



Science Medicine and Health

AIIIM900: Introduction to Additive Biofabrication

Subject Outline

Spring, 2018
UOW Online

Subject Information

Credit Points: 12
Pre-requisite(s): Nil
Co-requisite(s): Nil
Restrictions: Nil
Contact Hours: As per subject database

Subject Contacts

Subject Coordinator/Lecturer

Name:	A/Prof Michael Higgins
Location:	Innovation Campus, AIIIM Building 231, Room 236
Telephone:	61 2 4221 3989
Email:	mhiggins@uow.edu.au
Consultation mode and times:	Email for appointment

Student Support and Advice

For general enquiries please contact StudentHub 41:

Location: 41.138B Wollongong Campus
Telephone: 61 2 4221 3492
Email: smah-students@uow.edu.au

Table of Contents

Section A: General Information	3
Subject Learning Outcomes.....	3
Subject Description	3
Readings, References and Materials	3
Textbooks.....	3
Prescribed Readings (includes eReadings).....	3
Recommended Readings.....	3
Recent Changes to this Subject.....	5
List of Topics Covered	5
Lecture, Tutorial, Laboratory Times	5
Lecture Times *	5
Lecture Program	6
Section B: Assessment	7
Assessment Summary	7
Minimum Requirements for a Pass in this Subject	9
Scaling.....	9
Late Submission.....	9
Late Submission Penalty – at 5%	10
Supplementary Assessments.....	10
System of Referencing Used for Written Work	10
Submission of Assessments	10
Assessment Return.....	11
Section C: General Advice	12
Student Consultation and Communication.....	12
eLearning Space	12
Use of Internet Sources	12
Extraordinary Changes for the Subject after Release of the Subject Outline	13
Learning Analytics.....	13
The Assessment Quality Cycle	13
Academic Integrity Policy	13
Student Academic Complaints Policy (Coursework or Higher Degree Research)	13
Student Support Services and Facilities	14
Student Etiquette.....	14
UOW Grade Descriptors	15
University Policies	16
Version Control Table	17

Section A: General Information

Subject Learning Outcomes

On completion of this subject, students should be able to:
1. translate advanced and specialised knowledge about recent developments in biomaterials, including biopolymers and bio-inks
2. demonstrate an understanding of the rheology of biopolymers and bio-inks, and formulate printable materials specific to an application area;
3. appreciate how biomaterials, biopolymers and bio-inks are applied during the fabrication process
4. explain the operating principles of additive biofabrication techniques
5. design a workflow process to produce a 3D structure, prototype or device using additive biofabrication
6. exercise critical thinking and judgement in the generation and evaluation of innovative technology and related business ideas and solutions;
7. evaluate the application of knowledge and skills associated with additive biofabrication techniques in professional practice and/or further learning

Subject Description

The subject will introduce students to the emerging area of 3D printing and Biofabrication, including the concepts that distinguish these approaches from traditional manufacturing. Topics covered include: Fundamental topics and methodologies of biofabrication; Printable materials and their rheological properties; Biopolymers and bioinks; Techniques/instrumentation such as commercial and customized 3D printers, rapid prototypers, extrusion printers, metal printers, bioplotters and live cell printing. The topics will be introduced via a 'real-world' case study on cartilage repair for the knee and development of a 'Biopen' to enable the biofabrication. The issues around ethics and regulatory matters associated with the development and use of 3D printing facilities and biofabrication-based therapies and devices in clinical settings will also be explored throughout the subject.

Readings, References and Materials

Textbooks

The following text(s) will need to be purchased by students enrolled in this subject.

eBook "3D Bioprinting: Printing Parts for Bodies" Wallace et al.
see link - <https://3dbioprint.atavist.com/3dbioprinting?promo>

Free Online Course: "3D Bioprinting: Printing Parts for Bodies"
See link - <https://www.futurelearn.com/courses/bioprinting>

Prescribed Readings (includes eReadings)

The following readings are prescribed for this subject, but students are not expected to purchase these. They are available to students through the library on the subject's eLearning site.

Nil

Recommended Readings

The following references complement the prescribed readings and textbooks:

Ferris, C. J., Gilmore, K. J., Beirne, S., McCallum, D., & Wallace, G. G. (2013). Bio-ink for on-demand printing of living cells. *Biomaterials Science*, 1(2), 224-230.

