

EN40 Bachelor of Engineering

Unit Map for the major in Mechanical Engineering

Suggested course path with [links](#) to current or most recent [Unit Outlines](#)

Year 1		Year 2		Year 3		Year 4	
Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2
BEB100 Introducing Professional Practice	PCB136 Engineering Physics	ENB211 Dynamics Pre-req MAB180/131, ENB101	ENB201 Fluid Mechanics Pre-req ENB101, MAB132/182	ENB301 Instrumentation & Control Pre-req MAB182/132, ENB105 or 243	ENB312 Dynamics of Machinery Pre-req ENB211	ENB421 Thermodynamics 2 Pre-req ENB221,321	BEB701 Work Integrated Learning
ENB101 Engineering Mechanics 1	ENB102 Engineering Mechanics II	ENB105 Electrical & Computer Eng	ENB215 Fundamentals of Mechanical Design Pre-req ENB102, 104, MAB180/131	ENB311 Stress Analysis Pre-req ENB102,201,211	ENB317 Design & Maintenance of Machinery Pre-req ENB316	BEB801 Project 1	BEB802 Project 2
ENB104 Engineering Materials	ENB103 Electrical Engineering Pre-req PCB136, MAB131/180	ENB231 Materials & Manufacturing 1 Pre-req ENB104	ENB222 Thermodynamics I Pre-req ENB101, MAB182/132	ENB331 Materials & Manufacturing 2 Pre-req ENB231	ENB321 Fluid Dynamics Pre-req ENB201	AM selective Applications Minor??	Major/Minor
MAB180 or 131 Maths units for Engineering	MAB182 or 132 Maths units for Engineering	MAB233 Maths unit for Engineering ?Pre-req MAB132/182	BEB200 Introducing Sustainability	ENB316 Design of Machine Elements Pre-req ENB215	Major/Minor	Major/Minor	Major/Minor

Core subjects common to all majors	Field of Practice subjects in a specific area of expertise	Engineering Design & Project subjects	Professional Practice subjects that build work experience	Electives
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Outcomes Map for the EN40 major in Mechanical Engineering

Year 1		Year 2		Year 3		Year 4	
Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2
<p align="center">BEB100</p> <p>Communication. Indiv & group participation. Information gathering & processing. Ethical/indigenous/international issues. CEF</p>	<p align="center">PCB136</p>	<p align="center">ENB211</p> <p>-Use fundamentals principles of kinematics and kinetics to formulate and solve dynamics problems for particles, rigid bodies and mechanical vibrations -Analyse basic mechanical components & mechanisms. ABCE</p>	<p align="center">ENB201</p> <p>Pressure/forces in static fluids. Continuity of mass, energy conservation, momentum in flowing fluids. Appl to pipes flow systems, hydraulics. ABCE</p>	<p align="center">ENB301</p> <p>-Use measurement devices and programmable logic controllers appropriately. -Model mechanical and electrical systems using discrete events and transfer functions, linear time-invariant systems, open & closed loop control, and block diagrams. -Assess the stability of linear time invariant systems. -Design analogue controllers, proportional integral derivatives, lead & lag controllers. -Apply linearization techniques to the estimation of transfer functions ABCE</p>	<p align="center">ENB312</p> <p>-Extend the principles of kinematics & kinetics to solve problems of machine components. -Apply analytical techniques to solve mechanical problems -Use equations of motions and discrete methods to solve multiple degrees of freedom vibration problems ABCE</p>	<p align="center">ENB421</p> <p>Applications of heat transfer theory. Physical mechanisms of heat transfer. Rates of energy transfer. ABCE</p>	<p align="center">BEB701</p> <p>Developing & managing workplace learning & activity. Recording/logging workplace learning & activity. Critical reflection on professional practice. ABEF</p>
<p align="center">ENB101</p> <p>Fundamentals of statics & rigid body mechanics. Forces & moments. Analysis of beams, struts, trusses, machines. Shearing forces & diagrams. Centroids. ABCE</p>	<p align="center">ENB102</p> <p>Elastic 2-D flexible bodies sustaining forces & stresses in static equilib. Appl of elastic relationships to stresses, strains in various bodies, & potential failure. ABCE</p>	<p align="center">ENB105</p> <p>Relationship between computer hardware & software. Simple Matlab & Excel programs & macros. Transformer theory. Dc/ac generators & motors Basic electronic devices/circuits. ABCE</p>	<p align="center">ENB215</p> <p>Mechanical design. Product value analysis. Problem solving & concept development. Design in other disciplines. Mechanical component design. ABCE</p>	<p align="center">ENB311</p> <p>Fundamentals of applied elasticity in stress analysis. Practical approaches to stress analysis. Numerical techniques & analysis using software. ABCE</p>	<p align="center">ENB317</p> <p>Optimal design of machine components. Fundamentals of friction & wear. Improving machine reliability. Risk analysis. ABCE</p>	<p align="center">BEB801</p> <p>Application and development of discipline knowledge. Scheduling, design, development, construction, testing, analysis. Professional written & oral capabilities. ABCD</p>	<p align="center">BEB802</p> <p>Application and development of discipline knowledge. Scheduling, design, development, construction, testing, analysis. Prof writing & oral skills. Relate theory & practice. ABCD</p>
<p align="center">ENB104</p> <p>Eng materials and applications. Management of information/ data. Communication: Individual & team. ABCE</p>	<p align="center">ENB103</p> <p>Analysis of dc & ac electrical circuits. Power in ac & dc circuits. Freq response, impedance, admittance & transfer. Current & voltage measurement ABCE</p>	<p align="center">ENB231</p> <p>Microstructure of eng materials at different phases of equilibrium. Bulk deformation and material removal processes. Effects of materials, & selection. Data management. ABCE</p>	<p align="center">ENB222</p> <p>First, Second Laws & their applications. Analysis of cycles (eg refrigeration). Psychometry & air-conditioning. Chem of combustion, fuels, pollutants. ABCE</p>	<p align="center">ENB331</p> <p>Material removal processes. Metal cutting. Behaviour & failure of materials. NC/CNC machining systems. Information management. ABCE</p>	<p align="center">ENB321</p> <p>Hydraulic & pneumatic circuits. Fluid power devices. Rotating fluid machinery. Fluid flow in piping systems & around bodies. Compressible flow & shock waves. ABCE</p>	<p align="center">AM selective Applications Minor??</p>	<p align="center">Major/Minor</p>

