PROGRAMME SPECIFICATION	

1	**Awarding Institution**	Newcastle University
2	**Teaching Institution**	Newcastle University
3	**Final Award**	M.Eng.
4	**Programme Title**	Electrical and Electronic Engineering with Industrial Project Microelectronic Engineering with Industrial Project Digital Electronics with Industrial Project Electrical Power Engineering with Industrial Project Automation and Control with Industrial Project Electronic Communications with Industrial Project
5	**UCAS/Programme Code**	H605, H612, H991, H622, H661, H621
6	**Programme Accreditation**	IET
7	**QAA Subject Benchmark(s)**	Engineering
8	**FHEQ Level**	7
9	**Last updated**	18 August 2014

10 Programme Aims

- to provide opportunities for students to undertake a broad-based education in electrical and electronic engineering and to acquire appropriate knowledge and understanding, of engineering skills and key skills,
- to produce graduates who will be equipped to enter employment in industry, the professions or public service, or to follow a postgraduate route into research, industry or academia, or apply the skills learnt in a range of areas other than engineering,
- to allow for the development of increased knowledge in areas of specialisation,
- to give extended experience of group activities,
- to give experience of working in an industrial environment in accord with the university's policy and procedures for the assurance of the quality and standards of placement learning,
- to produce graduates who will meet the accreditation requirements of the Institution of Engineering and Technology.
- to provide a qualification which meets the designated learning outcomes at level 7 of the National Qualifications Framework and meets the requirements of the National Subject Benchmarks in Engineering.
- Provide, in the later stages, specialisation in an area of engineering to enhance their professional capability in their chosen field, as demonstrated by a coherent group of specialist taught modules and a major individual project in the specified area:
  - Electrical and Electronic Engineering: in contrast to the other named specialist streams below, the later stages of this degree maintain the breadth of the earlier stages, 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.
  - Microelectronic Engineering: the later stages of this degree focus on meeting the requirements of the semiconductor industry.
  - Digital Electronics: the later stages of this degree focus on meeting the requirements of the computer hardware and digital systems design industry.

- Electrical Power Engineering: the later stages of this degree focus on meeting the requirements of the electrical power generation and distribution industry, including renewables.
- Automation and Control: the later stages of this degree focus on meeting the requirements of industries using electrical automation and control.
- Electronic Communications: the later stages of this degree focus on meeting the requirements of the telecommunications industry.

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 (US, EA, D, P, S prefixes) have references to the UK-SPEC learning outcomes which are referenced in the QAA benchmark statements for Engineering. These are interpreted in the subject-specific form defined by the IET. The generic skills (T prefix) have references to the UK-SPEC general learning outcomes and QCA key skills at levels 4 and 5.

	Underpinning Science And Mathematics
US1	Knowledge and understanding of scientific principles and methodology necessary to underpin their education in their engineering discipline, to enable appreciation of its scientific and engineering context, and to support their understanding of historical, current, and future developments and technologies
US1m	A comprehensive understanding of the scientific principles of own specialisation and related disciplines;
US2	Knowledge and understanding of mathematical principles necessary to underpin their education in their engineering discipline and to enable them to apply mathematical methods, tools and notations proficiently in the analysis and solution of engineering problems.
US2m	An awareness of developing technologies related to own specialisation
US3	Ability to apply and integrate knowledge and understanding of other engineering disciplines to support study of their own engineering discipline
US3m	A comprehensive knowledge and understanding of mathematical and computer models relevant to the engineering discipline, and an appreciation of their limitations.
US4m	An understanding of concepts from a range of areas including some outside engineering, and the ability to apply them effectively in engineering projects
	Teaching and Learning Methods
US	The primary means of imparting knowledge and understanding of fundamental mathematics, science and engineering principles (US1-US4m) is lectures. These are supplemented by example classes and (in stage 1) by small group tutorials which enable students to check their learning. Practical lab work reinforces learning (US1,US2).. Throughout the course students are encouraged to supplement taught material by independent reading, for which they are given extensive support and guidance on reading materials and how to use them.
	Awareness of new developments (US2m) is acquired through examples in lectures and project work in the latter stages. Knowledge of other engineering disciplines (US3) is acquired through Engineering Mathematics which includes examples from a range of disciplines and through mechanical engineering and physics concepts covered in topics such as electrical machines and semiconductor devices. Mathematical and computer modelling skills (US3m) are acquired through lectures and practical programming exercises in Matlab and C and through CAD tools in project work. Concepts in areas outside engineering (US4m) are learned through lectures in accountancy and law and through project work .

