



# MEDI751

## The Artificial Human - When Implants Replace Diseased Organs

S2 Day 2019

*Medicine and Health Sciences Faculty level units*

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#### **Disclaimer**

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## General Information

Unit convenor and teaching staff

Unit Convenor, Senior Lecturer

Dr Danè Turner

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Contact via email

Level 1, 75 Talavera Rd.

Consultation by appointment

Unit Convenor, Lecturer

Dr Mark Butlin

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Contact via email

Level 1, 75 Talavera Rd

Consultation by appointment

Credit points

4

Prerequisites

Admission to MRes

Corequisites

Co-badged status

Unit description

This unit will introduce some of the latest technologies in medical implants (eg. Pacemakers, hip implants, nerve stimulators) and provide a critical review of the clinical, biological, structural and philosophical aspects of implants and how they replace diseased organs and biological systems of the body.

Topics of discussion will include implant research, design and testing, infection control, clinical trials, and ethics. A large component will be examining the background and application of a variety of different implants. These will be explored in relation to the gross anatomy, biomechanics, and physiology of the human body. The overriding aim is to discover what makes a successful implant.

## Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

## Learning Outcomes

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

Acquire advanced knowledge of the latest biomedical technologies in a variety of different medical disciplines.

Critically evaluate biomedical implants in terms of clinical success and ethical issues.

Evaluate research strategies used to advance translational research into medical implants on the market.

Develop skills in communication and self directed learning.

## General Assessment Information

Grade descriptors and other information concerning grading are contained in Schedule 1 of the Macquarie University Assessment Policy, which is available at: <https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/assessment>.

Further details for each assessment task will be available on iLearn.

All final grades in the Masters of Research are determined by a grading committee and are not the sole responsibility of the Unit Convenor.

Students will be awarded a final grade plus a Standardised Numerical Grade (SNG). The SNG is not necessarily a summation of the individual assessment components. The final grade and SNG that are awarded reflect the corresponding grade descriptor in the Grading Policy.

To pass this unit, students must demonstrate sufficient evidence of achievement of the learning outcomes, attempt all assessment tasks, meet any ungraded requirements including professionalism and achieve an SNG of 50 or better.

## Student Professionalism

In the Faculty of Medicine and Health Sciences, professionalism is a key capability embedded in all our programs. As part of developing professionalism, students are expected to attend all small group interactive sessions including tutorials, as well as clinical- and laboratory-based practical sessions.

Furthermore, lectures and seminars are key learning activities that you are expected to attend throughout completion of the Masters of Research program. While audio recordings and lecture slides may be made available following these large group sessions, it is important to recognise that such resources are a study aid - and should not be considered an alternative to lecture or seminar attendance.

Students who do not maintain adequate attendance (greater than or equal to 80% of scheduled classes) may be deemed unable to meet expectations regarding professionalism and may be referred for disciplinary action (which may include exclusion from assessments and unit failure).

Similarly, as part of developing professionalism, students are expected to submit all work by the due date. Applications for assessment task extensions must be supported by appropriate

evidence and submitted via [www.ask.mq.edu.au](http://www.ask.mq.edu.au). For further details please refer to the Special Consideration Policy available at <https://students.mq.edu.au/study/my-study-program/special-consideration>.

## Late Submission

All assignments which are officially received after the due date, and where no extension has been granted, will incur a deduction of 10% for the first day, and 10% for each subsequent day including the actual day on which the work is received. Weekends and public holidays are included. For example:

Due date	Received	Days late	Deduction	Raw mark	Final mark
Friday 14th	Monday 17th	3	30%	75%	45%

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#">Research Ethics Assessment</a>	20%	No	Week 3
<a href="#">Implant Research Project</a>	40%	No	Week 9 and Week 12
<a href="#">In Class Mini Exams</a>	40%	No	Week 6 and Week 13

### Research Ethics Assessment

Due: **Week 3**

Weighting: **20%**

2 to 3 page letter to patient detailing an example study protocol and risks. Includes review of a complete research study.

On successful completion you will be able to:

- Critically evaluate biomedical implants in terms of clinical success and ethical issues.
- Develop skills in communication and self directed learning.

### Implant Research Project

Due: **Week 9 and Week 12**

Weighting: **40%**

On a physiological problem/disease that has an unmet need for an implantable solution. Essay 20%, abstract (scientific) 10%, abstract (lay person) 10%.

On successful completion you will be able to:

- Acquire advanced knowledge of the latest biomedical technologies in a variety of

different medical disciplines.

- Critically evaluate biomedical implants in terms of clinical success and ethical issues.
- Evaluate research strategies used to advance translational research into medical implants on the market.
- Develop skills in communication and self directed learning.

## In Class Mini Exams

Due: **Week 6 and Week 13**

Weighting: **40%**

Multiple choice and short answer covering unit content from the entire session. Conducted in class in week 6 and 13.

On successful completion you will be able to:

- Acquire advanced knowledge of the latest biomedical technologies in a variety of different medical disciplines.
- Critically evaluate biomedical implants in terms of clinical success and ethical issues.
- Evaluate research strategies used to advance translational research into medical implants on the market.

