PROGRAMME SPECIFICATION	

1 Awarding Institution	Newcastle University
2 Teaching Institution	Newcastle University
3 Final Award	MEng (Hons)
4 Programme Title	Master of Engineering in Mechanical Engineering with Honours in one of six named options
5 UCAS/Programme Code	Stage 0 Entry with Foundation Year H305 H305 Stage 1 Entry Mechanical Engineering H301 Mechanical and Low Carbon Transport Engineering H390 Mechanical Design and Manufacturing Engineering HH37 Mechanical Engineering with Bioengineering H3H8 Mechanical Engineering with Mechatronics H3H6 Mechanical Engineering with Microsystems H3H9
6 Programme Accreditation	IMechE, IET (2011)
7 QAA Subject Benchmark(s)	http://www.qaa.ac.uk/Publications/InformationAndGuidance/Pages/Subject-benchmark-statement-Engineering-.aspx
8 FHEQ Level	7
9 Last updated	February 2014

10 Programme Aims

These related degree programmes with a common core aim to:

1. Develop students knowledge, understanding and skills (including transferable skills), as well as awareness and “know how”, in the field of mechanical engineering specified below, so that as graduates they will be equipped to enter employment as professional engineers (progressing on to Chartered Engineer or equivalent status) or in other professional careers, providing the engineering industry and professions (in the UK and elsewhere) with employable and enterprising graduates, prepared for the assumption of technical, managerial and financial responsibilities and who have an appreciation of the value of education to the wider community.

2. Prepare students for engagement in life-long learning (e.g. professional CPD or further Higher Education) with capability in critical enquiry, research and knowledge acquisition through building deeper study on a base of general mechanical, materials and manufacturing engineering as follows:
   - ***Mechanical Engineering*** (H301):
     In contrast to the other named specialist streams below, the later stages of this degree deliver depth but in a range of different aspects of mechanical, materials and manufacturing engineering (including simulation, analysis, design and control software tools), in order to produce graduates capable of developing into senior roles in which they may be required to understand and manage a broad spectrum of engineering activities and systems.

   - ***Mechanical and Low Carbon Transport Engineering*** (H390):
     The later stages of this degree focus on a range of aspects of mechanical, materials and manufacturing engineering appropriate to the future development of sustainable land-based transport technology (in particular automotive, rail and mass-rapid-transport) to meet the multi-disciplinary needs of specialist consultancies and vehicle designers as well as vehicle and vehicle component manufacturers.
   - ***Mechanical Design and Manufacturing Engineering*** (HH37):
     Throughout this degree there is an emphasis on the core engineering activity of innovative design, based on the ability to exploit and apply engineering science, within the constraints of (but exploiting the synergy between) materials and manufacture, for functional and sustainable solutions that meet customers' needs, thus developing a mix of skills appropriate to a range of manufacturing sectors.
   - ***Mechanical Engineering with Bioengineering*** (H3H8):
     Building from and extending the basic mechanical, materials and manufacturing engineering core, the later stages of this degree introduce students to the application of engineering principles in the inter-disciplinary fields of biomedical engineering and healthcare, as well as in the wider social issues of accessibility, with experience of depth of study in a selection of fields (eg design of artificial joints, materials, human factors).
   - ***Mechanical Engineering with Mechatronics*** (H3H6):
     Building from the basic mechanical, materials and manufacturing engineering core, the later stages of this degree introduce students to precision engineering and instrumentation, electronic control, real-time computing, robotics and systems thinking for the design of innovative mechatronic products in an inter-disciplinary engineering context.

- ***Mechanical Engineering with Microsystems*** (H3H9):
  Building from the basic mechanical, materials and manufacturing engineering core, the later stages of this degree introduce students to microsystems (inter-disciplinary functional systems in a package < 1 cm^3) and their applications, particularly in biological systems, by widening and deepening their knowledge base to encompass design and fabrication of microelectronic devices and systems, nanoscience and nanomaterials and aspects of biomedical engineering.

