

# MECHANICS OF ENGINEERING (SKTG 1313)

## COURSE OUTLINE



Department of Energy Engineering  
Faculty of Chemical & Energy Engineering  
Universiti Teknologi Malaysia, 81310 UTM  
Johor Bahru, Johor, Malaysia

## Outline of this Lecture

- *About Myself* .....
- *Synopsis of the Course* .....
- *Course Outcomes* .....
- *References* .....
- *Teaching Methodology* .....
- *Assessment* .....

## About Myself

- Instructor** : **HASRINAH HASBULLAH**
- Position/  
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- Email** : [hasrinah@petroleum.utm.my](mailto:hasrinah@petroleum.utm.my)
- Lectures** : **WEDNESDAY** 0800 – 1000 N29 Smart Classroom  
**THURSDAY** 0800 – 0900 N11a DK2  
**THURSDAY** 0900 – 1000 (T) N11a DK2
- Course website** : <http://elearning.utm.my>  
<http://fcee.utm.my/hasrinah/current-semester/>

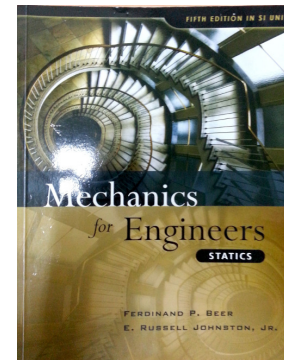
## Synopsis of the Course

- This course is designed to introduce students to the **basic principles** and **concepts in mechanics**.
- It will deal with statics in engineering mechanics:
  - The resultant and **resolution of force(s)** acting on a particle,
  - The **equilibrium of a particle**,
  - The **effect of force(s)** on a rigid bodies,
  - How to **replace a force system** with equivalent system,
  - The **equilibrium of rigid bodies**,
  - Determination of **centroid** and,
  - Analysis of **structure** and **friction**
- This course also includes the dynamics in engineering mechanics that are **determination of rectilinear and curvilinear motions** of particle and analysis of **principle of work** and **energy**.
- **AT THE END OF THE COURSE**, students should be able to **demonstrate** and **apply the knowledge** by solving various problems in Statics and Dynamics.

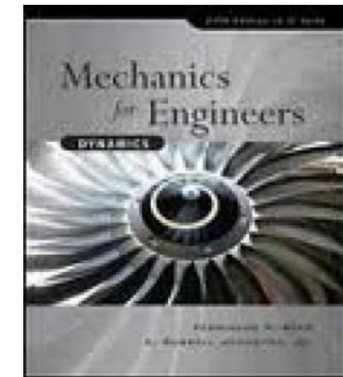
## Course Outcomes

- **Determine** the resultant and components of forces acting on a particle
- **Apply** the concept of free-body diagram and the equation of equilibrium
- **Apply** the concepts of force-couple system on rigid body
- **Determine** the connection forces in trusses and general frame structure
- **Apply** the concept of centroid and the theorem of Pappus-Guldinus
- **Analyze** systems that include fractional forces
- **Apply** the equation of motion in rectilinear and curvilinear motion of particle.
- **Analyze** the principle of work and energy.
- **Cooperate** in team working as part of a group of engineering students working to solve statics problems

## References



**Mechanics for Engineers: Statics**  
Fifth Edition  
Beer, F. P.  
Johnston, E. R.



**Mechanics for Engineers: Dynamics**  
Fifth Edition  
Beer, F. P.  
Johnston, E. R.

## Teaching Methodology

- **Content delivery through lectures**
  - Lectures are given based on the **active learning** approach.
  - For each of the subtopics, **at least one example** of test or exam standard will be discussed to enhance students understanding on the subject matter.
- **Tutorial**
  - Students will be divided into **groups**.
  - Students are required to **discuss and solve the questions** given in their group.

## Assessment

The breakdown for grading is as follows:

■ Quizzes/Assignment	:	15%
■ Group task	:	5%
■ Test 1	:	10%
■ Test 2	:	10%
■ Test 3	:	10%
■ Final exam	:	50%
■ Total	:	100%