Master of Research

2021 COURSE OVERVIEW
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### Graduate Capabilities – FMHHS Master of Research (Year 1 & 2)

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<thead>
<tr>
<th>Scientist &amp; Scholar</th>
<th>Research Practitioner</th>
<th>Engaged Global Citizen</th>
<th>Professional</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Applied medical research scientist</strong></td>
<td><strong>Effective personal and digital communicator</strong></td>
<td><strong>Socially and culturally responsible practitioner</strong></td>
<td><strong>Team worker</strong></td>
</tr>
<tr>
<td><strong>Scholar and evidence-based practitioner</strong></td>
<td><strong>Skilled and informed researcher</strong></td>
<td><strong>Internationally aware researcher</strong></td>
<td><strong>Ethical and reflective practitioner</strong></td>
</tr>
<tr>
<td>Graduates will have coherent and advanced knowledge of the underlying principles and concepts in one or more disciplines and knowledge of research principles and methods</td>
<td>Graduates will be effective communicators and highly skilled, competent researchers delivering ethical and safe research.</td>
<td>Graduates will be socially and culturally responsible practitioners with awareness of local and global medical research issues, and who are able to operate effectively in a range of research environments.</td>
<td>Graduates will be effective communicators and highly skilled, competent researchers delivering ethical and safe research.</td>
</tr>
</tbody>
</table>
FMHHS Course Learning Outcomes – Year 1

Macquarie University’s Master of Research Year 1 (BPhil) Course in FMHHS has several course learning outcomes for each of the four previously stipulated graduate capabilities.

1. Scientist & Scholar: Graduates will be scientists and scholars with advanced knowledge and skills to deliver science – and evidence – based research practice. Graduates will have:
   1.1. cognitive skills to review, analyse, consolidate and synthesize knowledge to identify and provide solutions to complex problems with intellectual independence.
   1.2. cognitive and technical skills to demonstrate a broad understanding of a body of knowledge and theoretical concepts with advanced understanding in some areas.
   1.3. cognitive skills to exercise critical thinking and judgement in developing new understanding.
   1.4. technical skills to design and use research in a project.
   1.5. communication skills to present a clear and coherent exposition of knowledge and ideas to a variety of audiences.

2. Research Practitioner: Graduates will be effective communicators and highly skilled, competent researchers delivering robust research outcomes. Graduates will demonstrate the application of knowledge and skills:
   2.1. with initiative and judgement in professional practice and/or scholarship.
   2.2. to adapt knowledge and skills in diverse contexts.
   2.3. with responsibility and accountability for own learning and practice and in collaboration with others within broad parameters.
   2.4. to plan and execute project work and/or a piece of research and scholarship with some independence.

3. Engaged Global Citizen: Graduates will be socially and culturally responsive researchers with awareness of local and global medical research issues, and who are able to operate effectively in a range of settings.
   3.1. Graduates will demonstrate awareness of implications of different research approaches and be aware of the process of developing sound research projects.
   3.2. Graduates will demonstrate knowledge of contemporary local and global research and apply strategies for best practice in their research investigations.
   3.3. Graduates will demonstrate an understanding of, and work effectively within, research organizations and be able to identify and recommend strategies for improvement where appropriate.

4. Professional: Graduates will be ethical and reflective research practitioners able to lead and work collaboratively within teams.
   4.1. Graduates will demonstrate an understanding of governance and management of research and research environments.
   4.2. Graduates will demonstrate an ability to apply their knowledge and skills as ethically responsible and reflective researchers committed to lifelong learning to advance their practice.
   4.3. Graduates will demonstrate management, project leadership and strategy skills to deliver competitive cutting-edge research outcomes that benefit society.
Macquarie University's **Master of Research Year 2 Course** in FMHHS has several course learning outcomes for each of the four previously stipulated graduate capabilities.

1. **Scientist & Scholar:** Graduates will be scientists and scholars with advanced knowledge and skills to deliver science – and evidence – based research practice. Graduates will have:
   1.1. cognitive skills to demonstrate mastery of theoretical knowledge and to reflect critically on theory and its application.
   1.2. cognitive, technical, and creative skills to investigate, analyse, and synthesize complex information, problems, concepts, and theories to different bodies of knowledge or practice.
   1.3. cognitive, technical, and creative skills to generate and evaluate complex ideas and concepts at an abstract level.
   1.4. cognitive and technical skills to design, use, and evaluate research and research methods.
   1.5. communication and technical skills to present a coherent and sustained argument and to disseminate research results to specialist and non-specialist audiences.
   1.6. technical and communication skills to design, evaluate, implement, analyse, theorise and disseminate research that makes a contribution to knowledge.

2. **Research Practitioner:** Graduates will be effective communicators and highly skilled, competent researchers delivering robust research outcomes. Graduates will demonstrate the application of knowledge and skills:
   2.1. with creativity and initiative to new situations in professional practice and/or for further learning.
   2.2. with high-level personal autonomy and accountability.
   2.3. to plan and execute a substantial piece of research.

3. ** Engaged Global Citizen:** Graduates will be socially and culturally responsive researchers with awareness of local and global medical research issues, and who are able to operate effectively in a range of settings.
   3.1. Graduates will have a body of knowledge that includes the understanding of recent developments in one or more disciplines.
   3.2. Graduates will demonstrate advanced knowledge of research principles and methods applicable to the field of work or learning.
   3.3. Graduates will demonstrate knowledge of contemporary local and global research issues and apply strategies for best practice in their research investigations.
   3.4. Graduates will demonstrate an understanding of, and work effectively within, research organizations and be able to identify and recommend strategies for improvement where appropriate.

4. **Professional:** Graduates will be ethical and reflective research practitioners able to lead and work collaboratively within teams.
   4.1. Graduates will demonstrate an understanding of governance and management of research and research environments, be able to both lead projects and work within project teams effectively.
   4.2. Graduates will demonstrate an ability to apply their knowledge and skills as ethically responsible and reflective researchers committed to lifelong learning to advance their practice.
Graduates will demonstrate management, project leadership and strategy skills to deliver competitive cutting-edge research outcomes that benefit society.

Course Structure

Students may commence the FMHHS MRes course in either session 1 or 2 of the academic year, and may choose to study full time or part time, depending on circumstances.

