



Cancer Sciences

Course Outline

Never Stand Still

Medicine

CANCER SCIENCES

(Course Code: PATH 3208)

(6 UOC)

SESSION II, 2012

Cancer Sciences Course outline

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Course Introduction

Cancer Sciences Course (PATH3208) is an undergraduate course for 3rd year students. It is run jointly by School of Prince of Wales Hospital (Adult Cancer Program of Lowy Cancer Research Centre), the School of Medical Science (SoMS), and the School of Biotechnology and Biomolecular Sciences (BABS). It aims to help students develop independent research ability, so as to set up a bridge between scientific studies and research practice. It suits all research students, and in particular candidate honours students.

Course staff

A/Prof Jia Lin Yang, (Course convenor)

Room 209, Lowy Cancer Research Centre, phone: 93859390, e-mail: j.yang@unsw.edu.au

Consultation time: Tuesday 2-3pm

School of Medical Sciences

Professor Nicholas Hawkins (Head of School, co-convenor, email: N.Hawkins@unsw.edu.au)

Dr Patsie Polly

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A/Prof Noel Whitaker (Deputy Head of School)

Prof Marc Wikins (Director of NSW System Biology Initiative)

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Prof Robyn Ward (Head of School)

Prof Phillip Crowe (Head of Department of Surgery)

Prof Phillip Hogg (Director of Lowy Cancer Research Centre)

Prof David Goldstein

Prof Sue Wilson

A/Prof Claire Vajdic

Dr Anthony Don

Dr Carl Power (Head of Biomedical Resources and Imaging Laboratory)

Dr Caroline Ford

Dr Barbara-Ann Adelstein

Dr Jake Oliver

Dr Jason Wong

Dr John Pimanda

Dr Kerrie McDonald

Dr Luke Hesson

Ms Marylyn Emanuel
Ms Meg Schneider
Dr Michael Jackson (Head of Radiation Oncology)
Dr Megan Hitchins
Dr Melvin Chin
Dr Shing Wong
Mr Simon Downes
Dr Viola Heinzelmann-Schwarz
Dr Vivien Chin
Dr Sheri Nixdorf
Dr Robert Rapkins
Ms Weini Samuel

Guest Lecturers/Instructors/tutors

Dr Josephine Joya (Director of Animal Care)
Dr Xuchuan Jiang (School of Materials Science and Engineering)
Dr Renee Whan (Head of Biomedical Imaging Facility)
Ms Kathryn Coleman (Learning & Teaching Unit)
Ms Mita Das (Career and Employment)
Ms Fiona Thurn (Learning & Teaching Unit)

Course administration

Administrative and general problems related to attendance, or the content and conduct of the course, can in the first instance be addressed by consulting one of the course convenors.

Course Convenors

A/Prof Jia-Lin Yang (Convenor): E-mail: j.yang@unsw.edu.au

Prof Nicholas Hawkins (Co-convenor): E mail: N.Hawkins@unsw.edu.au

Course Student Advisor

Ms Carmen Robinson

Student Advisor, School of Medical Science
BSB Student Office, Room G27, Ground Floor, Biological Sciences Building
Email: Carmen.Robinson@unsw.edu.au
Phone: 9385-2464

Students wishing to see their tutors or other members of staff should call in at the BSB (BABS/SOMS/ BEES) student office and make an appointment with the student support staff. If students have difficulties of a personal nature, they should contact the School of Medical Science Grievance Officer, Dr Priti Pandey.

Should a student feel that there are particular circumstances that have affected their performance in the course, they should lodge an application for special consideration. The procedures involved in this are outlined in the UNSW Student Guide, and special forms are widely available on campus e.g. Student Health Centre, Student Centre. All students in the PATH3208 course are advised that email is the official means by which the Course Convenor and administrative staff will communicate with them. All email messages will be sent to the student's official UNSW email address (e.g., z1234567@student.unsw.edu.au). If a student does not wish to use the University email system, they MUST arrange for their official mail to be forwarded to your chosen address. The University recommends that students check their mail at least every other day. Facilities for checking email are available in SoMS, BABS, and in the University library. Further information and assistance is available from DIS-Connect (Phone 9385-1777). The UNSW Library runs free email courses.