3. Gain an internationally recognised qualification which meets the requirements of the Framework for Higher Education Qualifications at Integrated Masters Level 7 with particular reference to the QAA Subject Benchmark Statement for Engineering (including Annex MEng degrees) and to the Engineering Council (UK) UKSpec.
4. For non-native speakers of English, extend their English language skills appropriate to engineering and industry through experience of life and study in a UK Higher Education institution.
5. Achieve the above in the contexts of the School, SAgE Faculty and University business plans, following the University's policies and procedures and conforming to the relevant sections of the QAA Code of Practice.

11 Learning Outcomes

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas. The programme outcomes have references to the benchmark statements for Engineering and to Engineering Council UK (UK Spec Learning Outcomes).

Knowledge and Understanding

On completing the programme students should have:

A1 Knowledge and understanding of scientific principles and methodology necessary to underpin their education in mechanical and related engineering disciplines, to enable appreciation of its scientific and engineering context and to support their understanding of future developments and technologies in mechanical engineering and manufacturing. (UK Spec US1), At Masters Level 7, a comprehensive understanding of the scientific principles of mechanical, manufacturing and related engineering disciplines. (UK Spec US1m)

A2 Knowledge and understanding of mathematical principles necessary to underpin their education in mechanical and related engineering disciplines. (UK Spec US2). At Masters Level 7, a comprehensive knowledge and understanding of mathematical models relevant to the mechanical and related engineering disciplines, and an appreciation of their limitations (UK Spec US2m)

A3 The ability to understand and apply Engineering principles to analyse key processes in manufacturing and mechanical and related engineering. (UK Spec E1)

A4 Knowledge and understanding of commercial and economic context of mechanical engineering processes (UK Spec S1). At Masters Level 7, an understanding of concepts from a range of areas including business and industry, sustainability and the environment, legal and finance. (UK Spec US3m)

A5 Knowledge of management techniques which may be used to achieve engineering and manufacturing objectives within the context of mechanical engineering processes. (UK Spec S2). At Masters Level 7, knowledge and understanding of industrial management and business practices, and their limitations (UK Spec S2m)

A6 Understanding of the requirement for mechanical engineering activities to promote sustainable development (UK Spec S3)

A7 Knowledge of characteristics of particular mechanical and related engineering equipment, processes or products (UK Spec P1). At Masters Level 7, understanding of current mechanical engineering and manufacturing practice and its limitations and some appreciation of development trends (UK Spec P1m) with knowledge and understanding of a wide range of engineering materials and components (UK Spec P2m).

Intellectual Skills

On completing the programme students should have:

B1 Knowledge and understanding of scientific principles and methodology necessary to underpin their education in mechanical and related engineering disciplines, to enable appreciation of scientific and engineering context and to support understanding of future developments and technologies(UK Spec US1). At Masters Level 7, the ability to learn and work independently.

B2 The ability to apply mathematical methods, tools and notations proficiently in the analysis and solution of mechanical engineering problems (UK Spec US2). At Masters Level 7, the ability to learn new theories, concepts and methods for unfamiliar situations.

B3 Ability to apply and integrate knowledge and understanding of other engineering disciplines to support the study of mechanical and related engineering disciplines (UK Spec US3). At Masters Level7, an understanding of concepts from a range of areas including some outside engineering, and the ability to apply them effectively in mechanical engineering projects (UK Spec US4m) based on the, ability to use fundamental knowledge to investigate new and emerging mechanical engineering and manufacturing technologies (UK Spec E1m).

B4 Ability to identify, classify and describe the performance of systems and mechanical components through the use of analytical methods and modelling techniques (UK Spec E2), At Masters Level 7, an understanding of the capabilities of computer based models for solving problems in engineering, and the ability to assess the limitations of particular cases. (UK Spec E3m)

B5 Understanding of and ability to apply a systems approach to mechanical engineering problems (UK Spec E4)

B6 Investigate and define a problem and identify constraints including environmental and sustainability limitations, health and safety and risk assessment issues (UK Spec D1).