Semester 1 and 2 (BPhil Year 1): Foundation research skills
The figure below outlines the FMHHS enrolment requirements for the MRes Year 1 (BPhil) course. The BPhil is an 80 credit point AQF level 8 qualification. All units are 10 credit points. Each 10 credit point unit has a nominal workload of 150 hours. Required units are shown below (core units in grey).

If students wish to proceed into MRes Year 2, they must complete the core unit requirements for that discipline/department. All departments follow the Medical Research stream, with the exception of Cognitive Science, Linguistics, and Psychology, who request specific core units to be completed.

Semester 3 and 4 (MRes Year 2): Research Project
Year 2 of the MRes will be made up of structured research preparation and training, where candidates will:
• Extend their knowledge of research innovations in their discipline;
• Survey the current literature related to their particular research interest;
• Engage with the latest research methods in their field;
• Receive training in project management and plan a major research project, and
• Complete a significant individual research project of own design, with the support of a research supervisor.

The requirements for your MRes 2 year will include a variety of tasks (grey boxes below) depending on the department in which you are enrolled. More details can be sourced from your departmental directors and course guides.

Altogether 90% of your final grade will be allocated by external examiners, and the remaining 10% will be internally allocated by specific examined tasks defined by your department.
BPHIL/MRES Y1
Year 1 MEDI units

MEDI7000 RESEARCH COMMUNICATIONS
Offered externally/online in session 1 and on campus in session 2

This unit aims to equip you with skills to communicate academic research effectively, and with a heightened appreciation of the relationship between research communications and disciplinary knowledge creation. You will analyse, critique and practise academic communication conventions from different research genres in a variety of modes (written, oral and visual), across disciplines. You will develop communication skills to present a clear and coherent exposition of research concepts to a variety of audiences.

LEARNING OUTCOMES
On successful completion of this unit, students will be able to:

1. Demonstrate a range of communication styles required as an active academic research professional.
2. Effectively utilise written, oral, and visual communications to disseminate research.
3. Explain the structure and style of various types of research communications.
4. Identify different approaches taken to present your data and communicate your research.

ASSESSMENT

<table>
<thead>
<tr>
<th>Assessment No.</th>
<th>Type of Assessment</th>
<th>Value</th>
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<tbody>
<tr>
<td>A1</td>
<td>Comparative analysis</td>
<td>15%</td>
<td>LO1,2</td>
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<tr>
<td>A2</td>
<td>Research Pitch</td>
<td>25%</td>
<td>LO2,3,4</td>
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<td>A3</td>
<td>Systematic Review Protocol</td>
<td>15%</td>
<td>LO1,2,3,4</td>
</tr>
<tr>
<td>A4</td>
<td>Oral Presentation</td>
<td>45%</td>
<td>LO2,3,4</td>
</tr>
</tbody>
</table>

UNIT CONVENOR
Dr Jennifer Rowland jen.rowland@mq.edu.au
MEDI7001  MEDICAL RESEARCH FOUNDATIONS – ETHICS, INTEGRITY, AND PRACTICE

Offered in session 1.

This unit will cover a range of key topics critical to good research practice in Medical Sciences. Presented by lecturers from the various disciplines represented in the faculty, the unit will focus on good research practice, ethics, fundamentals of different research approaches, and research reproducibility. You will explore how best to pose questions, design and deliver their research, with a strong emphasis on integrity, leadership, and cultural competence. The focus will be on the principles that underlie effective research in all disciplines of health systems, clinical and biomedical research. This unit is recommended to all students wishing to pursue robust and high quality research.

LEARNING OUTCOMES

On successful completion of this unit, students will be able to:

1. Describe good practice in Medical Research, including ethics, integrity and leadership.
2. Explain the fundamentals of different research types and approaches.
3. Pose effective research questions and describe key components in research design.
4. Critique different methodologies that might be applied to address research questions.

ASSESSMENT

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<tbody>
<tr>
<td>A1</td>
<td>Table/Timeline</td>
<td>10%</td>
<td>LO1,2</td>
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<tr>
<td>A2</td>
<td>Debate/Role Play</td>
<td>20%</td>
<td>LO1,2</td>
</tr>
<tr>
<td>A3</td>
<td>Literature Analysis</td>
<td>30%</td>
<td>LO1,2,3,4</td>
</tr>
<tr>
<td>A4</td>
<td>Poster and talk</td>
<td>40%</td>
<td>LO1,3,4</td>
</tr>
</tbody>
</table>

UNIT CONVENORS

Prof. Mark Connor  mark.connor@mq.edu.au
Dr Yordanka Krastev  yordanka.krastev@mq.edu.au
Dr Rae-Anne Hardie  rae-anne.hardie@mq.edu.au
MEDI7004 DECODING THE BRAIN

Offered in session 1.

This unit will introduce students to contemporary approaches to the investigation of brain structure and function. You will focus on applying rapidly developing technologies to unravel the complex organisation of the brain circuits that underlie movement, sensation and homeostatic function. You will be introduced to strategies and tools, including the genetic, optical, electronic and analytical tools neuroscientists use to probe the workings of the brain. You will also be introduced to the obstacles that will need to be overcome if future scientists are to explain the most complex structure in the known universe.

LEARNING OUTCOMES

On successful completion of this unit, students will be able to:

1. Explain the functional organization of the nervous system as it pertains to the transmission of information between neurons, the conduction of electrical activity ultimately the encoding of information within the various functional systems of the nervous system, and describe the key experimental observations through which those insights were gained.

2. Demonstrate proficient knowledge of current research techniques used in neuroscience and design experiments that use them to answer questions relating to structure and function of the brain or the development of novel experimental or analytical techniques.

3. Critically evaluate the neuroscience literature and identify current gaps in knowledge or misconceptions relating to a topic of their choice.

4. Analyze and interpret real experimental data.

5. Demonstrate proficient skills in research communication and self-directed learning by reviewing and appraising the contemporary neuroscience literature and conveying their findings to their peers.