	Assessment Strategy
	Testing the knowledge base is through a combination of unseen written examinations and assessed coursework (US1-US4m) in the form of laboratory reports, coursework reports, project reports and presentations.
Engineering Analysis	
EA1	Understanding of engineering principles and the ability to apply them to analyse key engineering processes.
EA1m	An ability to use fundamental knowledge to investigate new and emerging technologies.
EA2	Ability to identify, classify and describe the performance of systems and components through the use of analytical methods and modelling techniques.
EA2m	Ability to apply mathematical and computer-based models for solving problems in engineering, and the ability to assess the limitations of particular cases.
EA3	Ability to apply quantitative methods and computer software relevant to their engineering discipline, in order to solve engineering problems.
EA3m	Ability to extract data pertinent to an unfamiliar problem, and apply in its solution using computer based engineering tools when appropriate.
EA4	Understanding of and ability to apply a systems approach to engineering problems.
	Teaching and Learning Methods
EA	Analytical skills (EA1, EA3) are developed through worked examples in lectures and small group teaching (at stage 1), and solving tutorial problems. Mathematical and computer modelling (EA3, EA2, EA2m,EA3m) is used in project work to solve engineering problems. Student are encouraged to learn a systems approach (EA4) by applying principles taught in lectures to their project work. Knowledge of emerging technologies is imparted through lectures and students carry out investigations into aspects of these during literature studies and project work.
	Assessment Strategy
	Analysis and problem solving skills (EA1-EA4) are assessed through written examinations and coursework and through project work, which appears throughout the course.
Design	
D1	Investigate and define a problem and identify constraints including environmental and sustainability limitations, health and safety and risk assessment issues;
D1m	Wide knowledge and comprehensive understanding of design processes and methodologies and the ability to apply and adapt them in unfamiliar situations
D2	Understand customer and user needs and the importance of considerations such as aesthetics;
D2m	Ability to generate an innovative design for products, systems, components or processes to fulfil new needs
D3	Identify and manage cost drivers
D4	Use creativity to establish innovative solution;
D5	Ensure fitness for purpose for all aspects of the problem including production, operation, maintenance and disposal;
D6	Manage the design process and evaluate outcomes.
	Teaching and Learning Methods
D	Design skills (D1,D2,D3,D5,D6,D1m) are learned from lectures and practised in project work and paper design exercises. Students are supported in developing creativity (D4,D2m) during project work.

	Assessment Strategy
	Design skills (D1,D2,D3,D5,D6,D1m) are assessed through laboratory project reports, assignments and dissertations, presentations and written examinations.
	Creative skills (D4,D2m) are mainly assessed through coursework and project work reports and presentations
Economic, Social, And Environmental Context	
S1	Knowledge and understanding of commercial and economic context of engineering processes;
S1m	Extensive knowledge and understanding of management and business practices, and their limitations, and how these may be applied appropriately
S2	Knowledge of management techniques, which may be used to achieve engineering objectives within that context;
S2m	The ability to make general evaluations of commercial risks through some understanding of the basis of such risks
S3	Understanding of the requirement for engineering activities to promote sustainable development;
S4	Awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues;
S5	Understanding of the need for a high level of professional and ethical conduct in engineering.
	Teaching and Learning Methods
S	Knowledge of management techniques and practices (S2,S1m,S2m) is imparted through lectures and practised through business exercises and project work. An understanding of ethical issues (S5) is imparted by lectures and developed through group discussions. Knowledge of social, legal, environmental and economic implications of engineering activities (S1,S3,S4) is imparted through lectures on engineering topics and on accountancy, finance and law and business management. Students are encouraged to develop further awareness in project work, particularly the group projects and industrial project.
	Assessment Strategy
	Knowledge of management techniques and practices (S2,S1m,S2m) is assessed by written examinations, group project reports and business exercise reports. Understanding of ethical issues (S5) is not assessed directly. Knowledge of social, legal, environmental and economic implications of engineering activities (S1,S3,S4) is assessed by examinations, project reports and business exercise reports.
Engineering Practice	
P1	Knowledge of characteristics of particular materials, equipment, processes, or products.
P1m	A thorough understanding of current practice and its limitations, and some appreciation of likely new developments;
P2	Workshop and laboratory skills.
P2m	Extensive knowledge and understanding of a wide range of engineering materials and components.
P3	Understanding of contexts in which engineering knowledge can be applied (e.g. operations and management, technology development, etc).
P3m	Ability to apply engineering techniques taking account of a range of commercial and industrial constraints.
P4	Understanding use of technical literature and other information sources.
P5	Awareness of nature of intellectual property and contractual issues.
P6	Understanding of appropriate codes of practice and industry standards
P7	Awareness of quality issues.
P8	Ability to work with technical uncertainty