Ferris, C. J., Gilmore, K. G., & Wallace, G. G. (2013). Biofabrication: an overview of the approaches used for printing of living cells. *Applied microbiology and biotechnology*, 97(10), 4243-4258.

Di Bella, C., Fosang, A., Donati, D. M., Wallace, G. G., & Choong, P. F. (2015). 3D Bioprinting of Cartilage for Orthopedic Surgeons: Reading between the Lines. *Frontiers in surgery*, 2.

Cornock, R., Beirne, S., & Wallace, G. G. (2013, July). Development of a coaxial melt extrusion printing process for specialised composite bioscaffold fabrication. In *Advanced Intelligent Mechatronics (AIM), 2013 IEEE/ASME International Conference on* (pp. 973-978). IEEE.

Cornock, R., Beirne, S., Thompson, B., & Wallace, G. G. (2014). Coaxial additive manufacture of biomaterial composite scaffolds for tissue engineering. *Biofabrication*, 6(2), 025002.

Wallace, G. G., & Beirne, S. (2013). Additive BIO Fabrication: Impact, Opportunities and Challenges. See link - <http://ro.uow.edu.au/aiimpapers/554/>

Engineering a multimodal nerve conduit for repair of injured peripheral nerve
Quigley, A.F., Bulluss, K.J., Kyrtziz, I.L.B., Gilmore, K., Mysore, T., Schirmer, K.S.U., Kennedy, E.L., O'Shea, M., Truong, Y.B., Edwards, S.L., Peeters, G., Herwig, P., Razal, J.M., Campbell, T.E., Lowes, K.N., Higgins, M.J., Moulton S.E., Murphy, M.A., Cook, M.J., Clark, G.M., Wallace, G.G., Kapsa, R.M.I.
Journal of Neural Engineering 2013 10 (1), 016008.

Bio-ink properties and printability for extrusion printing living cells
Chung, J.H.Y., Naficy, S., Yue, Z., Kapsa, R., Quigley, A., Moulton, S.E., Wallace, G.G.
Biomaterials Science 2013, 1, 763-773.

Formation and processability of liquid crystalline dispersions of graphene oxide
Jalili, R., Aboutalebi, S.H., Esrafilzadeh, D., Konstatinov, K., Razal, J.M., Moulton, S.E., Wallace, G.G.
Materials Horizons 2014, 1, 87-91.

Differentiation of Stem Cells from Human Infrapatellar Fat Pad: Characterization of Cells Undergoing Chondrogenesis
Felimban, R., Ye, K., Traianedes, K., Di Bella, C., Crook, J., Wallace, G.G., Quigley, A., Choong, P.F.M., Myers, D.E.
Tissue Engineering: Part A 2014, 20 (15-16), 2213-2223.

3D printed metal columns for capillary liquid chromatography
Sandron, S., Heery, B., Gupta, V., Collins, D.A., Nesterenko, E.P., Nesterenko, P.N., Talebi, M., Beirne, S., Thompson, F., Wallace, G.G., Brabazon, D., Regan, F., Paull, B.
Analyst 2014, 139, 6343-6347.

Development of the Biopen: A handheld device for surgical printing of adipose stem cells at a chondral wound site
O'Connell, C.D., Di Bella, C., Thompson, F., Augustine, C., Beirne, S., Cornock, R., Richards, C.J., Chung, J., Gambhir, S., Yue, Z., Bourke, J., Zhang, B., Taylor, A., Quigley, A., Kapsa, R., Choong, P., Wallace, G.G.
Biofabrication 2016 8, 015019.

Fabrication of 3D structures from graphene-based biocomposites
Sayyar, S., Officer, D., Wallace, G.G.
Journal of Materials Chemistry B 2017, 5, 3462-3482

In-situ handheld three-dimensional bioprinting for cartilage regeneration
Di Bella, C., Duchi, S., O'Connell, C.D., Blanchard, R., Augustine, C., Yue, Z., Thompson, F., Richards, C., Beirne, S., Onofrillo, C., Bauquier, S.H., Ryan, S.D., Pivonka, P., Wallace, G.G., Choong, P.F.
Journal of Tissue Engineering and Regenerative Medicine 2017, 1-11.