## Delivery and Resources

- Up to 2 hours of face-to-face contact each week in the form of either a lecture, tutorial, or site visit, depending on the content of the week.
- Further material and suggested reading sources will be provided through the iLearn space.
- Students should use provided material to actively seek further reading through searching the current literature (e.g. research articles and reviews) using tools such as PubMed, Scopus, and/or GoogleScholar. This material should supplement and extend their understanding of the topics, and assist in preparation of assessed material.

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central\)](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)

- [Assessment Policy](#)
- [Fitness to Practice Procedure](#)
- [Grade Appeal Policy](#)
- [Complaint Management Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#) (**Note:** *The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.*)

Undergraduate students seeking more policy resources can visit the [Student Policy Gateway](https://students.mq.edu.au/support/study/student-policy-gateway) (<https://students.mq.edu.au/support/study/student-policy-gateway>). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit [Policy Central](http://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central) (<http://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central>).

## Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/study/getting-started/student-conduct>

## Results

Results published on platform other than [eStudent](#), (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit [ask.mq.edu.au](http://ask.mq.edu.au) or if you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

## Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

## Learning Skills

Learning Skills ([mq.edu.au/learningskills](http://mq.edu.au/learningskills)) provides academic writing resources and study strategies to improve your marks and take control of your study.

- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module for Students](#)
- [Ask a Learning Adviser](#)

## Student Services and Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

## Student Enquiries

For all student enquiries, visit Student Connect at [ask.mq.edu.au](http://ask.mq.edu.au)

If you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

## IT Help

For help with University computer systems and technology, visit [http://www.mq.edu.au/about\\_us/offices\\_and\\_units/information\\_technology/help/](http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/).

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.

## Graduate Capabilities

### PG - Capable of Professional and Personal Judgment and Initiative

Our postgraduates will demonstrate a high standard of discernment and common sense in their professional and personal judgment. They will have the ability to make informed choices and decisions that reflect both the nature of their professional work and their personal perspectives.

This graduate capability is supported by:

#### Learning outcomes

- Critically evaluate biomedical implants in terms of clinical success and ethical issues.
- Evaluate research strategies used to advance translational research into medical implants on the market.

#### Assessment tasks

- Research Ethics Assessment
- Implant Research Project
- In Class Mini Exams

### PG - Discipline Knowledge and Skills

Our postgraduates will be able to demonstrate a significantly enhanced depth and breadth of knowledge, scholarly understanding, and specific subject content knowledge in their chosen fields.

This graduate capability is supported by:

#### Learning outcomes

- Acquire advanced knowledge of the latest biomedical technologies in a variety of different medical disciplines.
- Critically evaluate biomedical implants in terms of clinical success and ethical issues.

- Evaluate research strategies used to advance translational research into medical implants on the market.

### **Assessment tasks**

- Research Ethics Assessment
- Implant Research Project
- In Class Mini Exams

## **PG - Critical, Analytical and Integrative Thinking**

Our postgraduates will be capable of utilising and reflecting on prior knowledge and experience, of applying higher level critical thinking skills, and of integrating and synthesising learning and knowledge from a range of sources and environments. A characteristic of this form of thinking is the generation of new, professionally oriented knowledge through personal or group-based critique of practice and theory.

This graduate capability is supported by:

### **Learning outcomes**

- Critically evaluate biomedical implants in terms of clinical success and ethical issues.
- Evaluate research strategies used to advance translational research into medical implants on the market.
- Develop skills in communication and self directed learning.

### **Assessment tasks**

- Research Ethics Assessment
- Implant Research Project
- In Class Mini Exams

## **PG - Research and Problem Solving Capability**

Our postgraduates will be capable of systematic enquiry; able to use research skills to create new knowledge that can be applied to real world issues, or contribute to a field of study or practice to enhance society. They will be capable of creative questioning, problem finding and problem solving.

This graduate capability is supported by:

### **Learning outcome**

- Evaluate research strategies used to advance translational research into medical implants on the market.

### **Assessment task**

- Implant Research Project



## PG - Effective Communication

Our postgraduates will be able to communicate effectively and convey their views to different social, cultural, and professional audiences. They will be able to use a variety of technologically supported media to communicate with empathy using a range of written, spoken or visual formats.

This graduate capability is supported by:

### Learning outcomes

- Critically evaluate biomedical implants in terms of clinical success and ethical issues.
- Evaluate research strategies used to advance translational research into medical implants on the market.
- Develop skills in communication and self directed learning.

### Assessment tasks

- Research Ethics Assessment
- Implant Research Project
- In Class Mini Exams

## PG - Engaged and Responsible, Active and Ethical Citizens

Our postgraduates will be ethically aware and capable of confident transformative action in relation to their professional responsibilities and the wider community. They will have a sense of connectedness with others and country and have a sense of mutual obligation. They will be able to appreciate the impact of their professional roles for social justice and inclusion related to national and global issues

This graduate capability is supported by:

### Learning outcomes

- Critically evaluate biomedical implants in terms of clinical success and ethical issues.
- Evaluate research strategies used to advance translational research into medical implants on the market.

### Assessment tasks

- Research Ethics Assessment
- Implant Research Project
- In Class Mini Exams