	Teaching and Learning Methods
P	Experimental skills (P2) are developed by carrying out laboratory experiments and constructing practical projects. Knowledge of materials, products and processes (P1,P2m) is imparted through lectures and through open-ended project work. Students are encouraged to 'learn by doing'. An understanding of the industrial and commercial application of engineering practice and some practical limitations (P1m, P3,P3m,P5,P6,P7,P8) is achieved through open-ended project work including an industrial project. Students also learn how to use information sources such as technical literature (P4) during these projects. An awareness of intellectual property and contractual issues is also imparted through lectures in business management, accountancy and law.
	Assessment Strategy
	Assessment of practical skills (P1, P2, P2m) is through observed laboratory work, laboratory and project report writing and assessed presentations and demonstrations. Skill P4 is assessed directly by literature study report and by integration into project and laboratory reports. Understanding of industrial and commercial practice (P1m, P3,P3m,P5,P6,P7,P8) is assessed through industrial project presentation and report and through extended coursework.
General Transferable Skills	
T1	Plan, conduct and report a programme of investigative work.
T1m	Develop, monitor and update a plan or programme of work, to reflect a changing operating environment;
T2	Communicate effectively in writing, verbally and diagramatically (E, C).
T3	Give oral presentations using a variety of visual aids (E).
T4	Apply mathematical skills (E).
T5	Work as a member of a team (E, C).
T5m	Understand different roles within a team, and be able to exercise leadership;
T6	Use information and communications technology (E, C).
T7	Learn independently in familiar and unfamiliar situations with open-mindedness and in the spirit of critical enquiry (E).
T7m	Learn new theories, concepts, methods etc in unfamiliar situations.
	Teaching and Learning Methods
T	Project planning skills (T1,T1m) are developed through business exercises and practical project work. Knowledge of Communication and presentation skills (T2,T3) is imparted through communications skills lectures and practised through report writing, and giving oral presentations. Mathematical skills (T4) are developed throughout the course in lectures, problem solving exercises and analysis of practical experimental work.
	Team working skills (T5, T5m) are developed through group project work.
	IT and communication technology skills (T6) are developed through the use of computer aided design and office software tools to produce coursework submissions.
	Throughout the course the learner is encouraged to undertake independent reading both to supplement and consolidate what is being taught / learnt and to broaden their individual knowledge and understanding of the subject (T7, T7m).
	Assessment Strategy
	Skills T1, T6 and T1m are assessed through coursework, laboratory and project reports.
	Skill T3 is assessed through presentations.
	Skills T2 and T4 are assessed by examinations and coursework throughout the course.
	Skill T5 and T5m are assessed by group project coursework in Stages 2 and 4

	Skill T7, T7m is assessed as part of specialist modules and through integration in other activities.
	T6 is assessed .

12 Programme Curriculum, Structure and Features

Basic structure of the programme

Stages 1 and 2 are broadly-based and common to all BEng and MEng Honours streams with all modules compulsory.