Recommended readings are not intended as an exhaustive list, students should use the Library catalogue and databases to locate additional resources.

Recent Changes to this Subject

Subject materials redesigned for fully online delivery.

List of Topics Covered

The following are examples of the topics to be covered in this course.

1. Application of Materials and Machinery for 3D Printing
2. Introduction to Biopolymers, Hydrogels, and Bioinks
3. Live Cell Printing and Related Tissue Engineering Applications
4. Experimental Characterization on Rheology and Mechanical Properties
5. A 'Real-World' Case Study on Biofabrication for Cartilage Repair of the Knee (The BIOPEN project)
6. Bioethics and Regulatory Matters for 3D Printing and Biofabrication

Week	Week Commencing	Lecture/Tutorial	Content expert	Online support
1	20/08/2018	Case study Knee. Ethics; Knowledge and introduction	Michael Higgins	Michael Higgins
2	27/08/2018	Printing Hardware	Stephen Beirne	Stephen Beirne
3	03/09/2018	Inks Basics and Formulation	Zhilian Yue	Zhilian Yue
4	10/09/2018	Inks Basics and Formulation	Zhilian Yue	Zhilian Yue
5	17/09/2018	Biomaterial Synthesis	Sanjeev Gambhir	Sanjeev Gambhir
6	24/09/2018	Biomaterial Synthesis	Sanjeev Gambhir	Sanjeev Gambhir
Mid-Session Recess 1 October – 7 October				
7	08/10/2018	Printing with Cells and printing Protocols	Xiao Liu / Kalani Ruberu	Xiao Liu
8	15/10/2018	Printing with Cells and printing Protocols	Xiao Liu / Kalani Ruberu	Xiao Liu
9	22/10/2018	Characterisation	Sepidar Sayyar	Sepidar Sayyar
10	29/10/2018	Characterisation	Sepidar Sayyar	Sepidar Sayyar
11	05/11/2018	Case study application now and Future	Michael Higgins	Michael Higgins
12	12/11/2018	Regulation	Michael Higgins	Michael Higgins
13	19/11/2018	Revision	Michael Higgins	Michael Higgins
Study Recess 26 November – 9 December 2018				

*The above schedule should be used as a guide only

Lecture, Tutorial, Laboratory Times

Lecture Times *

Lectures will be held on:

Day	Start Time	End Time	Room
Wednesday	11:30	13:30	Online

Lecture Program

Week	Week Commencing	Lecture/Tutorial	Content expert	Assessment	Activities
1	20/08/2018	Case study Knee. Ethics; Knowledge and introduction	Michael Higgins		Complete book and activities; <i>Ethics Medical need</i>
2	27/08/2018	Printing Hardware	Stephen Beirne	Quiz 1	Complete book and activities; <i>Printing Hardware</i>
3	03/09/2018	Inks Basics and Formulation	Zhilian Yue	Quiz 2	Complete book and activities: <i>Inks Basics and Formulation</i>
4	10/09/2018	Inks Basics and Formulation	Zhilian Yue		Complete book and activities; <i>Inks Basics and Formulation</i>
5	17/09/2018	Biomaterial Synthesis	Sanjeev Gambhir	Assessment 2	Complete book and activities; <i>Biomaterial Synthesis</i>
6	24/09/2018	Biomaterial Synthesis	Sanjeev Gambhir		Complete book and activities; <i>Biomaterial Synthesis</i>
Mid-Session Recess 1 October – 7 October 2018					
7	08/10/2018	Printing with Cells and printing Protocols	Xiao Liu / Kalani Ruberu		Complete book and activities; <i>Printing with Cells and printing Protocols</i>
8	15/10/2018	Printing with Cells and printing Protocols	Xiao Liu / Kalani Ruberu		Complete book and activities; <i>Printing with Cells and printing Protocols</i>
9	22/10/2018	Characterisation	Sepidar Sayyar		Complete book and activities; <i>Characterisation</i>
10	29/10/2018	Characterisation	Sepidar Sayyar		Complete book and activities; <i>Characterisation</i>
11	05/11/2018	Case study application now and Future	Michael Higgins	Assessment 3	Complete book; <i>Case study the knee</i>
12	12/11/2018	Regulation	Michael Higgins		Complete book and activities; <i>Regulation</i>
13	19/11/2018	Revision	Michael Higgins	Assessment 4	
Study Recess 26 November– 9 December 2018					