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<tbody>
<tr>
<td>A1</td>
<td>In Class Test</td>
<td>15%</td>
<td>LO1,2,4</td>
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<tr>
<td>A2</td>
<td>Journal Article Review</td>
<td>25%</td>
<td>LO1,2,3,5</td>
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<tr>
<td>A3</td>
<td>Final Exam</td>
<td>40%</td>
<td>LO1,2,3,4</td>
</tr>
<tr>
<td>A4</td>
<td>Journal Club</td>
<td>20%</td>
<td>LO3,4,5</td>
</tr>
</tbody>
</table>

UNIT CONVENOR

Associate Prof. Simon McMullan simon.mcmullan@mq.edu.au
MEDI7007  UNLOCKING THE MECHANISMS OF HUMAN DISEASE

Offered in session 2.

PREREQUISITE: MEDI7001 Research Foundations

In this unit you will explore the aetiology, pathogenesis and risk factors involved in common human diseases, including cancer and neurodegenerative conditions. Disease processes will be studied with a focus on cell biology, genetics, and immunology. You will gain an in depth understanding of fundamental biological mechanisms governing human disease pathogenesis. Current treatments and clinical trials will be reviewed and the impact of disease on the individual and on society will be discussed. The latest research into treatment response and resistance, liquid biopsies, and biomarker discovery will be incorporated throughout the unit, and the reality and promise of personalised therapy will be considered.

LEARNING OUTCOMES

On successful completion of this unit, students will be able to:

1. Identify the mechanisms and risk factors that contribute to disease.
2. Critically review contemporary research in human disease processes.
3. Evaluate current treatment strategies and the role of personalised therapy.
4. Demonstrate competency in communicating ideas within a research group to produce a research grant proposal.

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<tr>
<td>A1</td>
<td>Oral presentation</td>
<td>30%</td>
<td>LO1,2,3,4</td>
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<td>A2</td>
<td>Written assessment</td>
<td>25%</td>
<td>LO1,2,3,4</td>
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<tr>
<td>A3</td>
<td>Final exam</td>
<td>45%</td>
<td>LO1,2,3</td>
</tr>
</tbody>
</table>

UNIT CONVENOR

Prof. Helen Rizos  helen.rizos@mq.edu.au
MEDI7010 UNMASKING HEALTH SERVICES RESEARCH

Offered in session 2.

PREREQUISITE: MEDI7001 Research Foundations

In this unit, you will develop an advanced conceptual knowledge of innovative research relevant to a range of topics within the field of health services research. You will gain discipline-specific knowledge that will be relevant to your future research career and be exposed to the expertise of leading researchers, post-doctoral fellows, and PhD candidates from the Australian Institute of Health Innovation, Faculty of Medicine, Health and Human Sciences.

You will: (1) Attend seminars and lectures focused on ongoing research projects from the Australian Institute of Health Innovation and from invited speakers from leading national and international research institutes. (2) Participate in self-directed and group tasks in which you will learn to research, read and critically review seminal research findings that have shaped contemporary thinking, and disseminate your findings in written and oral forms.

LEARNING OUTCOMES

On successful completion of this unit, students will be able to:

1. Demonstrate advanced knowledge of current research in health services.
2. Synthesise and analyse information regarding health services research from a wide variety of sources.
3. Identify and discuss complex problems and issues in health services research with intellectual independence.
4. Articulate cogent argument in written and oral form for a variety of audiences.
5. Identify pertinent areas of research and formulate a suitable methodology to answer a research question.

ASSESSMENT

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<tr>
<td>A1</td>
<td>Podcast</td>
<td>15%</td>
<td>LO1,2,3,4</td>
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<tr>
<td>A2</td>
<td>Research Proposal</td>
<td>50%</td>
<td>LO1,2,3,4,5</td>
</tr>
<tr>
<td>A3</td>
<td>Shark-tank Grant Pitch</td>
<td>20%</td>
<td>LO3,4,5</td>
</tr>
<tr>
<td>A4</td>
<td>Seminar Attendance - :Log Book</td>
<td>15%</td>
<td>LO1,2</td>
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</tbody>
</table>

UNIT CONVENOR

Associate Prof. Rebecca Mitchell r.mitchell@mq.edu.au
MEDI7011 RESEARCH FRONTIERS IN MEDICAL SCIENCES

Offered in session 1.

In this unit you will develop an advanced conceptual knowledge of breakthrough discoveries relevant to a range of topics within the field of medical research. Through mentoring by senior research-active staff and postdoctoral researchers within the Faculty of Medicine, Health, and Human Sciences, you will gain discipline-specific knowledge that will be relevant to your future research career. You will attend seminars and lectures focused on ongoing research projects from the Faculty of Medicine and Health Sciences and from invited speakers from leading national and international research institutes. You will also participate in self-directed and group tasks in which you will learn to conduct research, read and critically review seminal research findings that have shaped contemporary thinking, and to disseminate these findings in written and oral form.

LEARNING OUTCOMES

On successful completion of this unit, students will be able to:

1. Explain the ethical and practical requirements for research with humans and animals.
2. Synthesise and analyse information regarding medical/health research from a wide variety of sources.
3. Identify and discuss complex problems and issues in medical research with intellectual independence.
4. Articulate cogent arguments in written and oral form for a variety of audiences.
5. Apply skills in research literacy and research related information technology.

ASSESSMENT

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<th>Content (LO)</th>
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<tbody>
<tr>
<td>A1</td>
<td>Journal Club Presentation</td>
<td>25%</td>
<td>LO 1,3,4, 5</td>
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<tr>
<td>A2</td>
<td>Scientific News Article</td>
<td>20%</td>
<td>LO 3,4,5</td>
</tr>
<tr>
<td>A3</td>
<td>Essay</td>
<td>35%</td>
<td>LO 2,3,4,5</td>
</tr>
<tr>
<td>A4</td>
<td>Seminar attendance and critique</td>
<td>20%</td>
<td>LO1,2</td>
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</tbody>
</table>

UNIT CONVENOR

Prof. Jacqueline Phillips   jacqueline.phillips@mq.edu.au
MEDI7012 PITCHING YOUR RESEARCH FOR FUNDING

Offered online in session 2.