Stage 1 aims to provide all students with a firm foundation on which to build their future studies. A substantial mathematical base is provided through ENG1001, this is enhanced by mathematical techniques and practice introduced in other modules. Knowledge and understanding of fundamental engineering principles is provided through the technical modules, which also serve to broaden and enhance intellectual abilities. Practical work in the laboratory emphasises a project based approach, this, together with computing classes, develops a range of practical and transferable skills.

Stage 2 builds on the work of Stage 1, continuing the development of an understanding of mathematical methods at the point of application. Knowledge and understanding is increased through all modules. Project work again forms a major part of the practical work of the stage. In Stage 2 all students take part in a group project (EEE2008) which develops and exercises practical and teamwork skills as well as enhancing intellectual abilities. Work on Project Management provides an understanding of the requirements of the management of engineering programmes. This work is practised and assessed as part of the group project.

Stage 3 continues to enhance and expand the student's knowledge, understanding and intellectual abilities. However, it is distinct from Stages 1 and 2, where almost all modules are compulsory, as the student will now specialise in particular aspects of electrical and electronic engineering and additionally study a small number of options selected freely from a wider range of topics, though some appropriate modules are recommended. (except for the Electrical and Electronic stream which remains broad-based and most taught modules are optional).

- Microelectronic Engineering students take compulsory modules in analogue and digital systems, electronic devices and power electronics.
- Digital Electronics Engineering students take compulsory modules in design and test of digital systems, real time and embedded systems, IC design and electronic communications.
- Electrical Power Engineering Engineering students take compulsory modules in machines and drives, renewable energy and control systems.
- Automation and Control Engineering students take compulsory modules in control systems, robotics and electric drives.
- Electronic Communications Engineering students take compulsory modules in communications and signal processing, RF and analogue design.

All students take a module covering commercial and legal aspects of engineering to further their understanding of commercial engineering practice. A major part of Stage 3 is the individual student project, which is a significant part of the training of a professional engineer. This project enables the development of intellectual ability and practical and transferable skills as well as providing a mechanism for their assessment.

Stage 4 of the course is structured so that students spend the first semester working in an industrial environment (these activities can extend back into the preceding summer vacation period). Students take further technical and non-technical modules in Stage 4. A major activity for these MEng students is a group project. Project activities relate to real engineering problems, the group is run as a small business venture with a defined product specification to be fulfilled within a budget.

Students study compulsory advanced topics according to specialism, except Electrical and Electronic Engineering students who choose advanced options from the specialist streams.

- Automation and Control students study distributed and adaptive control
- Digital Electronics students study digital CAD software and mobile communications
- Electrical Power Engineering students study machine design and distributed control
- Electronic Communications students study modulation, coding and mobile communications
- Microelectronic Engineering students study digital CAD software and semiconductor fabrication.

Key features of the programme

The normal Undergraduate year is arranged in three terms and is divided into two Semesters. Semester 1 is twelve weeks, preceded by an induction week and followed by a period of examination for those topics completed in Semester 1. Semester 2 is also twelve weeks long and is followed by a second examination period

The course normally lasts four years, although it is possible to take a gap year.

Every Honours student studies 120 credits in each Stage (or year), resulting in MEng candidates completing 480 credits by the end of their course. Candidates must successfully complete all parts of a stage before progressing to the next. Courses are pursued through full-time study; the only part-time study is limited provision for the repetition of failed modules.

All students follow the same programmes in Stages 1 and 2. In the third and fourth years students follow a specialisation. The MEng and BEng versions of the programme are common up to the end of Stage 2 and it is possible for students to transfer between courses (subject to conditions) up to this point.

There is a Foundation Year for candidates not adequately qualified to embark on Stage 1 of Degree Programmes.

Programme regulations (link to on-line version)

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

13 Criteria for admission

Admission offers normally meet the minimum standard of three UK GCE A-levels at grades AAB for Stage 1 admission. In addition, the University recruits candidates with a wide range of equivalent qualifications based on its knowledge of equivalents and other international qualifications. A limited number of international qualifications and HND holders with appropriate subjects and grades may be considered for direct entry to Stage 2. Exceptionally, suitably qualified candidates may be taken into Stage 3 of the 4-year MEng programme.