Section B: Assessment

Assessment Summary

Assessment Item	Form of Assessment	Due Date	Return/Feedback Dates	Weighting
1	Online quizzes	Quiz 1 due by the end of week 2 (02/09 11:59pm) Quiz 2 due by the end of week 3 (09/09 11:59pm)	Immediate online feedback	10%
2	Tutorial activities	Activity 1 due by the end of week 2 (02/09 11:59pm) Activity 2 due by the end of week 4 (16/09 11:59pm) Activity 3 due by the end of week 6 (30/09 11:59pm)	3 weeks after submission	30%
3	Short essay	Week 13, 21/11/2018 11:59pm	With final results	20%
4	Written Assignment	05/12/2018 11:59pm	3 weeks after submission	40%

Details of Assessment Tasks

Assessment tasks will be marked using explicit criteria that will be provided to students prior to submission.

Assessment 1	2 Online quizzes
Due date	Quiz 1 due by the end of week 2 (02/09 11:59pm) Quiz 2 due by the end of week 3 (09/09 11:59pm)
Weighting	10% for the combined quizzes
Submission	Online via Moodle site for AIIM900
Type of Collaboration	Individual assessment
Length	10 questions in each quiz
Details	The quiz questions accompany key topics and concepts around 3D printing and Biofabrication
Style and format	Multiple choice, drag-and-drop and standard questions
Subject Learning Outcomes	<p>Subject learning outcome (SLO) 1: translate advanced and specialised knowledge about recent developments in biomaterials, including biopolymers and bio-inks.</p> <p>Subject learning outcome (SLO) 2: demonstrate an understanding of the rheology of biopolymers and bio-inks, and formulate printable materials specific to an application area;</p> <p>Subject learning outcome (SLO) 3: appreciate how biomaterials, biopolymers and bio-inks are applied during the fabrication process</p> <p>Subject learning outcome (SLO) 4: explain the operating principles of additive biofabrication techniques</p>
Marking Criteria	1 mark for each quiz question

Assessment 2	Tutorial activities
Due date	Activity 1 due by the end of week 2 (02/09 11:59pm) Activity 2 due by the end of week 4 (16/09 11:59pm) Activity 3 due by the end of week 6 (30/09 11:59pm)
Weighting	30% (10% for each activity)
Submission	Online submission via the Moodle site for AIIM900
Type of Collaboration	Individual Assessment
Length	3 tutorial activities for assessment
Details	There are 3 tutorial activities exploring topics on printing hardware, protocols and bioinks used in current research on cartilage tissue repair and engineering. Understanding the quality, reliability and source of bioinks will constitute an activity.
Style and format	Self-Tutorial, Individual Research
Subject Learning Outcomes	<p>Subject learning outcome (SLO) 1: translate advanced and specialised knowledge about recent developments in biomaterials, including biopolymers and bio-inks.</p> <p>Subject learning outcome (SLO) 2: demonstrate an understanding of the rheology of biopolymers and bio-inks, and formulate printable materials specific to an application area;</p> <p>Subject learning outcome (SLO) 3: appreciate how biomaterials, biopolymers and bio-inks are applied during the fabrication process</p> <p>Subject learning outcome (SLO) 4: explain the operating principles of additive biofabrication techniques</p> <p>Subject Learning Outcome (SLO) 5, design a workflow process to produce a 3D structure, prototype or device using biofabrication</p> <p>Subject Learning Outcome (SLO) 6: exercise critical thinking and judgement in the generation and evaluation of innovative technology and related business ideas and solutions;</p>
Marking Criteria	The marking criteria will be made available by the subject coordinator in week 1

Assessment 3	Short essay– Bioethics and Regulation
Due date	21/11/2018 11:59pm
Weighting	20%
Submission	Online submission via the Moodle site for AIIM900
Type of Collaboration	Individual Assessment
Length	1500 words maximum, including references
Details	<p>Short essay on ethical and regulatory considerations for 3D printing and biofabrication in research, government, industry and clinical perspectives</p> <p>Scope; biofabrication, bioprinting, emerging technologies, policies and public engagement related to your clinical application area.</p>
Style and format	Mini-Essay (1500 words, including references)
Subject Learning Outcomes	<p>Subject Learning Outcome (SLO) 6: exercise critical thinking and judgement in the generation and evaluation of innovative technology and related business ideas and solutions</p> <p>Subject Learning Outcome (SLO) 7: evaluate the application of knowledge and skills associated with additive biofabrication techniques in professional practice and/or further learning</p>
Marking Criteria	The marking criteria will be made available by the subject coordinator in week 1.