Course Details

This course is offered during session II and has six unit of credit (UOC).

It will involve a significant group work component related to the development of experimental strategies in cancer research. Group work contributes over half of all assessment items.

Successful completion of at least 18 UOC from any Level 2 subjects (such as BABS2202 or PATH2201 or MATH2081 or MATH2901) offered by the Faculty of Science is a prerequisite for enrolment to the course. Given the strong research focus of this course, there is no specific need for prior completion of Stage II or III subjects in Pathology.

Course Aims

Students undertaking PATH3208 will gain a basic knowledge of cancer biology, including aetiology and risk factors. They will also learn the scientific rationale underpinning current and future practices in cancer management (diagnosis and treatment), and the concept of 'individualised' cancer medicine. At the same time, students will develop an understanding of modern experimental approaches to important questions in common cancers. This will include coverage of the design, measurement and evaluation of translational cancer studies and clinical trials.

A fundamental aim of this course is for students to identify relevant career goals, and to accumulate and present evidence of achievement in these goals in the form of an online resume.

This course specifically focuses on the design, measurement and evaluation of research projects in the field of human cancer. For those wishing to pursue a career in basic or clinical cancer research, the course will emphasise experimental approaches to cancer aetiology, as well the translational research strategies that use knowledge of cancer biology to improve diagnosis and management of that disease. Similarly, for those who may wish to pursue a career in the health sciences, the course will provide an understanding of cancer research and research methods.

Student learning outcomes

At the completion of this course a successful student will be able to:

1. Describe causes and risk factors for common cancers, and relate these to known pathogenetic mechanisms.
2. Describe current approaches to the diagnosis and treatment of common cancers.
3. Describe research techniques and experimental strategies that are commonly used in both basic and clinical cancer research.
4. Describe how to measure and evaluate common experimental strategies or clinical studies in the field of cancer.
5. Work independently to identify and critically analyse articles from the current cancer research literature.
6. Work as part of a team to identify a valid research question in the field of cancer, and frame it within the context of existing literature.
7. Work as part of a team to design and document a research strategy that will potentially answer that question.
8. Present cancer research questions and research strategies to their peers.
9. Effectively assess research presentations made by their peers.
10. Develop evidence of achievement in relevant career goals, and record this evidence in a personal online resume.

Learning and Teaching Rationale

The intended learning outcomes are achieved through pre-active and active participation as well as drawing on knowledge of students in a range of areas, including normal anatomy, pathology, histology, biochemistry, molecular and cellular biology and statistics.

This course has strong self-directed learning approaches, but also emphasises a collaborative, team-based approach to learning and assessment. Students will be encouraged to utilise their allocated teams as study groups. These strategies are designed to assist students in developing the skills that they will need as future members of a multidisciplinary research team, particularly in the setting of translational cancer research institutes, hospital-based cancer diagnostic laboratory and clinical trials organisations.

Teaching Strategies

The course employs a variety of teaching modes in order to facilitate student learning. These include:

1. A series of lectures (18 hours in total) that introduce key concepts and research techniques, as well as research project design, measurement and evaluation.
2. Whole class tutorials (6 hours in total) will introduce Moodle and Mahara pilot program used in the course assessment, e-portfolio, resume, career options and employability development.

Small group tutorials (5 hours in total) and specialist facilitating that extend and amplify students' understanding of concepts and material presented in lectures. Small group tutorials will also provide opportunities for progress assessment, with students completing individual and team assessment tasks.

3. Practical classes (10 hours in total) provide an opportunity for students to experience and apply modern research techniques relevant to human cancer. They also provide an opportunity for students to amplify and extend their understanding of material and concepts covered in lectures and prescribed readings.
4. Individual and group study. Students will undertake individual and group study to complete key assignment tasks throughout the course (see Assessment).

Learning is supported via an eLearning Blackboard and an e-portfolio module (accessible via student number and zPass at <http://lms-blackboard.telt.unsw.edu.au/>) that includes the Moodle/Mahara website. Announcements, timetables, lecture slides and other resources will be made available during the course.