Building on MEDI7011, you will continue to acquire an advanced conceptual knowledge of breakthrough discoveries relevant to a range of topics within the field of medical research. You will develop your skills in pitching your research for funding through mentoring by senior research-active staff, post-doctoral researchers and FMHHS PhD candidates, also gaining discipline-specific knowledge that will be relevant to your future research career. You will: 1. Attend seminars and lectures focused on ongoing research projects from the Faculty of Medicine, Health and Human Sciences and from invited speakers from leading national and international research institutes. 2. Participate in self-directed and group tasks in which you will learn to research, read and critically review seminal research findings that have shaped contemporary thinking, and to disseminate your findings in written and oral form.

LEARNING OUTCOMES

On successful completion of this unit, students will be able to:

1. Acquire advanced knowledge of current research in medical science.
2. Identify and discuss complex problems and issues in medical research with intellectual independence.
3. Synthesise and analyse information from a wide variety of sources on medical research.
4. Develop oral and written communication skills, related to grant applications, and self-directed learning.
5. Identify pertinent areas of research and formulate a suitable methodology to test out a research question.
6. Evaluate and appraise a research protocol based on quality, feasibility and significance.

ASSESSMENT

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<th>Value</th>
<th>Content (LO)</th>
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<tbody>
<tr>
<td>A1</td>
<td>Shark-tank grant pitch</td>
<td>20%</td>
<td>LO1,2,3,4,5,6</td>
</tr>
<tr>
<td>A2</td>
<td>Grant Application</td>
<td>40%</td>
<td>LO1,2,3,4,5,6</td>
</tr>
<tr>
<td>A3</td>
<td>Peer Review and Rebuttal</td>
<td>30%</td>
<td>LO2,3,4,6</td>
</tr>
<tr>
<td>A4</td>
<td>Seminar Attendance</td>
<td>10%</td>
<td>LO4,6</td>
</tr>
</tbody>
</table>

UNIT CONVENORS

Dr Dane Turner  daneh.turner@mq.edu.au
Dr Marina Junqueira Santiago  marina.junqueirasantiago@mq.edu.au
MEDI7041 RESEARCH ROTATION 1

Offered in session 1 and 2

This unit is the first of two units facilitating research within the first year of the Masters of Research within the Faculty of Medicine, Health and Human Sciences. This unit focuses on providing a first hand experience of performing research and research communication. In this unit, you will become a member of several research groups under the supervision of a senior PhD candidate or post-doctoral staff member. Learning activities will include participation in research activities such as assisting in the acquisition, analysis and interpretation of data, participation in research group meetings and journal clubs, and practical experience in research communication. The immersive learning environment within the research activities will provide you with access to discipline-specific expertise, and you will be able to demonstrate the application of the theoretical knowledge obtained in your other learning activities. Through this unit you will develop skills as a researcher and research communicator.

This unit is typically taken in your first semester of BPhil/MRes1, thus if you begin mid-year, you should take this in session 2.

LEARNING OUTCOMES

On successful completion of this unit, students will be able to:

1. Communicate advanced theoretical and practical knowledge of fields of contemporary research.
2. Participate in the day-to-day running of a research group and the responsibilities in research and collaborate in discussion centred around research ideas, methods, and data.
3. Acquire, analyse, and interpret research data and methods in a way suitable for presentation to the scientific community.
4. Review and critically evaluate diverse scientific literature and present your findings.

ASSESSMENT

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<th>Value</th>
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<tr>
<td>A1</td>
<td>Research Engagement</td>
<td>15%</td>
<td>LO1,2</td>
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<tr>
<td>A2</td>
<td>Poster presentation</td>
<td>30%</td>
<td>LO1,2,3,4</td>
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<tr>
<td>A3</td>
<td>Mini-paper submission</td>
<td>30%</td>
<td>LO1,2,3,4</td>
</tr>
<tr>
<td>A4</td>
<td>Project proposal</td>
<td>25%</td>
<td>LO1,3,4</td>
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</table>

UNIT CONVENORS

Dr Angela Laird  angela.laird@mq.edu.au
Dr Mark Butlin   mark.butlin@mq.edu.au
MEDI7042 RESEARCH ROTATION 2

Offered in session 1 and 2.

This unit is the second of two units facilitating research within the first year of the Masters of Research within the Faculty of Medicine, Health, and Human Sciences. This unit focuses on a first hand experience of research and research communication. In this unit, you will become a member of a research group under the supervision of a senior PhD candidate or post-doctoral staff member. Learning activities will include an opportunity to participate in research activities such as assisting in the acquisition, analysis and interpretation of data, participation in research group meetings and journal clubs, and practical experience in research communication. The immersive learning environment of the research activities will provide you with access to discipline-specific expertise, and you will be able to demonstrate the application of the theoretical knowledge obtained in your other learning activities. Through this unit you will develop skills as a researcher and research communicator.

This unit is typically taken in your second semester of BPhil/MRes1, thus if you begin mid-year, you should take this in session 1.

LEARNING OUTCOMES

On successful completion of this unit, students will be able to:

1. Review advanced theoretical and/or practical knowledge of a field of research and apply this knowledge to a small research project.
2. Participate in the day-to-day running of a research group and the responsibilities of self-directed postgraduate research and collaborate in discussion centred around research ideas, methods, and data.
3. Acquire, analyse, and interpret research data and methods in a way suitable for presentation to the scientific community.
4. Review and critically evaluate diverse scientific literature and present your findings.

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<tbody>
<tr>
<td>A1</td>
<td>Conference presentation</td>
<td>35%</td>
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</tr>
<tr>
<td>A2</td>
<td>Conference paper</td>
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</tr>
<tr>
<td>A3</td>
<td>Research Engagement</td>
<td>30%</td>
<td>LO2,3,4</td>
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</table>

UNIT CONVENORS

Dr Mark Butlin mark.butlin@mq.edu.au
Dr Angela Laird angela.laird@mq.edu.au
MEDI7047 RESEARCH PROJECT MANAGEMENT

Offered in session 2.

In this unit you will review the key stages of a scientific/medical research project, from conception to completion. Topics covered will include: project design and planning; establishing key project contributors; launching a project; managing a project underway; troubleshooting and dealing with change; record keeping; communicating and networking; publishing; and project completion. These topics will be explored in the context of short (1 year) and long (3 year) classical academic research projects. In completing this course, you will develop a clear understanding of how to deliver a research project from start to finish. Special guest lecturers will also provide insight to research projects in different contextual settings.

