

Course Title:	<b>Fluid Mechanics</b>
Course Code:	<b>ENME604</b>
Descriptor Start Date:	<b>18/07/2022</b>
Descriptor End Date:	<b>30/01/2023</b>
POINTS:	<b>15.00</b>
LEVEL:	<b>6</b>
PREREQUISITE/S:	<b>ENGE401, ENME500, and ENME506</b>
COREQUISITE/S:	<b>None</b>
RESTRICTION/S:	<b>None</b>

## LEARNING HOURS

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Hours may include lectures, tutorials, online forums, laboratories. Refer to your timetable and course information in Canvas for detailed information.

**Total learning hours: 150**

## PRESCRIPTOR

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To provide an understanding of the principles of fluid statics and dynamics, and use them to solve typical fluid mechanics problems. To also provide the ability to select appropriate pumps, fans and compressors for engineering applications.

## LEARNING OUTCOMES

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1. Calculate static pressure and thrust on immersed plates (a,b,i,j).
2. Apply the principles of buoyancy (a,b).
3. Solve problems for fluid jets on plates (a,b).
4. Solve internal flow situations (piping/ducts) and select appropriate pumps/fans for those situations (a,b,j,g).
5. Determine drag and lift in external flow situations (a,b).

**Disclaimer: Course descriptors may be amended between teaching periods/semesters**

## CONTENT

- Hydrostatics, equilibrium analysis, thrust on perpendicular and inclined plates, centre of pressure, buoyancy
- Fluid Kinematics, Bernoulli and Energy equations
- Momentum analysis: fluid jets on plates
- Internal flows: flow conditions, losses, use of Moody Charts, piping/duct networks and pump selection, efficiency
- External flows: drag and lift

### Key to Graduate Capabilities Profile

- Engineering knowledge
- Problem analysis
- Design/development of solutions
- Investigation
- Modern tool usage
- The engineer and society
- Environment and sustainability
- Ethics
- Individual and team work
- Communication
- Project management and finance
- Lifelong learning

## LEARNING & TEACHING STRATEGIES

Lectures, tutorials, case studies, computer simulation.

## ASSESSMENT PLAN

Assessment Event	Weighting %	Learning Outcomes
Labs	10.00	1,2,4
Tests	30.00	1,2,3,5
Final Exam	60.00	1-5

### Grade Map

#### MAP1

A+ A A- Pass with Distinction

B+ B B- Pass with Merit

C+ C C- Pass

D Fail

### Overall requirement/s to pass the course:

To pass the course, the student needs to gain a minimum grade of C- overall.

## LEARNING RESOURCES

Prescribed text: Mott and Utener, Applied Fluid Mechanics (7th ed) Pearson.

**For further information, contact:** Te Ara Auaha - Faculty of Design & Creative Technologies

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Principal Programme: **AK3719, Bachelor of Engineering Technology**

Related Programme/s:

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