



## 1. General Course Information

### 1.1 Course Details

<b>Course Code:</b>	<b>1501ENG</b>
<b>Course Name:</b>	<b>Engineering Mechanics</b>
<b>Trimester:</b>	<b>Trimester 1, 2023</b>
<b>Program:</b>	Diploma of Engineering
<b>Credit Points:</b>	10
<b>Course Coordinator:</b>	Dr James A. Kirkup
<b>Document modified:</b>	10 February 2023

### Course Description

Engineering Mechanics is both a foundation and a framework for most engineering disciplines. This course provides a basic knowledge of Newtonian mechanics, rigid-body mechanics, elasticity and structural analysis. In particular, the principles of statics and their applications in engineering, the methods of static analysis, and techniques of engineering computation are expounded. Students are expected not only to acquire a good grasp of the principles but also to develop the computational and analytical skills which are vital in obtaining correct engineering solutions. In practice, a wrong solution can lead to an engineering disaster. This course is designed to enable students to acquire fundamental knowledge in engineering.

Engineering Mechanics is a 10 credit point course within the Diploma of Engineering. The course is situated within the second trimester of the program. The Diploma of Engineering is designed to provide students with a pathway to: further university studies in Engineering and related degrees; or direct employment.

### Assumed Knowledge

Students are required to have completed 1018ENG Engineering Science before undertaking this course.

## 1.2 Teaching Team

Your teacher/s can be contacted via email as below:

You will also find their email in the Teacher's tile on your Course Site.

Name	Email
James Kirkup	<a href="mailto:James.kirkup@staff.griffithcollege.edu.au">James.kirkup@staff.griffithcollege.edu.au</a>
Andrew Wixted	<a href="mailto:Andrew.wixted@staff.griffithcollege.edu.au">Andrew.wixted@staff.griffithcollege.edu.au</a>

## 1.3 Meet with your teacher

Your teacher is available each week to meet outside of normal class times. This is called consultation. Times that your teacher will be available for consultation will be found on the Teacher's tile on your Course Site.

## 1.4 Timetable

Your timetable is available on the Griffith College Digital Campus at My Apps, Timetable.

## 1.5 Technical Specifications

All students must have access to a computer or suitable mobile device such as laptop or tablet (mobile phones are not suitable). In addition, up-to-date browser access, a reliable high-speed internet connection with enough upload and download capacity, a webcam and headset including microphone are needed.

## 2. Aims, Outcomes & Generic Skills

### 2.1 Course Aims

Engineering mechanics is an elective engineering subject which defines a foundation for most engineering disciplines. This course aims to familiarize students with the principles of static equilibrium by applying Newton's laws to solve engineering problems. Topics include introduction to statics equilibrium of particles and rigid bodies, centre of gravity and centroid, moment of inertia, analysis of truss in 2D, analysis of frames in 3D space, shear forces and bending moment diagrams.



### 2.2 Learning Outcomes

After successfully completing this course you should be able to:

1. Apply the fundamentals of mechanics to analyse the equilibrium, stability and determinacy of simple systems in 2D and 3D space.
2. Evaluate structural stability and determinacy of 2D trusses and analyse internal forces in trusses.
3. Apply the concepts of sectional properties and internal force characteristics of beams to solve real world engineering problems.



## 2.3 Graduate Capabilities and Employability Skills

For further details on the Graduate Capabilities and Employability Skills please refer to the [Graduate Generic Skills and Abilities policy](#).

Griffith College is committed to producing graduates who are able to demonstrate progress toward the development of a number of generic skills / capabilities that will allow them to successfully continue their studies at the tertiary level. This set of skills includes employability related skills that will ensure graduates are capable in the workplace of the future.

Studies in this course will give you opportunities to begin to develop the following skills:

Graduate Capabilities and Employability Skills			Focus within this course
Interacting with People	Teamwork		✓
	Communication		✓
	Respect for Culture and Diversity		✓
Readiness for the Workplace	Problem Solving		✓
	Planning and Organisation		✓
	Creativity and Future Thinking		✓



## 3. Learning Resources

### 3.1 Required Learning Resources

Guan, H. (2016), Engineering Mechanics-Supplementary Material & Workbook, Griffith School of Engineering, Griffith University Gold Coast Campus.