Assessment 4	Written Assessment on 3D Printing Topic
Due date	05/12/2018 11:59pm
Weighting	40%
Submission	Online submission via the Moodle site for AIIM900
Type of Collaboration	Individual assessment
Length	3000 words, including references
Details	Select and investigate a suitable clinical application for a current medical need. Construct a written proposal for that clinical application. Your response should include fundamental concepts and descriptions of biofabrication technologies and processes to enable this 'real world' application. Ethical and regulatory requirements, necessary materials, hardware and characterisation techniques should be outlined in your response.
Style and format	Essay
Subject Learning Outcomes	<p>Subject Learning Outcome (SLO) 3: appreciate how biomaterials, biopolymers and bio-inks are applied during the fabrication process</p> <p>Subject learning outcome (SLO) 4: explain the operating principles of additive biofabrication techniques</p> <p>Subject Learning Outcome (SLO) 5, design a workflow process to produce a 3D structure, prototype or device using biofabrication</p> <p>Subject Learning Outcome (SLO) 6: exercise critical thinking and judgement in the generation and evaluation of innovative technology and related business ideas and solutions;</p> <p>Subject Learning Outcome (SLO) 7: evaluate the application of knowledge and skills associated with additive biofabrication techniques in professional practice and/or further learning</p>
Marking Criteria	The marking criteria will be made available by the subject coordinator in week 1

Minimum Requirements for a Pass in this Subject

To receive a clear pass in this subject a total mark of 50% or more must be achieved. In addition, failure to meet any of the minimum performance requirements is grounds for awarding a Technical Fail (TF) in the subject, even where total marks accumulated are greater than 50%.

The minimum performance requirements for this subject are:

- attempt all assessment tasks
- total mark of 50% or more must be achieved

Scaling

Scaling may occur in this subject at the end of session by the Unit Assessment Committee and/or Faculty Assessment Committee (FAC). Marks will only be scaled to ensure fairness/parity of marking across groups of students. Scaling will not affect any individual student's rank order within their cohort. For more information refer to Assessment Guidelines – Scaling:

<http://www.uow.edu.au/about/policy/UOW058609.html>

Late Submission

Late submission of an assessment task without an approved extension of the deadline is not acceptable. If you are unable to submit an assessment due to extenuating circumstances (e.g. medical grounds or compassionate grounds), you can make an application of academic consideration. Not all circumstances qualify for academic consideration. For further details about applying for academic consideration visit the Student Central webpage:

<http://www.uow.edu.au/student/central/academicconsideration/index.html>

Late Submission Penalty – at 5%

Late submission of an assessment task without an approved extension of the deadline is not acceptable. Marks will be deducted for late submission at the rate of 5% of the total possible marks for that particular assessment task per day. This means that if a piece of work is marked out of 100, then the late penalty will be 5 marks per day (5% of 100 possible marks per day). The formula for calculating the late penalty is: the total possible marks x 0.05 x number of days late. For the purposes of this policy a weekend (Saturday and Sunday) will be regarded as two days.

For example:

- Student A submits an assignment which is marked out of 100. The assignment is submitted 7 days late. This means that a late penalty of 35 marks will apply ($100 \times 0.05 \times 7$). The assignment is marked as per normal out of 100 and is given a mark of 85/100, and then the late penalty is applied. The result is that the student receives a final mark of 50/100 for the assignment (85 (original mark) – 35 marks (late penalty) = 50/100 (final mark)).
- Student B submits a report which is marked out of 20. The report is submitted three days late. This means that a late penalty of 3 marks will apply ($(20 \times 0.05 \times 3)$). The report is marked as per normal out of 20 and is given a mark of 17/20, and then the late penalty is applied. The result is that the student receives a final mark of 14/20 for the report (17 (original mark) – 3 marks (late penalty) = 14/20 (final mark)).