Research opportunities

Opportunities exist for all students wishing to undertake undergraduate and postgraduate cancer research program within the Faculty of Medicine. Information on the research interests of different staff members involved in the course is available through the UNSW Research Gateway (<http://research.unsw.edu.au/>). Details of the different research units in the Lowy Cancer Research Centre is available on the Centres website (<http://www.lowycancerresearchcentre.unsw.edu.au/>), while information on staff and research groups within the School of Medical Sciences can be found at <http://medicallsciences.med.unsw.edu.au/somswweb.nsf/page/Research>

Students are also encouraged to communicate with invited guest lecturers that are active in research and clinical practice.

Assessment

The course covers a significant amount of new material and will require diligence and application to succeed. The learning objectives for each activity provide a focus for study, and should be previewed and reviewed for all activities. Students will take part in (self and peer) assessment together with academic staff.

The breakdown of assessments in the course is as follows:

Group work	60%
<i>Literature review</i>	<i>(20%)</i>
<i>Presentation and answer questions</i>	<i>(20%)</i>
<i>Project design report</i>	<i>(20%)</i>
Individual assignments	40%
<i>Questionnaires (1-2) (both beginning and end of the course)</i>	<i>(5%)</i>
<i>Online “review” (selective resume)</i>	<i>(5%)</i>
<i>Quizzes(1-5)</i>	<i>(15%)</i>
<i>Cancer research article analysis</i>	<i>(15%)</i>

1. Group project: (60%)

Developing an experimental approach to a valid cancer research question

Students will undertake this project in a group of four to six students. The groups will be determined in week 1 of the course, and will usually contain at least two students who have previously undertaken pathology study (PATH2201, PATH3205/6).

As a group, students will complete two tasks:

a. Develop and frame the question (20%)

Working as a group, students will identify a valid cancer research question for a cancer and a research type (a tutor will help with this).

These parameters need to be set by each group by the end of week 2, and no group can address a question from the same research **and** tumour type domains as any other group.

The group must produce a written report (literature review format) of approximately 2000 words ending with hypothesis and aim (hypotheses and aims) for a research project, which will be used for presentation and final report, excluding tables, figures and references, that delineates their question, in

the form typical of a literature review at the start of an Honours thesis, or an introduction to a research publication. This must be submitted by the start of week 8.

b. Develop and present an experimental approach to the question (40%)

The presentation of this task will firstly involve a 15 minute oral presentation to the class, followed by a further 10 minutes of questions and discussion. The presentation is about a research project identified from the literature review. This will occur in a lecture theatre format in weeks 10-12, and will count for 20% of the total course marks.

Secondly, the group will produce a separate written report which outlines their experimental approach and methods of the research project presented to the class and modified from class feedback through discussions. This will be in the order of 2000 words, and must be submitted within two weeks of the oral presentation. This written report will account for a further 20% of the course marks.

2. Individual assignment: (40%)

a. Critical review of a research paper (15%)

Students will be provided with a research paper in week 1 of the course, and will be required to critically review that paper in terms of specific criteria provided. Each student must submit an individual written report of this appraisal, of approximately 500-1000 words in length, by the end of week 4 of the course.

b. Quiz assessments (15%)

A 10 minute MCQ assessment will be held from the second to the sixth tutorials, covering all materials within preceding lectures, practicals and tutorials. Each assessment will contribute 3% toward the course marks, to a total of 15%.

c. Resume assessment and questionnaires (10%)

Students will be required to submit a completed questionnaire at both the beginning and end of the course that identifies their relevant career goals as well as evidence of achievement during the course (5%). They will also submit an online resume that records evidence of achievement in terms of developing capacities relevant to a career in cancer research (5%).

Academic honesty and plagiarism

The UNSW will not tolerate plagiarism in submitted written work. The University regards this as academic misconduct and imposes severe penalties. Evidence of plagiarism in submitted assignments, etc. will be thoroughly investigated and may be penalised by the award of a score of zero for the assessable work. Significant plagiarism will be directly referred to the Division of the Registrar for disciplinary action under UNSW rules. The attention of students is drawn to the notes on plagiarism from the A-Z student guide on MyUNSW (<https://my.unsw.edu.au/student/atoz/Plagiarism.html>).