B7 Understand customer and user needs and the importance of considerations such as aesthetics (UK Spec D2). At Masters Level 7, ability to generate an innovative design for mechanical engineering systems, components or processes to fulfil new needs (UK Spec D4m)

B8 Ensure fitness for purpose for all aspects of mechanical engineering problems including production, operation, maintenance and disposal(UK Spec D5). At Masters Level 7, ability to generate ideas for new engineering products or projects and develop and evaluate a range of new solutions (UK Spec D5m)

B9 Manage the engineering design process and evaluate outcomes (UK Spec D6). At Masters Level 7, wide knowledge and comprehensive understanding of design processes and methodologies and the ability to apply and adapt them in unfamiliar situations (UK Spec D4m)

B10 Awareness of management and business practices, and how these may be applied appropriately *to* strategic and tactical issues in mechanical engineering and manufacturing. (UK Spec S2), At Masters Level 7, the ability to make general evaluations of commercial risks through some understanding of the basis of such risks (UK Spec S1m)

B11 Understanding of contexts in which mechanical engineering knowledge can be applied (i.e. operations and management, technology, product development) (UK Spec P3). At Masters Level 7, ability to apply mechanical engineering techniques taking account of a range of commercial and industrial constraints (UK Spec P8m)

Practical Skills

On completing the programme students should be able to:

C1 Ability to apply quantitative methods and computer software relevant to mechanical and related engineering disciplines, to solve engineering problems. (UK Spec E3). At Masters Level 7, understanding the capabilities of computer based models for solving problems in mechanical engineering, with the ability to assess the limitations of particular cases. (UK Spec E3m)

C2 Identify and manage cost drivers in mechanical engineering and manufacturing (UK Spec D3). At Master Level 7, develop, monitor and update business, project and personal plans on an on-going basis to reflect changing operating environments.

C3 Awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues (UK Spec S4). At Masters Level 7, apply mechanical engineering techniques taking account of a range of commercial and industrial constraints (UK Spec P8m)

C4 Awareness of nature of intellectual property and contractual issues (UK Spec P5)

C5 Understand appropriate codes of practice and industry standards (UK Spec P6)

C6 Awareness of quality issues (UK Spec P7)

C7 Work with technical uncertainty (UK Spec P8)

Transferable/Key Skills

On completing the programme students should be able to:

D1 Understand customer and user needs and the importance of considerations such as aesthetics in mechanical and manufacturing engineering. (UK Spec D2)

D2 Use creativity to establish innovation in manufacturing and mechanical and related engineering disciplines. (UK Spec D4)

D3 Understanding of the need for a high level of professional and ethical conduct in engineering (UK Spec S5). At Masters Level 7, understanding differing team roles and be able to exercise leaderships.

D4 Relevant Mechanical engineering workshop and laboratory skills (UK Spec P2). At Masters Level 7, extensive knowledge and understanding of a wide range of engineering materials and components (UK Spec P2m)

D5 Understanding use of technical literature and other information sources (UK Spec P4)

Teaching and Learning Methods

Key elements of professional graduate employability are that employers need to be sure that graduates are able to take individual responsibility for their own work without supervision, that they are capable of assimilating and organising complete information quickly and effectively and that they are self-learners, capable of keeping abreast of new developments without organisational support. Our approach to teaching and learning is designed to produce graduates who meet these criteria. From the outset, students will be expected to meet the basic professional requirement of taking responsibility for their own learning.

With engineering degrees lectures are extensively used to provide structure for each subject, to help to direct students' further reading and self study to convey how the underlying engineering science is applied to discipline specific problems, and to demonstrate approaches to problem-solving. Typically student self-study after lectures is supported by tutorial or problem classes, where advice is given on request to students who have issues arising from their application or understanding of the lecture material. Other types of classes include longer "hands-on" practical laboratory/workshop sessions, seminar/presentation activities, design project work and CAD/computer sessions where teamwork often features.