No marks will be awarded for work submitted either after the assessment has been returned to the students or more than two weeks after the due date, whichever is the sooner. This does not apply to situations where a particular assessment task is undertaken by students at different times throughout the session, but where the assessment is based on experiments or case studies specific to a student. In this case no marks will be awarded for work submitted more than two weeks after the due date.

Notwithstanding this, students must complete all assessment tasks to a satisfactory standard and submit them, regardless of lateness or loss of marks, where submission is a condition of satisfactorily completing the subject.

Supplementary Assessments

Supplementary assessment may be offered to students whose performance in this subject is close to that required to pass the subject, and are otherwise identified as meriting an offer of a supplementary assessment. The precise form of supplementary assessment will be determined at the time the offer of a supplementary assessment is made.

Students can log on to SOLS and click on the link titled “Supplementary Assessment” to view any applicable offers or use the following link;

<http://www.uow.edu.au/student/exams/suppassess/index.html>

System of Referencing Used for Written Work

The IEEE referencing system should be utilised.

Submission of Assessments

Refer to the submission requirements under the details of the individual assessments. Students are also expected to keep a copy of all their submitted assessments in the event that re-submission is required.

Assessment Return

Students will be notified when they can view their marked assessment. In accordance with University Policy marked assessments will usually only be held for 21 days after the declaration of marks for that assessment.

Section C: General Advice

Students should refer to the Faculty of Science, Medicine and Health website (<https://smah.uow.edu.au/index.html>)

for information on policies, learning and support services and other general advice.

Student Consultation and Communication

University staff receive many emails each day. In order to enable them to respond to your emails appropriately and in a timely fashion, students are asked to observe basic requirements of professional communication.

Please ensure that you include your full name and student number and identify your practical class or tutorial group in your email so that staff know who they are communicating with and can follow-up personally where appropriate.

Consider what the communication is about

- Is your question addressed elsewhere (e.g. in the subject outline or, on the eLearning site)?
- Is it something that is better discussed in person or by telephone? This may be the case if your query requires a lengthy response or a dialogue in order to address. If so, see consultation times above and/or schedule an appointment.
- Are you addressing your request to the most appropriate person?

Specific email subject title to enable easy identification of issue

- Identify the subject code of the subject you are enquiring about (as staff may be involved in more than one subject) put this in the email subject heading. Add a brief, specific query reference after the subject code where appropriate.

Professional courtesy

- Address the staff member appropriately by name (and formal title if you do not yet know them).
- Use full words (avoid 'text-speak' abbreviations), correct grammar and correct spelling.
- Be respectful and courteous.

eLearning Space

This subject has materials and activities available via eLearning. To access eLearning you must have a UOW user account name and password, and be enrolled in the subject. eLearning is accessed via SOLS (student online services). Log on to SOLS and then click on the eLearning link in the menu column. For information regarding the eLearning spaces please use the following link:

<https://www.uow.edu.au/student/elearning/index.html>

Use of Internet Sources

Students are able to use the Internet to access the most current information on relevant topics and information. Internet sources should only be used after careful critical analysis of the currency of the information, the role and standing of the sponsoring institution, reputation and credentials of the author, the clarity of the information and the extent to which the information can be supported or ratified by other authoritative sources.

Extraordinary Changes for the Subject after Release of the Subject Outline

In extraordinary circumstances the provisions stipulated in this Subject Outline may require amendment after the Subject Outline has been distributed. All students enrolled in the subject must be notified and have the opportunity to provide feedback in relation to the proposed amendment, prior to the amendment being finalised.

Learning Analytics

Data on student performance and engagement (such as Moodle and University Library usage, task marks, use of SOLS) will be available to the Subject Coordinator to assist in analysing student engagement, and to identify and recommend support to students who may be at risk of failure. If you have questions about the kinds of data the University uses, how we collect it, and how we protect your privacy in the use of this data, please refer to <http://www.uow.edu.au/dvca/bala/analytics/index.html>

The Assessment Quality Cycle

The Assessment Quality Cycle provides a level of assurance that assessment practice across the University is appropriate, consistent and fair.