Engineering requires a wide range of attributes and abilities, so selection is not solely based on academic grades. Selectors seek evidence of motivation and commitment from the Personal Statement and Reference on UCAS forms.

The School is committed to widening access, particularly for “late developers”. There is a Faculty Foundation Year (Stage 0) for those with insufficient science and mathematics to enter Stage 1 directly. In addition the school accepts students from the INTO Foundation Year who have successfully completed the Maths and Physics streams. Limited numbers of places may be available to Regional candidates through the University’s “Partners Programme”. All UCAS forms, including Late or Summer applications are considered, as well as candidates through Clearing.

MEng candidates are required to reach a minimum standard specified in the regulations to enter Stage 3 of the MEng degree. Those who fail to satisfy this requirement are transferred to Stage 3 of the BEng degree. This is made possible by the common material taught in the first two years of the BEng and MEng degree programmes.

Applicants whose first language is not English require an IELTS score of 6.0 (or equivalent)

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
These programmes are accredited by the Institution of Engineering and Technology.

Additional mechanisms

16 Regulation of assessment

Pass mark
The pass mark is 40%

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 20 credits and down to a mark of 35% is possible at each Stage and there are re-assessment opportunities, with certain restrictions.

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 for Stages 2, 3 and 4 is 1:3:3

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

	Modules used for degree classification (DC)	**Modules not used for degree classification**
<40	Fail	Failing
40-49	Third Class	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
An External Examiner, a distinguished member of the subject community, is appointed by the University 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/undergraduate/

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

Type	Stage	Module	D	EA	P	S	T	US
Compulsory	1	EEE1001		EA1, EA1m, EA3	P2		T1, T2, T4	US1, US1m, US2, US2m, US3, US3m, US4m
Compulsory	1	EEE1002	D1, D2, D3, D4, D6	EA1, EA2, EA3, EA4	P1, P2, P4, P5, P6, P8	S1, S4, S5	T1, T2, T4	US1, US2, US3, US4m
Compulsory	1	EEE1003		EA1, EA2, EA3, EA4	P2		T1, T2, T4	US1, US2, US3,
Compulsory	1	EEE1005		EA1, EA1m, EA2, EA3, EA4	P2		T1, T2, T4, T6	US1, US1m, US2, US2m, US3, US3m,
Compulsory	1	EEE1008	D4, D6	EA1, EA2, EA2m, EA3, EA4	P1m, P4		T6	US2m, US3m,
Compulsory	1	EEE1009	D2m, D3, D4, D5, D6	EA1, EA1m, EA2, EA2m, EA3, EA3m, EA4	P1, P2, P2m, P4, P6, P7, P8		T1, T1m, T2, T3, T4, T7	US1, US1m, US2, US2m, US3, US3m, US4m
Compulsory	1	ENG1001		EA2			T4	US2, US3,
Compulsory	2	EEE2007	D6	EA1, EA3, EA3m, EA4	P2, P4	S2m	T1, T2, T6	US1, US2m, US3,
Compulsory	2	EEE2008	D1, D2, D3, D4, D5, D6	EA1, EA3, EA4	P1, P2, P3m, P8	S1, S1m, S2, S2m, S3, S4, S5	T1, T2, T3, T5, T7	US3, US4m

Compulsory	2	EEE2009		EA1, EA1m, EA2, EA2m, EA3, EA4	P1, P2		T1, T2, T4	US1, US1m, US2, US2m, US3,
Compulsory	2	EEE2012	D1	EA1, EA1m, EA2, EA4	P1, P2, P3m	S1	T1, T2, T4	US1, US1m, US2, US2m, US3, US3m,
Compulsory	2	EEE2013		EA1, EA1m, EA2, EA2m, EA3	P1, P2, P2m, P3m, P8		T1, T2	US1, US2m,
Compulsory	2	EEE2014		EA1, EA1m, EA2, EA3	P1, P2, P5	S1, S5	T1, T2, T4	US1, US1m, US2, US2m, US3,
Compulsory	2	EEE2015		EA1, EA2, EA3	P1, P2, P4		T1, T2, T4	US1, US2, US3,
optional	3	optional modules						US1
optional	4	optional modules						US1

