

GENS4015

Brave New World

School of Physics

Faculty of Science

T1, 2022

1. Staff

Position	Name	Email	Consultation times and locations	Contact Details
Course Convenor	Sarah Martell	s.martell@unsw.edu.au	Consultation times: by arrangement via email Room 139, Old Main Building	(02) 9065 2276
Teaching Support Officer	Zofia Krawczyk-Bernotas	z.krawczyk-bernotas@unsw.edu.au	School of Physics office G06, Old Main Building	(02) 9065 5719

2. Course information

Units of credit: 6

Pre-requisite(s): Nil

Teaching times and locations: online

<http://timetable.unsw.edu.au/2022/GENS4015.html>

2.1 Course summary

This fully online 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 the essentials on these topics in this course.

The areas covered are: the physics of space and time; astronomy; space travel and exploration; astrobiology; life in the Universe; artificial intelligence; quantum science; the future of planet Earth, including an examination of the physics of climate change.

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; artificial intelligence; quantum science; the future of planet Earth, including an examination of the physics of climate change.

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 yourself of the science involved in topical issues, such as climate change and stem cell research
3. Communicate your 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 an asset in undertaking this course.

Timetable

Lectures:

Weeks: 1-5, 7-10

Location: Wholly online, work through as you wish during each week of the term. 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

3.2 Expectations of students

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

Students are also expected to take part on online discussions from Weeks 2 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 read <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	Topic	Assessment items
Week 1	Astrophysics	
Week 2	Astrophysics	Writing assignment 1: by 23:59 Friday 25/2
Week 3	Astrobiology	Writing assignment 2: by 23:59 Friday 4/3 Project proposal: by 23:59 Sunday 6/3
Week 4	Astrobiology	Writing assignment 3: by 23:59 Friday 11/3 Quiz 1: by 23:59 Sunday 13/3
Week 5	The future of the Earth and climate change	Writing assignment 4: by 23:59 Friday 18/3 Peer reviews: by 23:59 Sunday 20/3
Week 6	Flexibility week	None

Week 7	Life in space	Writing assignment 5: by 23:59 Friday 1/4 Quiz 2: by 23:59 Sunday 3/4
Week 8	Life in space	Writing assignment 6: by 23:59 Friday 8/4 Reflection: by 23:59 Sunday 10/4
Week 9	Artificial intelligence	Writing assignment 7: by 23:59 Friday 15/4
Week 10	Artificial intelligence	Final project: by 23:59 Friday 22/4

5. Assessment

5.1 Assessment tasks

1. Weekly writing assignments (20% of total course mark).

- From Week 2 to Week 9 of session there will be weekly writing assignments (1/2 - 2 pages) responding to discussion questions posed on Moodle by A/Prof. Martell.
- All 7 writing assignments will be of equal weight.
- **These writing assignments will be submitted through Turnitin by 23:59 Friday each week.**
- **Feedback:** You will receive marks and feedback from your TA within about one week after the close of the assignment.

2. Online Quizzes (15% of total course mark).

- There will be two online quizzes, in weeks 4 and 7.
- Quizzes will cover concepts from the scientific and mathematical course content.
- Students will have one attempt at each quiz.
- **The quizzes will open at 9:00 on the Monday of the week they are due and will be open for one week, closing at 23:59 on the following Sunday (i.e. just before midnight).**
- **Feedback:** Quiz marks will be posted to Moodle automatically.

3. Project proposal, peer review and reflection: One-page description/preview of your final project (40% of total course mark).

- Explore a topic from the course that interests you in one of several forms: 3-5 page essay, short fiction, podcast, artwork, book/film review.
- Check with A/Prof. Martell or with your TA if you have questions about the suitability of your topic or the form of your final report.
- **Project proposal due by 23:59 Sunday in Week 3.**
- **Peer review comments on three other students' project proposals due by 23:59 Sunday in Week 5.**
- **Reflection on peer review comments due by 23:59 Sunday in Week 8.**
- **Feedback:** You will receive marks and feedback from your TA about your project proposal within about 1 week of the close of the assignment.

4. Final project (25% of total course mark).

- Explore a topic from the course that interests you in one of several forms: 3-5 page essay, short fiction, podcast, artwork, book/film review.
- Incorporate scientific facts and implications for society.
- Incorporate skills and insights from your other coursework.
- **Due by 23:59 Friday end Week 10.**
- **Feedback:** Marks and feedback for this assignment will not be released until after the end of session.

Assessment task	Weight	Due date <i>(normally midnight on due date)</i>
Assessment 1: Weekly responses	20%	End of Weeks 2-5, 7-9
Assessment 2: Online Quizzes	15%	Weeks 4, 7
Assessment 3: Project proposal, peer review and reflection	40%	Proposal: Week 3 Peer review: Week 5 Reflection: Week 8
Assessment 4: Final project	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 course Moodle page for submitting your assignments online within Moodle.

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.

7. Readings and resources

These will all be linked from the course Moodle page.

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

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

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