Assessment Quality Cycle Activities are undertaken to contribute to the continuous improvement of assessment and promote good practices in relation to the:

- a. design of the assessment suite and individual assessment tasks;
- b. marking of individual assessment tasks;
- c. finalisation of subject marks and grades; and
- d. review of the subject prior to subsequent delivery

Copies of student work may be retained by the University in order to facilitate quality assurance of assessment processes.

Academic Integrity Policy

The full policy on Academic Integrity Policy is found in the Policy Directory on the UOW website (<https://www.uow.edu.au/about/policy/UOW058648.html>)

“The University’s Academic Integrity Policy, Faculty Handbooks and subject guides clearly set out the University’s expectation that students submit only their own original work for assessment and avoid plagiarising the work of others or cheating. Re-using any of your own work (either in part or in full) which you have submitted previously for assessment is not permitted without appropriate acknowledgement or without the explicit permission of the Subject Coordinator. Plagiarism can be detected and has led to students being expelled from the University.

The use by students of any website that provides access to essays or other assessment items (sometimes marketed as ‘resources’), is extremely unwise. Students who provide an assessment item (or provide access to an assessment item) to others, either directly or indirectly (for example by uploading an assessment item to a website) is considered by the University to be intentionally or recklessly helping other students to cheat. Uploading an assessment task, subject outline or other course materials without express permission of the university is considered academic misconduct and students place themselves at risk of being expelled from the University.”

Student Academic Complaints Policy (Coursework or Higher Degree Research)

In accordance with the Coursework Student Academic Complaints Policy, a student may request an explanation of a mark for an assessment task or a final grade for a subject consistent with the student’s right to appropriate and useful feedback on their performance in an assessment task. Refer to the Coursework Student Academic Complaints Policy for further information (<https://www.uow.edu.au/about/policy/UOW058653.html>).

Student Support Services and Facilities

Students can access information on student support services and facilities at the following link <<insert new link>>. This includes information on “Academic Support”, “Starting at University”, “Help at University” as well as information and support on “Careers and Jobs”.

Student Etiquette

Guidelines on the use of email to contact teaching staff and information on the university guide to eLearning ‘Netiquette’ can be found at

<https://www.uow.edu.au/student/learningcoop/software/email etiquette/index.html>

UOW Grade Descriptors

The University of Wollongong Grade Descriptors are general statements that describe student performance at each of the University's grade levels.

Grade	Mark %	Descriptor
High Distinction HD	85-100	<p>A high distinction grade (HD) is awarded for performance that provides evidence of an outstanding level of attainment of the relevant subject learning outcomes, demonstrating the attributes of a distinction grade plus (as applicable):</p> <ul style="list-style-type: none"> • consistent evidence of deep and critical understanding • substantial originality and insight in identifying, generating and communicating competing arguments, perspectives or problem-solving approaches • critical evaluation of problems, their solutions and their implications • use of quantitative analysis of data as the basis for deep and thoughtful judgments, drawing insightful, carefully qualified conclusions from this work • creativity in application as appropriate to the discipline • eloquent and sophisticated communication of information and ideas in terms of the conventions of the discipline • consistent application of appropriate skills, techniques and methods with outstanding levels of precision and accuracy • all or almost all answers correct, very few or none incorrect
Distinction D	75-84	<p>A distinction grade (D) is awarded for performance that provides evidence of a superior level of attainment of the relevant subject learning outcomes, demonstrating the attributes of a credit grade plus (as applicable):</p> <ul style="list-style-type: none"> • evidence of integration and evaluation of critical ideas, principles, concepts and/or theories • distinctive insight and ability in applying relevant skills, techniques, methods and/or concepts • demonstration of frequent originality in defining and analysing issues or problems and providing solutions • fluent and thorough communication of information and ideas in terms of the conventions of the discipline • frequent application of appropriate skills, techniques and methods with superior levels of precision and accuracy • most answers correct, few incorrect
Credit C	65-74	<p>A credit grade (C) is awarded for performance that provides evidence of a high level of attainment of the relevant subject learning outcomes, demonstrating the attributes of a pass grade plus (as applicable):</p> <ul style="list-style-type: none"> • evidence of learning that goes beyond replication of content knowledge or skills • demonstration of solid understanding of fundamental concepts in the field of study • demonstration of the ability to apply these concepts in a variety of contexts • use of convincing arguments with appropriate coherent and logical reasoning • clear communication of information and ideas in terms of the conventions of the discipline • regular application of appropriate skills, techniques and methods with high levels of precision and accuracy • many answers correct, some incorrect
Pass P	50-64	<p>A pass grade (P) is awarded for performance that provides evidence of a satisfactory level attainment of the relevant subject learning outcomes, demonstrating (as applicable):</p> <ul style="list-style-type: none"> • knowledge, understanding and application of fundamental concepts of the field of study • use of routine arguments with acceptable reasoning • adequate communication of information and ideas in terms of the conventions of the discipline • ability to apply appropriate skills, techniques and methods with satisfactory levels of precision and accuracy • a combination of correct and incorrect answers
Fail F	<50	<p>A fail grade (F) is given for performance that does not provide sufficient evidence of attainment of the relevant subject learning outcomes.</p>
Technical Fail TF		<p>A technical fail (TF) grade is given when minimum performance level requirements for at least one assessment item in the subject as a whole has not been met despite the student achieving at least a satisfactory level of attainment of the subject learning outcomes.</p>
Satisfactory S		<p>A satisfactory grade (S) is awarded for performance that demonstrates a satisfactory level of attainment of the relevant subject learning outcomes.</p>
Unsatisfactory U		<p>An unsatisfactory grade (U) is awarded for performance that demonstrates an unsatisfactory level of attainment of the relevant subject learning outcomes.</p>
Excellent E		<p>An excellent grade (E) may be awarded, instead of a satisfactory grade (S), within subjects from the School of Medicine that have been completed with a consistent pattern of high standard of performance in all aspects of the subject.</p>

