Integrity', T. Fishman (ed), Clemson University, 2013.

7. Readings and resources

Lecture Notes Supplied with Course

8. Administrative matters

Communications

Students should check their UNSW email account regularly as all official university communication will be sent to that address. Students should use their university email account when writing to UNSW staff and should always include their name and student number.

Health and Safety

The School of Physics is actively committed to the health, safety and welfare of its staff and students. Information on relevant UNSW Occupational Health and Safety policies and expectations is available at: www.ohs.unsw.edu.au and <https://www.physics.unsw.edu.au/about/safety>

Recommended Internet Sites

The School of Physics website is www.physics.unsw.edu.au. Under the “Current Students” link students will find information about degrees, courses, and assessment.

The University website my.unsw.edu.au provides links to the UNSW Handbook, Timetables, Calendars and other student information.

Student Complaint Procedures

UNSW has procedures for dealing with complaints. These aim to solve grievances as quickly and as close to the source as possible. Information is available here: student.unsw.edu.au/complaints. Staff who can assist include:

School Contacts:

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9. Additional support for students

- The *Current Students* Gateway: student.unsw.edu.au
- Academic Skills and Support: student.unsw.edu.au/skills
- Student Wellbeing, Health and Safety: student.unsw.edu.au/wellbeing
- Disability Support Services: student.unsw.edu.au/disability
- UNSW IT Service Centre: www.it.unsw.edu.au/students