### 3.2 Recommended Learning Resources

Hulse, R. and Cain, J.A., (2000), Structural Mechanics, Palgrave Macmillan, N.Y., 2nd Edition.

Hibbeler, R.C.(2007).Engineering Mechanics - Statics, Prentice-Hall, N.J., 11th Edition

Meriam, J.L. and Kraige, L.G., (2008) Engineering Mechanics, V.1 Statics, Wiley, New York, 6th Edition.

Beer, F. P.; Johnston, Jr., E. R.; Flori, Jr, R. E. (2008). Mechanics for Engineers Statics, McGraw Hill, 5 th Edition.

### 3.3 College Support Services and Learning Resources

Griffith College provides many facilities and support services to assist students in their studies. Links to information about support resources that are available to students are included below for easy reference.

- [Digital Library](#) – Databases to which Griffith College students have access to through the Griffith Library Databases.
- [Study Toolbox](#) – there is a dedicated website for this course on the Griffith College Digital Campus.
- [Academic Integrity](#) - Griffith College is committed to ensuring academic integrity is understood and maintained by all staff and students. All students learn about academic integrity through engagement with Academic Integrity online modules within the Academic and Professional Studies course.
- [Services and Support](#) provides a range of services to support students throughout their studies including academic advice and assignment help from Student Learning Advisors, and personal and welfare support from Student Counsellors.
- [Jobs and Employment](#) in the Student Hub can assist students with career direction, resume and interview preparation, job search tips, and more.
- [IT Support](#) provides details of accessing support, information on s numbers and internet access and computer lab rules.

### 3.4 Other Information about your Learning

#### Preparation and Participation in Learning

You need to prepare before attending your scheduled Learning Experience (In Class). Work through the Learning Content (Before Class) prepared by your teacher which is found on the course site. Make sure you complete the Learning Activities (After Class) set each week. Active participation in your learning will enhance your success. Ask questions when something is unclear or when you want to bring some issue to your teacher's attention; respond to questions to test your knowledge and engage in discussion to help yourself and others learn.

#### Attendance

You are expected to actively engage in all learning experiences which underpin the learning content in this course. You are expected to engage with the learning content and learning activities outside of timetabled class times. This requires you to be an active agent of your learning. You are expected to bring all necessary learning resources to class such as the required textbook and /or Workbook. In addition, you are encouraged to BYOD (bring your own device) to class such as a laptop or tablet. This is not a requirement as computer lab facilities are available on campus, however, the use of such devices in the classroom is encouraged with appropriate and considerate use principles being a priority.

#### Consultation Sessions

Teachers offer extra time each week to assist students outside the classroom. This is known as 'consultation time.' You may seek assistance from your teacher on email or in person according to how the teacher has explained this to the class. Attendance during consultation time is optional but you are encouraged to use this extra help to improve your learning outcomes.

#### Course Learning Materials

Learning materials are made available to you in the course site. The learning materials are arranged in Modules. In each Module you will find Learning Content (Before Class), Learning Experiences (In Class) and Learning Activities (After Class). **Learning Content (Before Class)** will be engaged with prior to the scheduled **Learning Experience (In Class)**. This will ensure you are prepared for the scheduled Learning Experience (In Class) by being aware of the content to be covered and therefore will be able to actively participate in the session. **Learning Activities (After Class)** are accessed after the scheduled session for purposes of review, consolidation of learning, and preparation for the Evidence of Learning Tasks (Assessments) in the course.

In addition, **Missed Class** learning material is provided in the course, providing support, interactive tools and directions for students who occasionally cannot attend the weekly scheduled Learning Experience (In Class, either in person or on Zoom) perhaps due to illness or other commitments. The Missed Class learning material should also be used in conjunction with Learning Content (Before Class) and Learning Activities (After Class) resources.

**Self-Directed Learning**

You will be expected to learn independently. This means you must organise and engage with the course Learning Content (Before Class) even when you are not specifically asked to do so by your teacher. The weekly guide (below) will be helpful to organise your learning. This involves revising the weekly Learning Content (Before Class) and completing the Learning Activities (After Class). It also means you will need to find additional information to evidence your learning beyond that given to you, and to construct your own response to a question or topic. All of this requires careful planning of your time. Expect to spend, on average, at least 10 hours per week including class time for each of your courses.