More details on UOW Grade descriptors can be found on the following link

<http://www.uow.edu.au/content/groups/public/@web/@gov/documents/doc/uow194941.pdf>

University Policies

Students should be familiar with the following University policies:

- a. Code of Practice – Teaching and Assessment
<http://www.uow.edu.au/about/policy/UOW058666.html>
- b. Code of Practice – Research, where relevant
<http://www.uow.edu.au/about/policy/UOW058663.html>
- c. Code of Practice – Honours, where relevant
<http://www.uow.edu.au/about/policy/UOW058661.html>
- d. Student Charter
<http://www.uow.edu.au/student/charter/index.html>
- e. Code of Practice – Student Professional Experience, where relevant
<http://www.uow.edu.au/about/policy/UOW058662.html>
- f. Academic Integrity and Plagiarism Policy
<http://www.uow.edu.au/about/policy/UOW058648.html>
- g. Student Academic Consideration Policy
<http://www.uow.edu.au/about/policy/UOW058721.html>
- h. Course Progress Policy
<http://www.uow.edu.au/about/policy/UOW058679.html>
- i. Academic Complaints Policy (Coursework and Honours Students)
<http://www.uow.edu.au/about/policy/UOW058653.html>
- j. Inclusive Language Policy
<http://www.uow.edu.au/about/policy/alphalisting/UOW140611.html>
- k. Workplace Health and Safety, where relevant
<http://staff.uow.edu.au/ohs/index.html>
- l. Intellectual Property Policy
<http://www.uow.edu.au/about/policy/UOW058689.html>
- m. IP Student Assessment of Intellectual Property Policy, where relevant
<http://www.uow.edu.au/about/policy/UOW058690.html>
- n. Policy on Ethical Objection by Students to the Use of Animal and Animal Products in Coursework Subjects, where relevant
<http://www.uow.edu.au/about/policy/UOW058708.html>
- o. Human Research Ethics Guidelines, where relevant
<http://www.uow.edu.au/research/ethics/human/index.html>
- p. Animal Research Guidelines, where relevant
<http://www.uow.edu.au/research/ethics/UOW009373.html>
- q. Student Conduct Rules and accompanying Procedures or Research Misconduct Policy for research students
<http://www.uow.edu.au/about/policy/rules/UOW060095.html>

Version Control Table

Version Control	Release Date	Author/Reviewer	Approved By	Amendment
1	20180801	Michael Higgins - Subject Coordinator	Sonia Losinno – Learning and Teaching Officer	Final UOW Online