Over the common core course at Stages 1-2, there will be an average of around 20 contact hours per week, about half of which will be lectures, about a quarter tutorials supporting those lectures and about a quarter practical activities. During the course of Stage 1, to support the transition to University training, students must attend a regular weekly small group tutorial or seminar with their allocated Tutor and there are additional support classes in Semester 2 for students having difficulties. Stage 2 features industrial contact in design and manufacturing and input from industry on CVs and interviews for a professional career in engineering.

At Stages 3 and 4 there is a greater expectation that students will manage their own learning, with seminar classes in which students present material they have researched themselves and independent work on assignments

more prevalent. This includes a team design project carried out with regional industry. At Stage 3 students undertake a major 30 credit individual project related to the specialist stream they are following. The Accrediting Institutions place a high importance on this project which must be passed to get an Honours Degree.

At Stage 4 there is a major 40 credit team project related to the students' specialist stream in which the teams also have to demonstrate their project management skills.

Assessment Strategy

Professional practice in industry demands the ability to bring methods and data together, apply problem-solving skills and demonstrate understanding under time constraints. To reflect this, the major end-of-course examination remains a valid assessment tool and forms an important element in our assessment strategy. However, there are equally many disciplines and skills where it is restrictive or inappropriate and engineering degrees are noted for the breadth of assessment tools that are used to obtain a balanced measure of the student. Spot or phase tests (including MCA) and short assignments feature in the early stages to help students structure their study and revision towards the synoptic end-of-course examinations. Laboratory/workshop, design and computing work are all best assessed through realistic assignments, with many of these being team assignments and involving oral or poster, as well as written reporting. In later stages application of major engineering software features in most main technical subject areas.

At Stage 1 the balance of assessment between end-of-course examination and various forms of in-course assessment is about 50:50, changing to about 70:30 in Stage 2, as students develop. However, at Stages 3-4 the greater importance of self-study and of major project work shift the overall balance back again (depending on the specialisation stream followed).

Assessment of major project work at Stages 3-4 is particularly innovative. The traditional "mini PhD " thesis or dissertation with vivas has been replaced by a much broader and more challenging assessment more in line with the needs of industry and professional engineering, incorporating the maintaining of a contemporaneous logbook, a short report typical of business reports or technical journal papers, an oral presentation and a poster. At Stage 4 there will also be a team project management file.

12 Programme Curriculum, Structure and Features

Basic structure of the programme

There is a Faculty Foundation Year (120 credit Stage 0) for students not adequately qualified in Mathematics and/or science and/or English language to embark on Stage 1 (http://www.ncl.ac.uk/sage/undergrad/foundation/).

Stages 1 and 2 are a broadly-based course common to all BEng and MEng

Honours streams with all modules compulsory. Students will study a broad range of applied mathematics, engineering sciences, design and manufacturing and management as well as IT skills. The School warns all MEng candidates that its Accreditors require an overall 60% average at Stage 2 to progress onto MEng Stage 3. Students not reaching this standard will be transferred to BEng Stage 3.

At Stage 3 all students have a 30 credit degree major individual project. To proceed to an Honours degree it is necessary pass this project without condonation or resit. Students follow a defined programme of modules appropriate to the specialist stream they have chosen. Students wishing to continue on to MEng require an overall average of 50% at Stage 3.

At Stage 4, all MEng students have a 40 credit major team project in which they also have to demonstrate project management skills. To proceed to an MEng degree it is necessary to pass this project.

Key features of the programme (including what makes the programme distinctive)

The normal Undergraduate academic year is approximately 31 weeks full time from September – June divided into two semesters, with vacation breaks at Christmas/New Year and Easter. Engineering Honours students study 120 credits (1 credit ≡10 study hours, including timetabled contact hours and private study) in each stage or academic year. Students must complete one stage before proceeding to the next. Currently the only part-time study available is limited provision for the repetition of failed modules (only three attempts are permitted for any module).

The key feature is the structure of two common general years, followed by two years of specialisation. Whatever stream students enter on, providing they meet the Stage 2 MEng progression requirement they can choose any of the specialist streams, allowing them time to explore the different subjects before deciding on their specialisation.