LEARNING OUTCOMES

On successful completion of this unit, students will be able to:

1. Describe how to design and deliver a project plan.
2. Critically evaluate components and deliverables of a project.
3. Apply understanding of project management techniques in selected disciplinary practice.
4. Evaluate best project troubleshooting approaches and the required associated steps.
5. Describe the coordination of a research project with a diverse multidisciplinary team.
6. Demonstrate skills in communication and self-directed learning.

ASSESSMENT

<table>
<thead>
<tr>
<th>Assessment No.</th>
<th>Type of Assessment</th>
<th>Value</th>
<th>Content (LO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Ethics and Safety review</td>
<td>20%</td>
<td>LO1,2</td>
</tr>
<tr>
<td>A2</td>
<td>Retrospective review of thesis project</td>
<td>40%</td>
<td>LO2,3,4,5,6</td>
</tr>
<tr>
<td>A3</td>
<td>Project Cycle Analysis</td>
<td>40%</td>
<td>LO1,2,3,4,6</td>
</tr>
</tbody>
</table>

UNIT CONVENOR

Dr Jennifer Rowland  jen.rowland@mq.edu.au
MEDI7051 THE ARTIFICIAL HUMAN

Offered in session 2.

This unit within the Masters of Research provides learning in the processes of development and commercialisation of research ideas using the framework of device development, with concepts being applicable to the wider biomedical sphere. This unit focuses on some of the latest technologies in medical implants and provides a critical review of the clinical, biological, structural and philosophical aspects of biomedical research development. In this unit you will explore: the concept of innovation; patenting; ethical and regulatory expectations; the process of clinical trials; issues of biocompatibility and infection. The unit also uses case studies of recent biomedical research and device success and failures (including in the orthopaedic and cardiovascular fields), to contextualise learning. Learning activities will include seminars from field experts and drafting of professional documents required in biomedical development and commercialisation. Through this unit you will develop an appreciation for research, development and commercialisation that will inform your future academic research or industry-focused biomedical career.

LEARNING OUTCOMES

On successful completion of this unit, students will be able to:

1. Review advanced knowledge of the latest biomedical technologies in a variety of different medical disciplines.
2. Critically evaluate biomedical implants in terms of clinical success and ethical issues.
3. Evaluate research strategies used to advance translational research into medical implants on the market.
4. Develop skills in communication and self directed learning.

ASSESSMENT

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<tr>
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<th>Value</th>
<th>Content (LO)</th>
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</thead>
<tbody>
<tr>
<td>A1</td>
<td>Research Ethics</td>
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<tr>
<td>A2</td>
<td>Implant Research Project</td>
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<td>LO1,2,3,4</td>
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<tr>
<td>A3</td>
<td>Quizzes</td>
<td>40%</td>
<td>LO1,2,3</td>
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</tbody>
</table>

UNIT CONVENORS

Dr Dane Turner  daneh.turner@mq.edu.au
Dr Mark Butlin  mark.butlin@mq.edu.au
BPHIL/MRES Y1

MEDI7101  EPIDEMIOLOGY AND BIOSTATISTICS FOR RESEARCH

Offered in session 1.

This unit provides an introduction to scientific inquiry and evaluation of evidence fundamental to research and practice with particular reference to public health. You will be introduced to epidemiology, biostatistics, and qualitative methods, via modules designed with an integrated approach to learning in mind. You will learn about study design, analysis, and interpretation. You will also gain an appreciation of the importance of evidence to the field of health research and apply techniques directly to your field of research interest.

LEARNING OUTCOMES

On successful completion of this unit, students will be able to:

1. Calculate and interpret the epidemiologic measures of occurrence; and association between exposure and disease and measures of public health impact.
2. Characterise analytic epidemiology study designs and describe the measures associated with these studies.
3. Explain epidemiological and statistical concepts commonly used in public health.
4. Organise, summarise, analyse and interpret data relevant to public health.

ASSESSMENT

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<tr>
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<th>Type of Assessment</th>
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<tbody>
<tr>
<td>A1</td>
<td>Online Quiz (Epidemiology)</td>
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<td>LO1,3,4</td>
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<tr>
<td>A2</td>
<td>Critical Appraisal</td>
<td>40%</td>
<td>LO1,2,3</td>
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<tr>
<td>A3</td>
<td>Final Exam</td>
<td>50%</td>
<td>LO1,2,3,4</td>
</tr>
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</table>

UNIT CONVENER

Prof. Janaki Amin  janaki.amin@mq.edu.au
PACE unit

MRES7001 PACE FOR RESEARCH

Offered in session 2.

The PACE for Research unit provides MRes students with the opportunity to undertake research as part of a research team or in community or industry settings. In consultation with a partner organisation/research team leader, students identify, design, manage and conduct a research project that aligns with the strategic priorities of that organisation/team. Students’ projects are overseen and guided by a host supervisor and supported through a series of academic seminars on campus. This unit aims to equip students with practical problem-solving and research skills, as well as insight into conducting research that involves a partner. Students complete 100 hours working with their partner organisation eventuating in delivery of a formal written project report. Students may choose to use the research conducted in this unit as the basis of their MRes thesis in the second year.

LEARNING OUTCOMES

On successful completion of this unit, students will be able to:

1. Apply knowledge and research methodologies learned in other units to a practical context.
2. Use project management guidelines to plan and manage a project that aligns with the priorities of the partner organisation.
3. Participate meaningfully as a member of an organisation or research team and develop a critically reflective practice on the experience of the research process.
4. Demonstrate initiative and self-sufficiency during the placement.
5. Use ethical practices during the research project.
6. Develop professional skills which contribute to an organisation’s appreciation of research.
7. Engage with ethical, social, and/or environmental issues affecting the partner organisation and assist in addressing them.

ASSESSMENT

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<th>Type of Assessment</th>
<th>Value</th>
<th>Content (LO)</th>
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<td>Project Management Plan</td>
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<tr>
<td>A2</td>
<td>Participation and Engagement</td>
<td>20%</td>
<td>LO3,4,5,6,7</td>
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<tr>
<td>A3</td>
<td>Presentation</td>
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<td>LO1,3,5,7</td>
</tr>
<tr>
<td>A4</td>
<td>Final Project Report</td>
<td>40%</td>
<td>LO1,2,3,5,6,7</td>
</tr>
</tbody>
</table>

UNIT CONVENOR

Dr Juliet Lum juliet.lum@mq.edu.au

NOTE: For FMHHS students, this unit is only applicable to projects or placements external to FMHHS, with a focus on non-academic settings. Those seeking FMHHS research experience should enrol in MEDI7041/7042 rotation units.
Cognitive Science units

COGS7010 RESEARCH FRONTIERS IN COGNITIVE SCIENCE

Offered in session 1.