Microelectronic Engineering with Industrial Project								
compulsory	3	EEE3003	D1, D3	EA2, EA4	P1, P1m, P2m, P4			US1, US2, US3,
compulsory	3	EEE3005	D1, D2, D2m, D3, D5, D6	EA1, EA1m, EA2, EA2m, EA3, EA3m, EA4	P1, P1m			US1, US2, US3,
compulsory	3	EEE3007	D3, D4, D5, D6	EA1, EA1m, EA2, EA4	P1m, P7	S1		US1, US1m, US2, US2m,

								US3, US3m,
compulsory	3	EEE3020	D2m, D6	EA1m	P1, P1m	S1	T4	US1, US2, US2m, US3,
compulsory	3	EEE8108	D2m, D3, D4, D6	EA1, EA2, EA3, EA4	P1, P2, P3, P4, P8	S2, S3	T1, T1m, T2, T3, T7, T7m	US1, US2m, US3m,
compulsory	3	EEE8111	D1m	EA1m	P1m, P4		T1, T1m	US2m,
compulsory	3	ENG2001			P3, P5, P7	S1, S2, S2m, S4		US4m
compulsory	4	EEE8100	D1m, D4, D6	EA1, EA2, EA2m, EA3, EA4	P1, P1m, P2, P2m, P8			US1, US1m, US2, US2m, US3m,
compulsory	4	EEE8103	D2, D2m, D3, D6	EA1, EA1m	P1, P1m, P6, P7, P8	S1		US1, US1m, US2, US2m, US3, US3m,
compulsory	4	EEE8106	D4, D6	EA1, EA2, EA3, EA3m	P1, P2, P3, P8			US1m, US2m, US3m,
compulsory	4	EEE8113	D3, D4	EA1, EA2, EA3m	P2, P4, P8	S1m, S2	T1, T1m, T2, T3, T5, T5m, T7, T7m	US2m, US3m, US4m
compulsory	4	EEE8114	D2, D3, D4, D6	EA1, EA2, EA2m, EA3	P1, P2, P3, P3m, P8	S1, S2	T1, T1m, T2, T7, T7m	US1, US2m, US3m,
Electrical Power Engineering with Industrial Project								
compulsory	3	EEE3001	D1m, D2m	EA1, EA2, EA2m, EA3	P4			US1, US2, US2m, US3m,
compulsory	3	EEE3002		EA1, EA2, EA2m			T4	US1, US2, US2m, US3, US4m
compulsory	3	EEE3011	D1	EA3	P1, P1m, P2m			US1, US2, US3,

								US3m,
compulsory	3	EEE3021	D1, D3, D5	EA1, EA1m, EA2m, EA3, EA3m, EA4	P1m, P3m, P4	S1, S3, S5		US3, US4m
compulsory	3	EEE8108	D2m, D3, D4, D6	EA1, EA2, EA3, EA4	P1, P2, P3, P4, P8	S2, S3	T1, T1m, T2, T3, T7, T7m	US1, US2m, US3m,
compulsory	3	EEE8111	D1m	EA1m	P1m, P4		T1, T1m	US2m,
compulsory	3	ENG2001			P3, P5, P7	S1, S2, S2m, S4		US4m
compulsory	4	EEE8102	D1, D2, D3, D4, D6	EA1, EA1m, EA2, EA3, EA4	P1, P1m, P2m, P3m			US1, US2, US2m, US3, US3m,
compulsory	4	EEE8105	D2	EA1, EA1m	P1, P1m, P4, P6	S1, S3, S4		US1, US2, US2m,
compulsory	4	EEE8106	D4, D6	EA1, EA2, EA3, EA3m	P1, P2, P3, P8			US1m, US2m, US3m,
compulsory	4	EEE8113	D3, D4	EA1, EA2, EA3m	P2, P4, P8	S1m, S2	T1, T1m, T2, T3, T5, T5m, T7, T7m	US2m, US3m, US4m
compulsory	4	EEE8114	D2, D3, D4, D6	EA1, EA2, EA2m, EA3	P1, P2, P3, P3m, P8	S1, S2	T1, T1m, T2, T7, T7m	US1, US2m, US3m,
Electrical and Electronic Engineering with Industrial Project								
compulsory	3	EEE8108	D2m, D3, D4, D6	EA1, EA2, EA3, EA4	P1, P2, P3, P4, P8	S2, S3	T1, T1m, T2, T3, T7, T7m	US1, US2m, US3m,
compulsory	3	EEE8111	D1m	EA1m	P1m, P4		T1, T1m	US2m,
compulsory	3	ENG2001			P3, P5, P7	S1, S2, S2m, S4		US4m
compulsory	4	EEE8106	D4, D6	EA1, EA2, EA3, EA3m	P1, P2, P3, P8			US1m, US2m, US3m,