Programme regulations (link to on-line version)

http://www.ncl.ac.uk/regulations/programme/

13 Criteria for admission

Entry qualifications
Admission offers normally require UK GCE A-level grades of AAB for MEng or BEng (including mathematics and science but excluding General Studies) for Stage 1 admission (equivalent grades but without A-level Mathematics and/or science indicate Stage 0 Foundation Year entry). In addition, the University recruits candidates with a wide range of equivalent qualifications. A limited number of post-school qualifications with appropriate subjects and high grades may be considered for Direct Entry to Stage 2 or, very exceptionally, Stage 3.

Admissions policy/selection tools
Engineering requires a wide range of attributes and abilities, so selection is not solely based on academic grades. UK Engineering degrees are demanding and most have high drop-out rates.Selectors seek evidence of motivation and commitment from the Personal Statement and Reference on UCAS forms and credible applicants are encouraged to attend for interview whenever practical.

Non-standard Entry Requirements
The School is committed to widening access, particularly for mature, female, disabled and ethnic minority students as well as those from state schools and disadvantaged areas. Links exist with the University's "Partners" programme and there is a Faculty Foundation Year (Stage 0) for those with insufficient mathematics and/or science to enter Stage 1 directly. All UCAS forms are considered but the School does not normally take candidates through UCAS Clearing.

Level of English Language capability
Applicants who are non-native speakers of English will usually be required to provide evidence of English Language proficiency equivalent to IELTS 6.0 or better. Direct Entrants to Stage 2 or Stage 3 are required to achieve IELTS 6.5, but Stage 0 entry may be allowed with IELTS 5.5.

14 Support for Student Learning

The Student Services portal provides links to key services and other information and is available at: *http://www.ncl.ac.uk/students/*

Induction
During the first week of the first semester students attend an induction programme. New students will be given a general introduction to University life and the University's principle support services and general information about the School and their programme, as described in the Degree Programme Handbook. New and continuing students will be given detailed programme information and the timetable of lectures/practicals/labs/ tutorials/etc. The International Office offers an additional induction programme for overseas students.

Study skills support
Students will learn a range of Personal Transferable Skills, including Study Skills, as outlined in the Programme Specification. Some of this material, e.g.

time management is covered in the appropriate Induction Programme. Students are explicitly tutored on their approach to both group and individual projects.

Numeracy support is available through Maths Aid and help with academic writing is available from the Writing Development Centre (further information is available from the Robinson Library).

Academic and Pastoral support
Each undergraduate and taught postgraduate student will be assigned a personal tutor.*
A personal tutor is one part of a wider network of advice and guidance available to students to support their personal and general academic development. The module leader acts as the first point of contact for subject-specific academic advice. Thereafter the Degree Programme Director or Head of School may be consulted. Issues relating to the programme may be raised at the Student-Staff Committee, and/or at the Board of Studies. Within the academic unit, students may also receive additional academic and pastoral advice from a range of other student-facing staff including degree programme directors, dissertation/project supervisors, and administrative support staff.
*Arrangements may vary for students taking special types of provision.

The University also offers a wide range of institutional services and support upon which students can call, such as the Writing Development Centre, Careers Service and Student Wellbeing Service. This includes one-to-one counselling and guidance or group sessions / workshops on a range of topics, such as emotional issues e.g. stress and anxiety, student finance and budgeting, disability matters etc. There is specialist support available for students with dyslexia and mental health issues. Furthermore, the Student Union operates a Student Advice Centre, which can provide advocacy and support to students on a range of topics including housing, debt, legal issues etc.

Support for students with disabilities
The University's Disability Support team provides help and advice for disabled students at the University - and those thinking of coming to Newcastle. It provides individuals with: advice about the University's facilities, services and the accessibility of campus; details about the technical support available; guidance in study skills and advice on financial support arrangements; a resources room with equipment and software to assist students in their studies.

Learning resources
The University's main learning resources are provided by the Robinson and Walton Libraries (for books, journals, online resources), and Information Systems and Services, which supports campus-wide computing facilities.