What is Plagiarism?

Plagiarism is the presentation of the thoughts or work of another as one's own.*

Examples include:

- direct duplication of the thoughts or work of another, including by copying material, ideas or concepts from a book, article, report or other written document (whether published or unpublished), composition, artwork, design, drawing, circuitry, computer program or software, web site, Internet, other electronic resource, or another person's assignment without appropriate acknowledgement;
- paraphrasing another person's work with very minor changes keeping the meaning, form and/or progression of ideas of the original;
- piecing together sections of the work of others into a new whole;
- presenting an assessment item as independent work when it has been produced in whole or part in collusion with other people, for example, another student or a tutor; and
- claiming credit for a proportion a work contributed to a group assessment item that is greater than that actually contributed.†

For the purposes of this policy, submitting an assessment item that has already been submitted for academic credit elsewhere may be considered plagiarism.

Knowingly permitting your work to be copied by another student may also be considered to be plagiarism.

Note that an assessment item produced in oral, not written, form, or involving live presentation, may similarly contain plagiarised material.

The inclusion of the thoughts or work of another with attribution appropriate to the academic discipline does *not* amount to plagiarism.

The Learning Centre website is main repository for resources for staff and students on plagiarism and academic honesty. These resources can be located via:

www.lc.unsw.edu.au/plagiarism

The Learning Centre also provides substantial educational written materials, workshops, and tutorials to aid students, for example, in:

- correct referencing practices;
- paraphrasing, summarising, essay writing, and time management;
- appropriate use of, and attribution for, a range of materials including text, images, formulae and concepts.

Individual assistance is available on request from The Learning Centre.

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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.

* Based on that proposed to the University of Newcastle by the St James Ethics Centre, and used with kind permission from the University of Newcastle

† Adapted with kind permission from the University of Melbourne.

Appropriate citation of sources therefore includes surrounding any directly quoted text with quotation marks, with block indentation for larger segments of directly-quoted text. The preferred format for citation of references is an author-date format with an alphabetically arranged reference list at the end of the assignment. Note that merely citing textbooks or website URLs is unlikely to yield a reference list of satisfactory standard.

The internet should be avoided as a primary source of information. Inclusion of appropriate journal articles, both primary research publications and reviews, is usually expected.

Course Design

Table 1. PATH3208 Course design and assessment planner

Changes in the timetable will be announced on Blackboard. All locations are being informed.

Week	Lectures (Table 4 in details)	Tutorials (Table 6)	Practicals (Table 7)	Assessment task
1	L1. Overview of PATH3208	T1 Moodle Mahara Questionnaire E-portfolio Resume "Review"	P1 - (A, B, C, D) Each practice group (A-D) has 2 students from individual tutorial groups (a-f)	1 st Questionnaire (17/7) Online Quiz 1 (27/7) Individual assignment: critical appraisal of a research paper (30/7)
	L2. Stats thinking in design			
2	L3. Basic cancer biology	T2 (1-12 groups) (different rooms)	P2 - (E1) in class (WW G2/G4 computer lab)	
	L4. Colorectal & lung cancer			
3	L5. Common lab techniques	T3 Resume "Review"	P3 - (A, B, C, D)	
	L6. Breast & ovary cancer			
4	L7. Animal models	T4 (1-12 groups) (different rooms)	P4 - (F1) in ½ class (ACP, Lowy)	Online Quiz 2 (10/8) Group task: Using existing literature to develop and frame a valid cancer research question.
	L8. Epi, Environment & Ca			
5	L9. Stem cells & cancer	T5 *LGM1	P5 - (G1) in ½ class (Radiation Oncology, POWH)	Online Quiz 3 (24/8)
	L10. Inherited cancer risk			
6	L11. Biomarkers Dx and Rx	T6 (1-12 groups) (different rooms)	P6 - (F2) in ½ class (ACP, Lowy)	Literature review
	L12. Cancer cell metabolism			
7	L13. Clinical trials designs	T7 Interview skills Mock	P7 - (A, B, C, D)	
	L14. Chemotherapy			