You will engage in critical research issues in cognitive science. We examine the assumptions and methodological issues of the main techniques used across the different fields of cognitive science (e.g., neuroimaging, behavioural, and neuropsychological techniques). The unit will include seminars by experts in the various techniques and student-led analyses of recently published papers. The aim is to provide you with the tools to critically appraise published studies and the inferences made on the basis of experimental data. Activities are based on seminar attendance, directed reading of research articles, and critical discussion of research in both written and oral form.

LEARNING OUTCOMES

On successful completion of this unit, students will be able to:

1. Identify the key critical issues in common methods used in cognitive science.
2. Provide critical analysis when reading academic research papers, and critically evaluate scientific methods, results and interpretations.
3. Demonstrate an advanced understanding of the methods available for research into cognitive science.
4. Demonstrate an advanced understanding of the common underlying assumptions in studying cognition.
5. Clearly articulate an argument in written and oral form to a variety of audiences.
6. Critically analyse information from a variety of sources.
7. Demonstrate an understanding of scientific integrity and the need for rigorous and transparent methodology and reporting of research.

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<tbody>
<tr>
<td>A1</td>
<td>In-Class Participation</td>
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<td>LO1,2,5,7</td>
</tr>
<tr>
<td>A2</td>
<td>Leading Journal Club</td>
<td>10%</td>
<td>LO1,2,4,5,7</td>
</tr>
<tr>
<td>A3</td>
<td>Critical Paper Review</td>
<td>30%</td>
<td>LO1,2,3,4,5,6,7</td>
</tr>
<tr>
<td>A4</td>
<td>Critical Issues Essay</td>
<td>50%</td>
<td>LO1,2,3,4,5,6,7</td>
</tr>
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UNIT CONVENOR

Prof. Anina Rich anina.rich@mq.edu.au
COGS7020 ADVANCED PRINCIPLES OF COGNITIVE SCIENCE: ATTENTION AND ACTION

Offered in session 1

This unit addresses the conceptual foundations of cognitive science. By covering key questions and issues in the philosophy of science, it addresses the underlying assumptions and implications of science. The unit also covers selected topics in cognitive science from a historical and theoretical perspective. The unit gives you an overview of the major issues and allows them then to reinforce their knowledge with further discussion and reading. The unit is student-led, involving regular critical evaluation of core material, presentations and analyses of mainstream views, and ongoing discussion. This helps to reinforce the your learning and allows you to decide on the most pertinent issues to your particular discipline and research area with support and direction from the coordinators.

LEARNING OUTCOMES

On successful completion of this unit, students will be able to:

1. Critically evaluate the conceptual and/or methodological foundations of cognitive science.
2. Synthesise and analyse information about complex problems and issues in cognitive science research practice including experimental design and statistical methods.
3. Exhibit analytical research skills and show intellectual independence.
4. Demonstrate effective scientific communication in written and oral form for a variety of audiences.
5. Demonstrate a high level of ethical conduct in research activities.

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<th>Content (LO)</th>
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<tbody>
<tr>
<td>A1</td>
<td>Lab Report</td>
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<td>LO2,3,4,5</td>
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<tr>
<td>A2</td>
<td>Midterm Essay</td>
<td>30%</td>
<td>LO1,2,3,4</td>
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<tr>
<td>A3</td>
<td>Final Essay</td>
<td>30%</td>
<td>LO1,2,3,4</td>
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UNIT CONVENER

Associate Prof. Matthew Finkbeiner  matthew.finkbeiner@mq.edu.au
Linguistics units

**APPL7020 DESIGNING AND CONDUCTING LANGUAGE-RELATED RESEARCH**

Offered in session 1 and 2

Acquiring advanced research knowledge and developing research skills is integral to and a core element in Master of Research course. In this unit, you will be exposed to main research methodologies including quantitative, qualitative, and mixed-methods; you will also be involved with research activities through learning and assessment tasks. By completing this unit, it is anticipated that you will master critical concepts in research and be able to apply different research methods by preparing research proposals on topics of interest.

**LEARNING OUTCOMES**

On successful completion of this unit, students will be able to:

1. Identify and communicate a research topic to a professional audience.
2. Demonstrate an in-depth understanding of different approaches to research
3. Conceive and formulate research questions/hypotheses relating to language study and language learning
4. Apply your research and writing skills to write a research proposal
5. Conduct and report a small-scale replication study to answer your research questions

**ASSESSMENT**

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<tr>
<td>A1</td>
<td>Annotated bibliography</td>
<td>20%</td>
<td>LO1,2,3,4</td>
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<tr>
<td>A2</td>
<td>Research proposal</td>
<td>20%</td>
<td>LO1,2,3,4</td>
</tr>
<tr>
<td>A3</td>
<td>Group oral presentation</td>
<td>10%</td>
<td>LO1,2,3</td>
</tr>
<tr>
<td>A4</td>
<td>Research report</td>
<td>25%</td>
<td>LO2,3,4,5</td>
</tr>
<tr>
<td>A5</td>
<td>Active participation</td>
<td>25%</td>
<td>LO2,3,5</td>
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</table>

**UNIT CONVENER**

Prof. Mehdi Riazi  
mehdi.riazi@mq.edu.au
EDIT7000 EDITING FOR RESEARCHERS

Offered in session 2 fully online

This unit is designed to help MRES candidates become effective editors of their own research, and able to project their work in different vehicles of publication. It examines critical aspects of publishing research as (i) a full dissertation, or (ii) a series of papers/journal articles. It compares issues in editing research for publication in print and online as well as broadcasting, to demonstrate the demands of each medium. The scope of the abstract for journal articles, conference papers and prefacing the dissertation is discussed, and the repurposing of content and stylistic adaption needed to publish research as extended non-fiction. Students are introduced to the standard style guides in the humanities, social sciences and sciences, and are given opportunity to discuss more specialised ones within their disciplinary/Faculty groups, with assignments on implementing their different recommendations. The unit provides supplementary (non-assessable) language support online for international students.