All new students whose first language is not English are required to take an English Language Proficiency Test. This is administered by INTO Newcastle University Centre on behalf of Newcastle University. Where appropriate, in-

sessional language training can be provided. The INTO Newcastle University Centre houses a range of resources which may be particularly appropriate for those interested in an Erasmus exchange.

15 Methods for evaluating and improving the quality and standards of teaching and learning

Module reviews
All modules are subject to review by questionnaires which are considered by the Board of Studies. Changes to, or the introduction of new, modules are considered at the Board of Studies and/or the School Teaching and Learning Committee. Student opinion is sought at the Student-Staff Committee and/or the Board of Studies. New modules and major changes to existing modules are subject to approval by the Faculty Learning, Teaching and Student Experience Committee.

Programme reviews
The Board of Studies conducts an Annual Monitoring and Review of the degree programme and reports to Faculty Learning, Teaching and Student Experience Committee. The FLTSEC takes an overview of all programmes within the Faculty and reports any Faculty or institutional issues to the University Learning, Teaching and Student Experience Committee.

External Examiner reports
External Examiner reports are considered by the Board of Studies. The Board responds to these reports through Faculty Learning, Teaching and Student Experience Committee. External Examiner reports are shared with institutional student representatives, through the Student-Staff Committee.

Student evaluations
All modules and stages* are subject to review by student questionnaires. Informal student evaluation is also obtained at the Student-Staff Committee, and the Board of Studies. The National Student Survey is sent out every year to final-year undergraduate students, and consists of a set of questions seeking students' views on the quality of the learning and teaching. The results from student surveys are considered as part of the Annual Monitoring and Review of the programme and any arising actions are captured at programme and School / institutional level and reported to the appropriate body.
*With the exception of intercalating years and the final stages of undergraduate programmes.

Mechanisms for gaining student feedback
Feedback is channelled via the Student-Staff Committee and the Board of Studies.

Faculty and University Review Mechanisms
Every six years degree programmes in each subject area undergo periodic review. This involves both the detailed consideration of a range of

documentation, and a review visit by a review team (normally one day in duration) which includes an external subject specialist and a student representative. Following the review a report is produced, which forms the basis for a decision by University Learning, Teaching and Student Experience Committee on whether the programmes reviewed should be re-approved for a further six year period.

Accreditation reports

Additional mechanisms

16 Regulation of assessment

Pass mark
The pass mark is 40% (Stages 0-3) and 50 at Stage 4.

Course requirements
Progression is subject to the University's Undergraduate Progress Regulations and Undergraduate Examination Conventions. In summary, students must pass, or be deemed to have passed, 120 credits at each Stage. Limited compensation up to 40 credits and down to a mark of 35% (Stages 0-3) or 40 (Stage 4) is possible at each Stage and there are re-assessment opportunities, with certain restrictions (except at the final Stage 4).

Weighting of stages
The marks from Stages 2, 3 and 4 will contribute to the final classification of the degree
The weighting of marks contributing to the degree is 1:2:2

Common Marking Scheme
The University employs a common marking scheme, which is specified in the Undergraduate Examination Conventions, namely

	Stage 4 Honours	**Stages 0-3**
<40	Fail	Failing
40-49	Fail	Basic
50-59	Second Class, Second Division	Good
60-69	Second Class, First Division	Very Good
70+	First Class	Excellent

Role of the External Examiner
External Examiners, distinguished members of the subject community, are appointed by Faculty Teaching and Learning Committee, following recommendation from the Board of Studies. The External Examiner is expected to:

i. See and approve assessment papers
ii. Moderate examination and coursework marking
iii. Attend the Board of Examiners
iv. Report to the University on the standards of the programme

In addition, information relating to the programme is provided in:

The University Prospectus: http://www.ncl.ac.uk/postgraduate/

The School Brochure
http://www.ncl.ac.uk/marketing/services/print/publications/ordering/

Degree Programme and University Regulations:
http://www.ncl.ac.uk/regulations/docs/

The Degree Programme Handbook

Please note. This specification provides a concise summary of the main features of the programme and of the learning outcomes that a typical student might reasonably be expected to achieve if she/he takes full advantage of the learning opportunities provided. The accuracy of the information contained is reviewed by the University and may be checked by the Quality Assurance Agency for Higher Education.

