Course Title:	**Computer Aided Design and Manufacturing - CAD/CAM**
Course Code:	**ENME612**
Descriptor Start Date:	**01/01/2022**
Descriptor End Date:	**30/01/2023**
POINTS:	**15.00**
LEVEL:	**6**
PREREQUISITE/S:	**ENGE500, ENME607**
COREQUISITE/S:	**None**
RESTRICTION/S:	**None**

LEARNING HOURS

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

Extends the students knowledge on relevant engineering applications in the field of Computer Aided Design (CAD), Computer Numerical Control (CNC) and Computer Aided Manufacturing (CAM). Introduces Computer Aided Engineering (CAE) analysis tools, such as how to evaluate a dynamic operation.

LEARNING OUTCOMES

1. Design 3-D parametric CAD parts using parametric features, select and apply suitable materials to the model (a,b,c,i,j,e).
2. Design parts using surface modelling and hybrid solid/surface modelling techniques (a,b,c,d,e,i),
3. Understand and improve the environmental impact of designs (a,b,c,d,e,f,g,h,i,j).
4. Render CAD models (virtual photograph) for use in professional documentation such as a proposals and brochures (a,b,c,e,f,i,j).
5. Define necessary constraints and simulate dynamic mechanisms and export results of static analysis and dynamic simulations to AVI files and spreadsheets (a,b,c,d,e,i,j).
6. Define working steps and machining methodologies, simulate and generate NC code. Convert file formats (of geometric data) from 3D solid models for feature recognition, operation plans, and to post process data to suit CNC machine tools (a,b,c,d,e,i,j).

CONTENT

- Multibody Solids.
- Sweeps
- Lofts.
- Surface Modelling
- Mould Tool Design
- Motion Analysis
- Simulation
- Static and, dynamic analysis
- Flow analysis
- Thermal analysis
- Design for Sustainability
- Computer Aided Manufacture.

Key to Graduate Capabilities Profile
a. Engineering knowledge
b. Problem analysis
c. Design/development of solutions
d. Investigation
e. Modern tool usage
f. The engineer and society
g. Environment and sustainability
h. Ethics
i. Individual and team work
j. Communication
k. Project management and finance
l. Lifelong learning

LEARNING & TEACHING STRATEGIES

The pedagogical approach will place emphasis on student centred learning through a varied number of lectures, tutorials, individual and group assignments, case studies, computer simulations.

ASSESSMENT PLAN

Assessment Event	Weighting %	Learning Outcomes
Design Assignment One	40.00	1,2,3
Design Assignment Two	40.00	4,5
Portfolio of work	20.00	1,2,3,5,6

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 achieve a minimum overall grade of C-.

LEARNING RESOURCES

Recommended reading lists will be supplied.

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

Principal Programme:	**AK3719, Bachelor of Engineering Technology**
Related Programme/s:	