



Course Outline

BABS2011

Current Trends in Biotechnology

School of Biotechnology and Biomolecular
Sciences

Faculty of Science

Term 1, 2022

1. Staff

| Position | Name | Email | Locations | Consultation Times |
|--------------------|-------------------|--|--|--------------------|
| Course Convenor | A/Prof Kyle Hoehn | k.hoehn@unsw.edu.au | Room 420A, Biological Sciences Building North (D26). West wing | By appointment |
| Course Co-convenor | Dr Frances Byrne | frances.byrne@unsw.edu.au | Room 420B, Biological Sciences Building North (D26). West wing | By appointment |
| Course Co-convenor | Dr Lindsay Wu | lindsay.wu@unsw.edu.au | SoMS | By appointment |

2. Course Information

Units of credit: 6

Pre-requisite(s): Level 1 Science

Teaching times and locations: <http://timetable.unsw.edu.au/2022/BABS2011.html>

Due to COVID -19, this course has been made fully online .

Lectures will be provided both online live in most cases, but some may be pre-recorded (e.g. international speakers, timing conflicts, or illness)

Quizzes will be held online at defined times that cannot be changed and attendance is required for quizzes and presentations (see course calendar).

2.1 Course Summary (Handbook entry)

Through lecture and case study presentations, students will be introduced to how biotechnology advances are impacting on society by solving problems in medicine (drugs), environment (biodegradable plastics), and agriculture (drought-resistance). Lectures discuss current analytical technologies that are enabling the performance of scientific fundamental and applied research. Through assignments, students will be provided with the opportunities to develop scientific expertise in a biotechnology targeted area of their interest and to develop the skills required to interpret scientific findings and report them to key technical and non-technical stakeholders involved in biotechnology commercialisation.

2.2 Course Aims

The course aims to provide students with:

1. Expertise to interpret and report scientific literature to both lay audiences (friends, high school classes, general public) and scientific audiences (investors, peers).
2. Knowledge of advanced technologies that enable biotechnology research
3. Skills in biotechnology commercialisation

2.3 Course learning outcomes (CLO)

At the completion of this course, students should be able to:

1. Define biotechnology in the context of its breadth and scope of diverse applications
2. be able to apply biotechnology to solve real-world problems

| | | |
|-------|---|-------------|
| CLO 3 | Comprehensively analyse the literature to review biotechnology strategies for addressing market opportunities. | Assignments |
| CLO 4 | Identify and explain appropriate analytical technologies to be used in biotechnology-based research, and understand basis for case study commercialisation. | Quiz 2 |
| CLO 5 | Develop insight into strategies for seeking venture capital support and commercialising biotechnology opportunities. | Projects |

3. S

4. Course schedule

| Monday Sessions - 2 hr block 11am – 1pm (11:00 – 13:00) | | Thursday Lectures - 3 hr block 3pm – 6pm (15:00 - 18:00) | | | Key dates |
|--|----------------------------------|---|---|---|-------------------|
| Kyle Hoehn (L) | Qiao Qiao (L) | Lindsay Wu (L) | Lindsay Wu (L) | Medical drug development | Week 1 starts |
| Week 2 starts | Kyle Hoehn (L) | Frances Byrne (L) | Megan Lenardon (L) | Lindsay Wu (L) | Lindsay Wu (L) |
| Kyle Hoehn (L) Evan Taddeo (P) | Jesse Govette (L) CAR-T cells | Brendan Burns (L) Environmental Biotech | Belinda Ferrari (L) Antarctic bioremediation | Belinda Ferrari (L) Extreme bioprospection | SWHL analysis due |
| Covers weeks 1-3 content | | | | | |
| Peer review due Friday Mar 25 by 5 PM | Week 6 starts March 21 | NO LECTURES THIS WEEK | | | |
| Investment thesis due | Week 7 starts | Russell Puxford (L) | | | |
| EASTER MONDAY – NO CLASS | | | | | |
| Peer review of presentations due March 29 (Thu) 11:59:59 AM | | | | | |

(L) = Live online lectu

5. Assessment

5.1 Assessment tasks

| Assessment task and methods | Weighting (%) | Submission methods | Mark and feedback style | Week |
|-----------------------------|---------------|--------------------|-------------------------|------|
|-----------------------------|---------------|--------------------|-------------------------|------|

Assignment 1

All students enrolled in courses offered at BABS automatically have access to the course Moodle site <https://moodle.telt.unsw.edu.au>. This site will be used to distribute course notes and information and should be checked at regular intervals. This includes:

- x Lecture handouts
- x Tutorial notes
- x Assessments - detailed information
 - marks
 - further information resulting from special consideration
- x Information about examination arrangements
- x
- x Self-management resources

Resources

Literature Searching: <http://www.ncbi.nlm.nih.gov/pubmed>

UNSW Library: <http://www.library.unsw.edu.au>

8. Administrative matters

Biosciences Student Office

Student Advisor (BABS) Email: BABStudent@unsw.edu.au

Tel: +61 (2) 9385 8047

Student Grievance Officer

Megan Lenardon (BABS) Email: m.lenardon@unsw.edu.au

School Contact (set up in progress)

Director of Teaching Email: BABSteaching@unsw.edu.au

Faculty Contact

Dr Gavin Edwards

Associate Dean (Academic Programs)

Email: g.edwards@unsw.edu.au

Tel: +61 (2) 9385 4652

Additional Websites

- x Biosciences Student Office: <https://www.babs.unsw.edu.au/contact/biosciences-student-office>
- x School of Biotechnology and Biomolecu

9. Additional support for students

- x The Current Students Gateway: <https://student.unsw.edu.au/>
- x Academic Skills and Support: <https://student.unsw.edu.au/academic-skills>

Project 1. Technology brochure. Individual assessment. (15% final grade)

Objective Students will prepare a report suitable for a lay audience that covers a scientifically published scientific discovery that underpins a technology under development.

Introduction. The traditional means for communicating scientific discovery is through publishing in peer review journals. These reports contain highly technical jargon - meaning that only those with scientific expertise in the particular discipline will be in a position to read the reports and understand the content. Even those who are science-educated are likely to have difficulty understanding the content if they are unfamiliar with the field of study and its experimental design and language.

In the commercialisation of scientific discovery, a broad range of stakeholders need to be engaged in the process and to fulfil their roles they all need to understand the underlying concepts of the science and the problems it can solve i.e. the technology the science enables. Business people, managers, marketers, investors, etc. will not be able to gain this insight into the science by reading the scientific reports.

Your objective in this assignment is to develop the communication skills required by biotechnologists to translate scientific reports to something digestible by the educated lay community. These capabilities are not only required for industry-based scientists but also those in government funded research agencies that are seeking government funding (grants).

These skills will also become invaluable should you wish to become a science communicator (e.g. journalist), a school teacher, or a marketing copywriter for science-based products.

Source of journal articles

1. Pick your favourite specific unmet biotechnology need (pancreatic cancer, Parkinson's disease, antibiotic resistance, bioplastics, improving crop tolerance, or something else that excites you about biotechnology – i.e. why are you in this class?)
2. Search for a paper with impact factor greater than 5 that is addressing this need.
 - a. For example, a lentiviral gene therapy to treat Parkinson's ap

For this project, your target audience is high school students. Your goal in the technology brochure is to encourage students to undertake further study/careers in the area that you have chosen.

Readability of your text should rank in the 7-12th grade range. Check readability here: <https://readabilityformulas.com/freetests/six-readability-formulas.php>

Assignment 2. Investment thesis . Individual. (20% final grade).

Submitted on-line through Turnitin.

Write a four-page report for a scientific audience that describes your investment thesis for a company that will be chosen during the course.

Submission structure

A 4-page (not including bibliography) investment thesis should be written for a scientifically-trained audience, that should include a 1-page executive summary of the company and technology with key financial information, an investment thesis, upcoming catalysts and milestones, base case assumptions with upside and downside scenarios, a detailed scientific description of the technology, and your estimated valuation for the company.

Examples will be provided.

Project 2 . Recorded pitch presentation . Teams of 3-4. (15% final grade)

Example topics - your company has developed : a new treatment for COVID-19, a new treatment for pancreatic cancer, a new solution for global warming, a new process for degrading plastics, a new recycling process for solar panels and wind turbines.

of all students to regularly consult their official student email accounts and myUNSW in order to ascertain whether or not they have been granted further assessment.

Further assessment exams will be offered during the Supplemental Exam times ONLY and failure to sit for the appropriate exam may result in a mark of zero for the exam. Further assessment will

Individual assistance is available on request from The Learning Centre.

Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting, and the proper referencing of sources in preparing all assessment items.

slide a.3.2 Research Tools, Plagiarism, and Spelling (Unit 16) EMC /P /ACID 2 ▶