Annex

Mapping of Intended Learning Outcomes onto Curriculum/Modules

Either

Intended Learning Outcome	Module codes (Compulsory in Bold)
A1	**EEE1006, MEC1007, MEC1011,** **EEE2010, MEC2001, MEC2003, MEC2009** **MEC3013, MEC3015, MEC3019,** **CME8056, MEC8024, MEC8025, MEC8026,** **MEC8028, MEC8029,**
A2	**MEC3014, MEC3019, MEC3020** **CME8034**, **CME8055, CME8101**, **EEE8005,** **EEE8006, EEE8019, EEE8028, MEC8023**, **MEC8027**, **MEC8028**, **MEC8099**
A3	**ENG1001, MEC1012,** **CME2012, ENG2010, , MEC2008, MEC2009,** **CME3097, MEC3013, MEC3014, MEC3015,** **MEC3016, MEC3018, MEC3020, MEC3098** **CME8034, CME8055, CME8056, CME8101,** **EEE8005, EEE8006, MEC8023, MEC8024,** **MEC8025, MEC8026, MEC8027, MEC8028,** **MEC8099**
A4	**MEC1010** **MEC2007, MEC2008** **MEC3017, MEC3018, MEC3019**
B1	EEE1006, MEC1007, MEC1011 EEE2010, MEC2001, MEC2003, MEC2009 CME3097, MEC3013, MEC3015,
B2	ENG1001 ENG2010, CME2012, MEC3014, MEC3098, EEE3009, EEE3010, MEC3014, MEC3019, MEC3020, MEC3098 EEE8005, EEE8006, EEE8028, MEC8099
B3	
B4	
C1	
C2	
C3	
C4	
D1	
D2	
D3	
D4	

Or

		Intended Learning Outcomes			
Module	**Type**	**A**	**B**	**C**	**D**
STAGE 1					
EEE1006	Compulsory	1	1, 3		5
ENG1001	Compulsory	3	2		
MEC1002	Compulsory				5, 6
MEC1007	Compulsory	1	1		5
MEC1010	Compulsory	4, 5, 6	3, 6, 7	2, 5, 7	2
MEC1011	Compulsory	1	1		2
MEC1012	Compulsory	3	4	1, 7	3
STAGE 2					
EEE2010	Compulsory	1,6	1,3,6		5
ENG2010/CME2012	Compulsory	3	2		
MEC2001	Compulsory	1,9,14	1		6
MEC2003	Compulsory	1, 6, 11	1,6	2,8	5
MEC2007	Compulsory	4, 5, 8	3, 6, 7,9 , 10	2, 5, 6, 7	2
MEC2008	Compulsory	3, 4, 5	4	1, 7	3
MEC2009	Compulsory	1, 3	1, 4, 5	1	2
STAGE 3					
Mechanical Engineering/Mechanical Engineering with Bioengineering					
CME3097	Compulsory	3, 6, 7	1, 3, 4, 6, 8		4, 5
MEC3013	Compulsory	1, 3, 7	1, 3, 4, 5, 6, 8		
MEC3014	Compulsory	2, 3	2, 4	1, 6	
MEC3015	Compulsory	1, 3, 6, 7	1, 3, 4, 5, 7, 9, 11	7	1
MEC3017	Compulsory	4, 5, 6	5, 10, 11	2, 3, 4, 5, 6	3
MEC3018	Compulsory	3, 4, 5, 6, 7	3, 4, 6, 7, 8, 9, 11	2, 3, 4, 5, 6, 7	1, 2, 3, 4, 5
MEC3098	Core	3, 6, 7	2, 3, 4, 5, 6, 11	1, 3, 5, 7	3, 4, 5
Mechanical and Low Carbon Transport Engineering/Mechanical Design and Manufacturing Engineering					
CME3097	Compulsory	3, 6, 7	1, 3, 4, 6, 8		4, 5
MEC3014	Compulsory	2, 3	2, 4	1, 6	
MEC3015	Compulsory	1, 3, 6, 7	1, 3, 4, 5, 7, 9, 11	7	1
MEC3017	Compulsory	4, 5, 6	5, 10, 11	2, 3, 4,	3