MAB180 or 131	MAB182 or 132	MAB233	BEB200 Sustainability in global & local contexts, &BEE professions. Addressing via trans-disciplinary approaches. BEF	ENB316 Mechanical component design and selection. Lubrication. Machine design. Technical documentation & model. Communicating design information. ABCE	Major/Minor	Major/Minor	Major/Minor
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A Knowledge and skills pertinent to a particular discipline or professional area

E The ability to work independently and collaboratively

B Critical, creative & analytical thinking, and effective problem-solving

F Social & ethical responsibility and an understanding of indigenous & international perspectives

C Effective communication in a variety of contexts and modes

D The capacity for life-long learning

G Characteristics of self-reliance & leadership

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Assessment Map for the EN40 major in *Mechanical Engineering*

Year 1		Year 2		Year 3		Year 4	
Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2
BEB100 Weekly tasks 20% Written report 30% Group report & artefact 30% Final Exam 30%	PCB136	ENB211 Labs & Computer assignment 20% Midsem test 20% Final exam 60%	ENB201 Mini test wk 9 20% CFD Assignment & Lab exercises 20% Final exam 60%	ENB301 2 Assignments 15 + 15% Final exam 70%	ENB312 Group Project written report 50% Lab report 5% Written work 10% Final exam 35%	ENB421 Midsem test 20% Lab test 20% (last wk of semester) Final exam 60%	BEB701 Logbook 0% Written workplan 40% Written report based on reflective diary 60%
ENB101 Test/Assignment 30% Project 20% + 20% Final exam 30%	ENB102 Test wk 5, 30% Project 20% + 10% Final exam 40%	ENB105 4 Quizes 30% 4 Lab/computing reports (30%) Final exam 40%	ENB215 Assign/ project report/ Lab reports /drawings 45% Final exam 55%	ENB311 FEA Project 30% Midsem exam 20% Final exam 50% Tutorials 0%	ENB317 Assignments & Project 40% Final exam 60%	BEB801 Written progress report 40% Written project report 60%	BEB802 Written progress report 40% Written project report 60%
ENB104 Tutorial reports & quiz (4) 30% Lab reports (20%) Final exam 50% Online tasks 0%	ENB103 Assignment & Lab 20% Assignment 30% Final exam 50% Quizzes, seminars labs, tutes 0%	ENB231 Project 30% Lab report 20% Final exam 50% Tutorials, & Quizzes 0%	ENB222 Problem solving and mini-tests 25% Lab report 20% Final exam 55%	ENB331 Project 30% Lab s 20% Final exam 50% Tutorials 0%	ENB321 Midsem test 40% Final exam 60% Tute problems & labs 0%	AM selective Applications Minor??	Major/Minor
MAB180 or 131	MAB182 or 132	MAB233	BEB200 Group Project presentation 20%, report 30% Discussion paper 25% Final exam 25%	ENB316 Written work 20% Design project 30% Final exam 50%	Major/Minor	Major/Minor	Major/Minor

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Classroom/Student Experience Map for the EN40 major in Mechanical Engineering