**Program Progression**

You are reminded that satisfactory Program Progression requires that attendance in classes is maintained at equal to or greater than 80%, students are engaged in their learning and that GPA is maintained at equal to or greater than 3.5 [please see Griffith College Policy Library - [Program Progression Policy](#) - for more information].






**Teacher and Course Evaluation**

Your feedback is respected and valued by your teachers. You are encouraged to provide your thoughts on the course and teaching, both positive and critical, directly to your teacher or by completing course and teacher evaluations via Griffith College's evaluation tool whenever these are available.



## 4. Weekly Guide: Learning Content, Learning Experiences and Learning Activities

The information below lays out how your learning will be organised throughout the trimester:

Week	Learning Content (Before Class)	Learning Experiences (In Class)	Learning Activities (After Class)	Evidence of Learning (Assessment)	Learning Outcome
					
<b>Module 1: Fundamentals of statics (equilibrium, determinacy and stability)</b>					
1	Introduction to Engineering Mechanics, Fundamentals of statics (I)  Online mini lessons	Revise the weekly content  Practice problem solving questions on statics (I)	Extra practice questions as homework activities	-	1
2	Fundamentals of statics (II)  Online mini lessons	Revise the weekly content  Practice problem solving questions on statics (II)	Extra practice questions as homework activities	-	1
3	Supports and support reactions, determinacy and stability  Online mini lessons	Revise the weekly content  Practice problem solving questions on reactions	Extra practice questions as homework activities	-	1
4	Analysis of forces and moments in three-dimensional space  Online mini lessons	Revise the weekly content  Practice problem solving questions on forces and moments in three-dimensional space	Extra practice questions as homework activities	-	1
<b>Module 2: Analysis and design of 2D trusses</b>					
5	Analysis of trusses (I): determinacy and stability, zero-force members, method of joints  Online mini lessons	Revise the weekly content  Practice problem solving questions on method of joints	Extra practice questions as homework activities	Module 1 Statistics Quiz	1, 2
6	Analysis of truss (II): Method of sections Working on truss project  Online mini lessons	Revise the weekly content  Practice problem solving questions on method of sections	Truss Project  Truss laboratory session	-	2
7	Working on truss project  Online mini lessons	Revise the weekly content  Practice problem solving questions on Trusses	Truss Project	-	2

<b>Module 3: Analysis and design of 2D beams</b>					
<b>8</b>	Centroids, centre of gravity and moments of inertia, Deflection of simply supported beams  Online mini lessons	Revise the weekly content  Practice problem solving questions on centroids and moments of inertia	Extra practice questions as homework activities	Truss Project	2, 3
<b>9</b>	Beams (I): Shear force and bending moment  Online mini lessons	Revise the weekly content  Practice problem solving questions on shear force and bending moment	Beam project	-	3
<b>10</b>	Beams (II): Shear force and bending moment  Online mini lessons	Revise the weekly content Practice problem solving questions on shear force and bending moment	Extra practice questions as homework activities  Beam laboratory session	Module 2 and 3 Statistics Quiz	3
<b>11</b>	Introduction to stress Working on beam project  Online mini lessons	Revise the weekly content  Practice problem solving questions on stress	Beam Project	-	3
<b>12</b>	Revision Module 1, 2 and 3  Extra practice problems	Practice problem solving questions on Module 1, 2 and 3	Beam Project	Beam Project	1, 2, 3



## 5. Evidence of Learning (Assessment)

	Evidence of Learning (Assessment)	Weighting	Learning Outcome	Due Date
1	Module 1 Statics quiz	15%	1	Week 5
2	Truss project	20%	2	Week 8 (submit via Turnitin)
3	Module 2 and 3 Statics quiz	15%	2, 3	Week 10
4	Beam project	20%	3	Week 12 (submit via Turnitin)
5	Final Exam – Hurdle 40%	30%	1, 2, 3	Final examination period

### 5.2 Evidence of Learning task detail

Please note that web applications such as ChatGPT, Google Translate, Grammarly and Youdao (or equivalent services) are not permitted for assessment creation, translation, or extensive language assistance purposes. Wikipedia, and Baidu, Weibo and WeTalk are not permitted to be used.