LEARNING OUTCOMES

On successful completion of this unit, students will be able to:

1. Analyse the advantages and disadvantages of print and online modes for publishing research
2. Construct academic content for communicating complex ideas in longer and shorter formats, making use of multidisciplinary research into technical terminology.
3. Make use of a repertoire of different editorial styles for journals within relevant discipline areas, based on research into conventions across disciplines.
4. Critically evaluate the writing of other researchers at the micro-level of language choice as well as the structure and articulation of content.
5. Apply sophisticated understanding of the different demands of presenting research as a set of papers and as an extended dissertation

ASSESSMENT

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<tbody>
<tr>
<td>A1</td>
<td>Editing Quiz</td>
<td>10%</td>
<td>LO3,4</td>
</tr>
<tr>
<td>A2</td>
<td>Analysis of Disciplinary Differences</td>
<td>30%</td>
<td>LO1,2,3,4,5</td>
</tr>
<tr>
<td>A3</td>
<td>Editing Abstracts Across Disciplines</td>
<td>20%</td>
<td>LO1,2,3,5</td>
</tr>
<tr>
<td>A4</td>
<td>Article Editing Essay</td>
<td>40%</td>
<td>LO1,2,3,4,5</td>
</tr>
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UNIT CONVENOR

Dr Adam Smith    adam.smith@mq.edu.au
LING7701  MODERN THEORIES OF LINGUISTICS IN THE HISTORY OF HUMAN SCIENCES

Offered in session 1.

Language, along with the night sky and the 'signs' of illness, has been one of the longest studied objects of human enquiry. This unit examines the contemporary theories produced in that sustained human effort. In particular, we investigate the claims that twentieth century linguistics makes to being a science; and we look closely at the current ways in which linguistic theories are extended by the techniques of twenty-first century sciences: genetics and evolutionary theory; language corpora; neurosciences and medicine; complexity and computational modelling; and electronic translation tools. The unit gives prominence to scholars concerned with the special conditions that pertain to the study of sign systems, of syntax, and of meaning: for example, Saussure; Chomsky; and various theorists across disciplines who offer methodical accounts for the study of meaning. You can choose a strand of specialisation in your readings and assignments: you can choose by the level of language (from phonetics up to context), by the orientation to theory (eg, functionalist, structuralist, generative, or other), and by era (1900-1950, 1950-2010, or classical and other). You will be encouraged to place your own research interests in the context of historical developments in the subject.

LEARNING OUTCOMES

On successful completion of this unit, students will be able to:

1. Present selected key linguistic theories in their historical context, and in relation to the motivations of the communities of scholars responsible for their development
2. Describe the distinguishing concepts of major linguistic theories and theorists
3. Present and evaluate claims and assumptions of different linguistic theories
4. Relate forms of evidence to different kinds of linguistic theory
5. Explain the ramifications of linguistic theory for other forms of intellectual enquiry, in particular how linguistics plays a role in the direction of the human sciences
6. Construct clear and cogent arguments about how linguistics may develop in the particular sub-discipline most relevant to your domain

ASSESSMENT

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<tbody>
<tr>
<td>A1</td>
<td>In-Class Participation</td>
<td>10%</td>
<td>LO1,2,5</td>
</tr>
<tr>
<td>A2</td>
<td>Leading Journal Club</td>
<td>10%</td>
<td>LO1,2,4,5</td>
</tr>
<tr>
<td>A3</td>
<td>Critical Paper Review</td>
<td>30%</td>
<td>LO1,2,3,4,5,6</td>
</tr>
<tr>
<td>A4</td>
<td>Critical Issues Essay</td>
<td>50%</td>
<td>LO1,2,3,4,5,6</td>
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UNIT CONVENOR

Associate Prof. David Butt  david.butt@mq.edu.au
Psychology units

PSYM7718 ADVANCED RESEARCH DESIGN AND STATISTICS

Offered in session 1.

This unit is designed as preparation for the Master of Research projects and to help equip you for your research career. The unit focuses on practical issues of quantitative data analysis. Most topics are dealt with in the context of Stata. Topics include sample size and statistical power analysis, data management in Stata and more advanced methods specifically applicable to research in psychology.

LEARNING OUTCOMES

On successful completion of this unit, students will be able to:

1. Understand how to calculate both prospective sample size requirements and retrospective: a) Be able to estimate sample size needed for simple research designs b) Be able to calculate statistical power available at the end of a study for simple research designs.
2. Describe how abstract concepts are operationalised in statistical terms in psychological research.
3. Understand the application and interpretation of several advanced statistical methods applicable to research in psychology.
4. Gain an enhanced practical understanding of statistical software used in psychological research, with a focus on understanding the syntax required to carry out analyses and interpreting output.

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<tr>
<td>A1</td>
<td>Research Evaluation Form</td>
<td>40%</td>
<td>LO2,3,4</td>
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<tr>
<td>A2</td>
<td>Final Examination</td>
<td>60%</td>
<td>LO1,2,3,4</td>
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</table>

UNIT CONVENOR

Associate Prof. Naomi Sweller naomi.sweller@mq.edu.au
PSYM7732 CONTEMPORARY ISSUES IN DEVELOPMENTAL PSYCHOLOGY: CHILD ABUSE AND NEGLECT

Offered in session 2.

This unit introduces the topic of child abuse and neglect. The prevalence of physical, sexual, and emotional abuse and neglect is canvassed and the empirical literature relevant to all forms of abuse and neglect is reviewed. Theoretical models for conceptualising and understanding child abuse and neglect are presented. There is considerable emphasis not only on the outcomes of child abuse and neglect but also on the psychological processes that mediate these outcomes. The adequacy of prevention and intervention programs will be appraised and the operation of some of these programs in New South Wales will be considered.