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		interview		(10/9)
8	L15. Radiotherapy	T8 (1-12 groups) (different rooms)	P8 - (Ht) in class (Lecture theatre, POWCS)	Group project: Development of a research plan to address a valid cancer research question.
	L16. Surgery			
9	L17. Adv. mol. techniques	T9 LGM2	P9 - (G2) in ½ class (Radiation Oncology, POWH)	Online Quiz 4 (14/9)
	L18. Nanooncology			
10	Presentation x 2	T10 (1-12 groups) (different rooms)	P10 - (A, B, C, D)	Online Quiz 5 (21/9) 2 nd Questionnaire (25/9) & "Review" (28/9)
	Presentation x 2			
11	Presentation x 2			
	Presentation x 2			
12	Presentation x 2	Course wrap up		Group presentations week 10-12 (Table 8 in details) (25/9 -17/10)
	Presentation x 2			
SV1				
SV2				Group project design report submission 2 weeks after presentation (9/10-31/10)

*LGM=local group meeting, in which the group of students join their tutor's real group research meeting.

Table 2. PATH3208 Course Title of lectures, tutorials and practices

Name	Title
L01	Overview of Cancer Sciences (PATH3208)
L02	Statistical thinking in project design, data measurement and evaluation
L03	Basic cancer biology
L04	Major unsolved issues in colorectal and lung cancer
L05	Experimental technologies in cancer research
L06	The Breast and ovary cancer
L07	Animal models
L08	Epidemiology, risk factors and environmental carcinogenesis
L09	Stem cells and cancer
L10	Inherited cancer predisposition
L11	Personalised cancer therapy, predictive and prognostic markers
L12	Cancer cell metabolism
L13	Clinical study designs
L14	Principles of chemotherapy
L15	Radiotherapy and functional imaging
L16	Principles of cancer surgery
L17	Advanced molecular techniques for cancer research
L18	Nanooncology
Prac A	Nanoparticles for biomedical application
Prac B	Advanced molecular technology
Prac C	Live cell imaging and confocal microscope
Prac D	Animal Imaging
Prac E	Applied medical statistics
Prac F	Common techniques in basic cancer research laboratory
Prac G	Radiation practices
Prac H	Surgery for cancer
Tut 1	Questionnaires assessment 1 and ePortfolio
Tut 2	How to analyse a research article?
Tut 3	How to prepare resume for job application?
Tut 4	How to write and assess a project literature review?
Tut 5	Attending tutor's real group meeting and Ethical & OH&S policies
Tut 6	Project design, measurement and evaluation
Tut 7	How to prepare and perform in job interview?
Tut 8	How to present and evaluate a research proposal?
Tut 9	Attending tutor's real group meeting and project design report
Tut10	Questionnaires assessment 2, resume assessment and course feedback

Resources for students

Textbooks

Students are expected to acquire the following text:

The Biology of Cancer. Robert A Weinberg, ©2007, Garland Science, Taylor & Francis Group LLC. ISBN 0-8153-4076-1 (soft cover) or ISBN 0-8153-4078-8 (hard cover).

PATH 3208 Web site

Students enrolled in the PATH 3208 course will be able to access the timetable, lecture notes and related information via Blackboard at <http://telt.unsw.edu.au>, using their student number as the user name (e.g. z1234567) and their z Pass as the password. Students are expected to visit this site regularly during their course.

Moodle/Mahara Websites

E-portfolio will be applied in the Cancer Sciences Course for the purpose of management and assessment. The website, its functions and user help/service will be described in Tutorial one.

Administrative matters

Administrative questions related to this course should be directed to the SOMS Student Advisor, Ms Carmen Robinson.

Ms Robinson is responsible for administration of undergraduate programs, and student support within the School of Medical Sciences.

Location: BSB Student Office (for students in BABS, SOMS and BEES), Room G27, Ground floor Biological Sciences Building (D26)

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