#### 1. Evidence of Learning Task 1: Mid-Trimester Exam- Quiz 1 (15%)

**Task Type:** Examination

**Due Date:** Week 5

**Weight:** 15%, Marked out of 40

**Duration:** 2hr 10min

**Task Description:** The test is comprised of 4 questions, related to the Module 1 (weeks 1 to 4). Please note that web applications such as ChatGPT, Google Translate, Grammarly and Youdao (or equivalent services) are not permitted for assessment creation, translation, or extensive language assistance purposes. Wikipedia, and Baidu, Weibo and WeTalk are not permitted to be used.

**Criteria and Marking:** Students are assessed on 4 Questions.

**Submission:** online quiz

#### 2. Evidence of Learning Task 2: Mid-Trimester Exam- Quiz 2 (15%)

**Task Type:** Examination

**Due Date:** Week 10

**Weight:** 15%, Marked out of 30

**Duration:** 2hr 10min

**Task Description:** The test is comprised of 5 questions, related to the Module 2 and 3 (weeks 5 to 9). Please note that web applications such as ChatGPT, Google Translate, Grammarly and Youdao (or equivalent services) are not permitted for assessment creation, translation, or extensive language assistance purposes. Wikipedia, and Baidu, Weibo and WeTalk are not permitted to be used.

**Criteria and Marking:** Students are assessed on 5 Questions

**Submission:** online quiz



### 3. Evidence of Learning Task 3: Laboratory Activity and Assignment - Truss Project (20%)

**Task Type:** Laboratory and Assignment – Written Assignment

**Due Date:** Week 8

**Weight:** 20%, Marked out of 20

**Task Description:** A Scaffolding Laboratory will be used to familiarize students with the demonstration of forces into the members of a truss. Students will reflect on their observation and relevant conceptualization to back support the Truss project. The scope of this assignment includes discussing the purpose, application and structural behavior of trusses and then evaluating a selected truss through analysis and redesign. Please note that web applications such as ChatGPT, Google Translate, Grammarly and Youdao (or equivalent services) are not permitted for assessment creation, translation, or extensive language assistance purposes. Wikipedia, and Baidu, Weibo and WeTalk are not permitted to be used.

**Criteria and Marking:** Students are assessed on 70% Group work and 30% individual work.

**Submission:** Turnitin via the course site

### 4. Evidence of Learning Task 4: Laboratory Activity and Assignment - Beam Project (20%)

**Task Type:** Laboratory and Assignment – Written Assignment

**Due Date:** Week 12

**Weight:** 20%, Marked out of 20

**Task Description:** A Scaffolding Laboratory will be used to familiarize students with the deflection of beams impacted by load, load position, second moment of area of beams, span and boundary condition. Students will reflect on their observation and abstract the relevant conceptualization to back support the Beam Project. The scope of this assignment includes discussing the purpose, application and structural behavior of beams and then evaluating a selected beam through analysis and redesign. Please note that web applications such as ChatGPT, Google Translate, Grammarly and Youdao (or equivalent services) are not permitted for assessment creation, translation, or extensive language assistance purposes. Wikipedia, and Baidu, Weibo and WeTalk are not permitted to be used.

**Criteria and Marking:** Students are assessed on 70% Group work and 30% individual work.

**Submission:** Turnitin via the course site

### 5. Evidence of Learning Task 3: Final Examination (30%)

**Task Type:** Examination

**Due Date:** Week 12

**Weight:** 30%, Marked out of 30

**Duration:** 3hrs 10min

**Task Description:** The test is comprised of 5 questions, related to the Module 2 and 3 (weeks 5 to 12). Please note that web applications such as ChatGPT, Google Translate, Grammarly and Youdao (or equivalent services) are not permitted for assessment creation, translation, or extensive language assistance purposes. Wikipedia, and Baidu, Weibo and WeTalk are not permitted to be used.

**Criteria and Marking:** Students are assessed on 5 Questions.

**Submission:** Face to face examination

In order to pass this Course, students must

- A. Attempt all assessments and student's overall grade must be above 50%**
- B. Demonstrate assurance of learning of all learning outcomes through graded Evidence of Learning Tasks.**
- C. Achieve 40% or more in the Final Exam.**

## 5.3 Late Submission

An Evidence of Learning Task submitted after the due date, without an approved extension from the teacher, will be penalised. The standard penalty is the reduction of the mark allocated to the Evidence of Learning Task by 5% of the maximum mark applicable for the Evidence of Learning Task, for each calendar day that the task is late. Evidence of learning tasks submitted more than seven calendar days after the due date are awarded zero marks.