LEARNING OUTCOMES

On successful completion of this unit, students will be able to:

1. Understand the major concepts, theoretical perspectives, empirical findings, and historical trends in child abuse and neglect.
2. Critically evaluate the research methods used in empirical research.
3. Apply knowledge of child abuse and neglect research findings in various contexts (e.g. family, school).
4. Competently use technological resources to obtain information on child abuse and neglect.
5. Explain the variations in child abuse and neglect across different cultural, ethnic and socioeconomic contexts.
6. Demonstrate skills for designing research on child abuse and neglect to be used to guide intervention and prevention programs, and to formulate policy.

ASSESSMENT

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<tr>
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<td>Essay</td>
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<tr>
<td>A2</td>
<td>Report</td>
<td>20%</td>
<td>LO1,2,3,4,5,6</td>
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<tr>
<td>A3</td>
<td>Final Examination</td>
<td>30%</td>
<td>LO1,2,3,4,5,6</td>
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UNIT CONVENOR

Associate Prof. Kay Bussey  kay.bussey@mq.edu.au
PSYM7739  EVOLUTION OF SOCIAL, SEXUAL AND EMOTIONAL BEHAVIOUR

Offered in session 1.

This unit will provide a framework for in-depth study of evolutionary explanations of human and animal behaviour. While evolution is overwhelmingly accepted by biologists as the best explanation for the development of life on Earth, and for the behaviour of non-human animals, the new science of evolution of human behaviour is considered controversial by many. This module will introduce the different evolutionary approaches to human behaviour: evolutionary psychology and human behavioural ecology. We will cover evolutionary explanations of behaviours such as cooperation, altruism, violence, murder, gossip, sexual attraction, relationships, culture and religion.

LEARNING OUTCOMES

On successful completion of this unit, students will be able to:

1. Explain evolutionary theory and describe how it can be applied to human behaviour.
2. Critically discuss the different methodological frameworks in evolutionary studies of human behaviour and their relationship with other branches of the social sciences.
3. Articulate the criticisms that have been levelled at evolutionary psychology, and their basis in fact or misconception.
4. Describe current research questions in evolution of brain and behaviour.
5. Make oral and written presentations of critiques and syntheses of published work, and engage with feedback from peers.

ASSESSMENT

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<tbody>
<tr>
<td>A1</td>
<td>Essay</td>
<td>30%</td>
<td>LO3,4,5</td>
</tr>
<tr>
<td>A2</td>
<td>Presentation</td>
<td>20%</td>
<td>LO1,2,4,5</td>
</tr>
<tr>
<td>A3</td>
<td>Final Examination</td>
<td>50%</td>
<td>LO1,2,3,4,5</td>
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UNIT CONVENOR

Associate Prof. Ian Stephen  ian.stephen@mq.edu.au
PSYM7763 ADVANCED VISUAL PERCEPTION

Offered in session 2.

Research in visual perception is rapidly changing, with broad impacts on many other areas of psychology and general life. In PSYM7763 we will meet weekly for lively seminars to critically evaluate recent papers chosen by the group. Recent areas of focus include face perception and the impact on ID screening for security applications; perception of bodies and its implications for eating disorders and body satisfaction, as well as developments in the understanding of basic visual processes. You will hone your skills in presentations, receiving individualised feedback from peers and members of staff, and submit an essay on a chosen visual perception topic. In addition, staff and postgraduate students may present their own current research to you.

LEARNING OUTCOMES

On successful completion of this unit, students will be able to:

1. Demonstrate an advanced understanding of the terminology, theories, processes, methods, and findings related to human perception.
2. Critically evaluate, synthesise and Interpret contemporary empirical research aimed at testing the theories of human perception.
3. Apply skills in communication and public speaking and critically evaluating research presentations.
4. Demonstrate an advanced understanding of the ethical challenges of perception research.

ASSESSMENT

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<tbody>
<tr>
<td>A1</td>
<td>Presentation</td>
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<td>A2</td>
<td>Seminar Participation</td>
<td>15%</td>
<td>LO1,2,3,4</td>
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<tr>
<td>A3</td>
<td>Essay</td>
<td>50%</td>
<td>LO1,2,4</td>
</tr>
<tr>
<td>A4</td>
<td>Peer Feedback</td>
<td>10%</td>
<td>LO2,3</td>
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UNIT CONVENOR

Associate Prof. Kevin Brooks  kevin.brooks@mq.edu.au
PSYM7764  SCIENCE AND PRACTICE OF PSYCHOLOGY IN CONTEXT

Offered in session 1.

This unit explores the development of modern psychology and the way that we understand the subject matter of psychological science. The first part of the unit looks at the history of modern psychology and at some of the rival schools of thought that underlie different approaches in psychology today. Some of the associated controversies within the history of psychology are also addressed, including the relation between psychology and the eugenics movement, and the development of the modern concept of mental disorder. The second part of the unit explores the manner in which we conceptualise the subject matter within psychology. Major concepts within psychology will be examined (eg, behaviour, cognition and motivation) and common weaknesses in psychological arguments identified with an aim to developing critical thinking skills.

LEARNING OUTCOMES

On successful completion of this unit, students will be able to:

1. Describe and outline the philosophical origins of modern empirical Psychology.
2. List and critique the central assumptions of modern empirical Psychology.
3. Trace the development of the conception of western Psychology from the Scientific Revolution to the present day.
4. Describe and critique some of the major concepts in modern Psychology.

ASSESSMENT

<table>
<thead>
<tr>
<th>Assessment No.</th>
<th>Type of Assessment</th>
<th>Value</th>
<th>Content (LO)</th>
</tr>
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<tr>
<td>A1</td>
<td>Essay Plan</td>
<td>10%</td>
<td>LO2,4</td>
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<td>A2</td>
<td>Essay</td>
<td>50%</td>
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<td>A3</td>
<td>Examination</td>
<td>40%</td>
<td>LO1,2,3,4</td>
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UNIT CONVENOR

Associate Prof. Simon Boag  simon.boag@mq.edu.au
Year 2 and key contacts

Year 2 of the course is hosted within the department where you will be completing your MRes project, and follow the basic structure outlined on page 6.

For further information about your year 2 course please contact your relevant departmental MRes Advisor.

<table>
<thead>
<tr>
<th>Department</th>
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<tbody>
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To explore the research being pursued in the faculty, please navigate to the PURE database. https://researchers.mq.edu.au/en/organisations/faculty-of-medicine-health-and-human-sciences

FMHHS HDR Contacts

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