Year 1		Year 2		Year 3		Year 4	
Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2
BEB100	PCB136	ENB211 Lect (2hr/wk) Tute (1hr/wk) Comp Lab (1hr/wk) CBE Some teamwork	ENB201 Lect (?hr/wk) Tute (hr/wk) Labs () (Workshops?)	ENB301 Lect (2hr/wk) Tute (1hr/wk) Lab (4 x 3hr experiments)	ENB312 Lect (2hr/wk) Tute/lab(1hr/wk) Prac (1hr/wk)	ENB421 Lect (2hr/wk) Tute/lab(1hr/wk) Prac (1hr/wk)	BEB701 Workplace learning
ENB101 Lect (1hr/wk) Tute (1hr/wk) Peer SI (1hr/wk) Team Project (1hr/wk)	ENB102 Lect (2hr/wk) Tute (1hr/wk) Team Project (1hr/wk)	ENB105 Lect (3hr/wk) Pracs (2 x 2hr) Comp Lab (1hr/wk)	ENB215 Lect (2hr/wk) Tute (2hr/wk) Drawing (1hr/wk)	ENB311 Lect (2hr/wk) Tute (1hr/wk) Pracs (3 or 4)	ENB317 Lect (2hr/wk) Tute/lab (2hr/wk)	BEB801 Appropriate tutorials & workshops by arrangement with teaching staff.	BEB801 Appropriate tutorials & workshops by arrangement with teaching staff.
ENB104 Lect (3hr/wk) Tute (1hr/wk) PracLab (1hr/wk) Online quizzes (10)	ENB103 Lect (2hr/wk) Tute (1hr/wk) Prac (1hr/wk) Seminars Online quizzes	ENB231 Lect (2hr/wk) Tute (1hr/wk) Lab (1hr/wk) Team project (1)	ENB222 Lect (2hr/wk) Tute (1hr/wk) Prac (1hr/wk)	ENB331 Lect (2hr/wk) Tute (1hr/wk) Prac Lab (3x3hr)	ENB321 Lect (2hr/wk) Tute (1hr/wk) Lab (1hr/wk)	AM selective Applications Minor??	Major/Minor
MAB180 or 131	MAB182 or 132	MAB233	BEB200 Lect (1hr/wk) Tute (2hr/wk) Group work	ENB316 Lect (2hr/wk) Tute (2hr/wk) Solid modelling class (2hr/wk)	Major/Minor	Major/Minor	Major/Minor

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Current Unit Coordinators for the EN40 major in *Mechanical Engineering*

Year 1		Year 2		Year 3		Year 4	
Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2
BEB100 Introducing Professional Practice Martin Murray	PCB136 Eng Physics	ENB211 Dynamics Andy Tan	ENB201 Fluid Mechanics Gary Chadwick	ENB301 Instrumentation & Control Ed Palmer	ENB312 Dynamics of Machinery Andy Tan	ENB421 Thermodynamics 2 Wim Dekkers	BEB701 Work Integrated Learning
ENB101 Engineering Mechanics 1 Fraser Mcgregor	ENB102 Eng Mech II Fraser Mcgregor	ENB105 Electrical & Computer Eng Kame Khouzan	ENB215 Fundamentals of Mechanical Design Vladis Kosse	ENB311 Stress Analysis Gary Chadwick	ENB317 Design & Maintenance of Machinery Vladis Kosse	BEB801 Project 1 Hayes, Mahalinga-Iyer, Thomson	BEB802 Project 2 Hayes. Mahalinga-Iyer, Thomson
ENB104 Engineering Materials Tuquabo Tesfamichael	ENB103 Electrical Eng Peter O'Shea	ENB231 Materials & Manufacturing 1 Tuquabo Tesfamichael	ENB222 Thermodynamics I Richard Brown	ENB331 Materials & Manufacturing 2 Prasad Gudimetia	ENB321 Fluids Dynamics Wim Dekkers	AM selective Applications Minor??	Major/Minor
MAB180 or 131 Maths units for Eng	MAB182 or 132 Maths units for Eng	MAB233 Maths unit for Eng	BEB200 Introducing Sustainability Laurie Buys	ENB316 Design of Machine Elements Vladis Kosse	Major/Minor	Major/Minor	Major/Minor

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EN40 Bachelor of Engineering

Reaccreditation classification of units in the Mechanical Engineering major

<i>R</i> Year 1		Year 2		Year 3		Year 4	
Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2
BEB100 Introducing Professional Practice	PCB136 Eng Physics	ENB211 Dynamics	ENB201 Fluid Mechanics	ENB301 Instrumentation & Control	ENB312 Dynamics of Machinery	ENB421 Thermodynamics 2	BEB701 Work Integrated Learning
ENB101 Engineering Mechanics 1	ENB102 Eng Mech II	ENB105 Electrical & Computer Eng	ENB215 Fundamentals of Mechanical Design	ENB311 Stress Analysis	ENB317 Design & Maintenance of Machinery	BEB801 Project 1	BEB802 Project 2
ENB104 Engineering Materials	ENB103 Electrical Eng	ENB231 Materials & Manufacturing 1	ENB222 Thermodynamics I	ENB331 Materials & Manufacturing 2	ENB321 Fluid Dynamics	AM selective Applications Minor??	Major/Minor
MAB180 or 131 Maths units for Eng	MAB182 or 132 Maths units for Eng	MAB233 Maths unit for Eng	BEB200 Introducing Sustainability	ENB316 Design of Machine Elements	Major/Minor	Major/Minor	Major/Minor

Engineering, Maths & Science Fundamentals	Engineering Specialisation	Engineering Design & Projects	Exposure to Professional Practice	Electives
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