Please refer to the Griffith College website - Policy Library > [Assessment Policy](#) for guidelines and penalties for late submission.

## 5.4 Other Information about Evidence of Learning

### Retention of Originals

You must be able to produce a copy of all work submitted if so requested. Copies should be retained until after the release of final results for the Course.

### Requests for extension

To apply for an extension of time for an evidence of learning task, you must submit an [Application for Extension of Assignment](#) form to your teacher at least 24 hours before the date the assignment is due. Grounds for extensions are usually: serious illness, accident, disability, bereavement or other compassionate circumstances and must be able to be substantiated with relevant documentation [e.g. [Griffith College Student Medical Certificate](#)]. Please refer to the Griffith College website – [Policy Library](#) for guidelines regarding extensions and deferred Evidence of Learning Tasks.

### Return of Evidence of Learning Tasks

1. Marks awarded for in-trimester evidence of learning tasks, except those being moderated externally with Griffith University, will be available on the course site within fourteen [14] days of the due date. This does not apply to the final evidence of learning task in this course (marks for this task will be provided with the final course result).
2. Students will be advised of their final grade through the Digital Campus. Students can review their final exam papers after student grades have been published. Review of final exam papers will not be permitted after the final date to enrol.
3. Marks for **all** evidence of learning tasks including the final exam (if applicable) will be recorded in the Course Site and made available to students through the Course Site.

*The sum of your marks of evidence of learning tasks in this course does not necessarily imply your final grade for the course. Standard grade cut off scores can be varied for particular courses, so you need to wait for the official release of grades to be sure of your grade for this course.*

## 6. Policies & Guidelines

Griffith College Evidence of Learning Tasks-related policies can be found in the [Griffith College Policy Library](#) which include the following policies:

[Assessment Policy](#), [Special Consideration](#), [Deferred Assessment](#), [Alternate Exam Sitings](#), [Medical Certificates](#), [Academic Integrity](#), [Finalisation of Results](#), [Review of Marks](#), [Moderation of Assessment](#), [Turn-it-in Software Use](#). These policies can be accessed within the [Policy Library](#)

**Academic Integrity** Griffith College is committed to maintaining high academic standards to protect the value of its qualifications. Academic integrity means acting with the values of honesty, trust, fairness, respect and responsibility in learning, teaching and research. It is important for students, teachers, researchers and all staff to act in an honest way, be responsible for their actions, and show fairness in every part of their work. Academic integrity is important for an individual's and the College's reputation.

All staff and students of the College are responsible for academic integrity. As a student, you are expected to conduct your studies honestly, ethically and in accordance with accepted standards of academic conduct. Any form of academic conduct that is contrary to these standards is considered a breach of academic integrity and is unacceptable.

Some students deliberately breach academic integrity standards with intent to deceive. This conscious, pre-meditated form of cheating is considered to be one of the most serious forms of fraudulent academic behaviour, for which the College has zero tolerance and for which penalties, including exclusion from the College, will be applied.

However, Griffith College also recognises many students breach academic integrity standards without intent to deceive. In these cases, students may be required to undertake additional educational activities to remediate their behaviour and may also be provided appropriate advice by academic staff.

As you undertake your studies at Griffith College, your teachers and academic advisors will provide you with guidance to understand and maintain academic integrity; however, it is also your responsibility to seek out guidance if and when you are unsure about appropriate academic conduct.

In the case of an allegation of a breach of academic integrity being made against a student he or she may request the guidance and support of a Griffith College Student Learning Advisor or Student Counsellor.

Please ensure that you are familiar with the Griffith College Academic Integrity Policy; this policy provides an overview of some of the behaviours that are considered breaches of academic integrity, as well as the penalties and processes involved when a breach is identified.

For further information please refer to the Griffith College website - Policy Library > [Academic Integrity Policy](#)

### **Reasonable Adjustments for Evidence of Learning Tasks – The Disability Services policy**

The [Disability Services policy](#) (accessed within the [Policy Library](#)) outlines the principles and processes that guide the College in making reasonable adjustments to Evidence of Learning Tasks for students with disabilities while maintaining academic robustness of its programs.

### **Risk Assessment Statement**

There are no out of the ordinary risks associated with this course.

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