				5, 6	
MEC3018	Compulsory	3, 4, 5, 6, 7	3, 4, 6, 7, 8, 9, 11	2, 3, 4, 5, 6, 7	1, 2, 3, 4, 5
MEC3019	Compulsory	1, 2, 4,6, 7	2, 4, 6	1, 3,	4
MEC3098	Core	3, 6, 7	2, 3, 4, 5, 6, 11	1, 3, 5, 7	3, 4, 5
Mechanical Engineering with Mechatronics/Mechanical Engineering with Microsystems					
EEE3009	Compulsory	7	2, 3, 5	1, 5	
EEE3010	Compulsory	7	2, 3, 5	1, 5	
MEC3015	Compulsory	1, 3, 6, 7	1, 3, 4, 5, 7, 9, 11	7	1
MEC3016	Compulsory	3, 7	3, 4, 5, 6	1	1, 2, 4, 5
MEC3017	Compulsory	4, 5, 6	5, 10, 11	2, 3, 4, 5, 6	3
MEC3018	Compulsory	3, 4, 5, 6, 7	3, 4, 6, 7, 8, 9, 11	2, 3, 4, 5, 6, 7	1, 2, 3, 4, 5
MEC3020	Compulsory	2, 3	2, 4	1, 6	
MEC3098	Core	3, 6, 7	2, 3, 4, 5, 6, 11	1, 3, 5, 7	3, 4, 5
Stage 4					
Mechanical Engineering					
CME8055	Compulsory	2 3	1 4	2	1
CME8056	Compulsory	1, 3	1, 3	1	1
MEC8024	Compulsory	1, 3	1, 3		1
MEC8026	Compulsory	1, 3	1, 3		1
MEC8099	Core	2, 3	1, 3, 4	1, 2	1, 2
Mechanical and Low Carbon Transport Engineering					
CME8055	Compulsory	2 3	1 4	2	1
MEC8024	Compulsory	1, 3	1, 3		1
MEC8028	Compulsory	1, 3	1, 4	1, 2	1, 2
MEC8029	Compulsory	1	2	1	1
MEC8099	Core	2, 3	1, 3, 4	1, 2	1, 2
Mechanical Design and Manufacturing Engineering					
CME8056	Compulsory	1, 3	1, 3	1	1
MEC8025	Compulsory	1, 3	1	1	1
MEC8028	Compulsory	1, 3	1, 4	1, 2	1, 2
MEC8029	Compulsory	1	2	1	1
MEC8099	Core	2, 3	1, 3, 4	1, 2	1, 2

Mechanical Engineering with Mechatronics					
EEE8005	Compulsory	2, 3	2, 3		1
EEE8006	Compulsory	2, 3	2, 3		1
EEE8028	Compulsory	2	2, 3		1
MEC8026	Compulsory	1, 3	1, 3		1
MEC8029	Compulsory	1	2	1	1
MEC8099	Core	2, 3	1, 3, 4	1, 2	1, 2
Mechanical Engineering with Microsystems					
CME8034	Compulsory	2, 3,	2		1
CME8101	Compulsory	2, 3	2		1
EEE8019	Compulsory	2	2		1
MEC8023	Compulsory	2, 3	1, 3		1
MEC8027	Compulsory	2, 3	2, 3	1	1
MEC8099	Core	2, 3	1, 3, 4	1, 2	1, 2
Mechanical Engineering with Bioengineering					
CME8056	Compulsory	1, 3	1, 3	1	1
MEC8023	Compulsory	2, 3	1, 3		1
MEC8027	Compulsory	2, 3	2, 3	1	1
MEC8028	Compulsory	1, 3	1, 4	1, 2	1, 2
MEC8099	Core	2, 3	1, 3, 4	1, 2	1, 2