compulsory	4	EEE8113	D3, D4	EA1, EA2, EA3m	P2, P4, P8	S1m, S2	T1, T1m, T2, T3, T5, T5m, T7, T7m	US2m, US3m, US4m
compulsory	4	EEE8114	D2, D3, D4, D6	EA1, EA2, EA2m, EA3	P1, P2, P3, P3m, P8	S1, S2	T1, T1m, T2, T7, T7m	US1, US2m, US3m,
Electronic Communications with Industrial Project								
compulsory	3	EEE3004	D1m, D2, D2m, D4, D6	EA1, EA1m, EA2, EA2m, EA3, EA3m, EA4	P1, P1m, P2, P3, P3m, P4, P7, P8		T4	US1, US1m, US2, US2m, US3, US3m, US4m
compulsory	3	EEE3005	D1, D2, D2m, D3, D5, D6	EA1, EA1m, EA2, EA2m, EA3, EA3m, EA4	P1, P1m			US1, US2, US3,
compulsory	3	EEE3006	D4	EA1, EA2, EA3	P1, P3, P4, P6, P7		T4	US1, US2, US3,
compulsory	3	EEE3015	D1, D1m, D2	EA1, EA2, EA4	P1, P4, P6, P7, P8	S1		US1, US2, US3,
compulsory	3	EEE8108	D2m, D3, D4, D6	EA1, EA2, EA3, EA4	P1, P2, P3, P4, P8	S2, S3	T1, T1m, T2, T3, T7, T7m	US1, US2m, US3m,
compulsory	3	EEE8111	D1m	EA1m	P1m, P4		T1, T1m	US2m,
compulsory	3	ENG2001			P3, P5, P7	S1, S2, S2m, S4		US4m
compulsory	4	EEE8101	D1, D1m, D2, D2m, D4	EA1, EA1m, EA2, EA2m, EA3, EA3m, EA4	P1, P1m, P2m, P3, P3m, P4, P7	S1, S1m, S2, S2m, S3		US1, US1m, US2, US2m, US3, US3m, US4m
compulsory	4	EEE8104	D1, D1m, D2,	EA1, EA1m,	P3, P3m, P5,	S1, S1m, S3, S4		US1, US1m,

			D2m, D3, D5, D6	EA2, EA4	P6, P7			US2, US2m, US3, US3m, US4m
compulsory	4	EEE8106	D4, D6	EA1, EA2, EA3, EA3m	P1, P2, P3, P8			US1m, US2m, US3m,
compulsory	4	EEE8113	D3, D4	EA1, EA2, EA3m	P2, P4, P8	S1m, S2	T1, T1m, T2, T3, T5, T5m, T7, T7m	US2m, US3m, US4m
compulsory	4	EEE8114	D2, D3, D4, D6	EA1, EA2, EA2m, EA3	P1, P2, P3, P3m, P8	S1, S2	T1, T1m, T2, T7, T7m	US1, US2m, US3m,
Digital Electronics with Industrial Project								
compulsory	3	EEE3007	D3, D4, D5, D6	EA1, EA1m, EA2, EA4	P1m, P7	S1		US1, US1m, US2, US2m, US3, US3m,
compulsory	3	EEE3009	D1, D1m, D3, D6	EA1, EA1m, EA2, EA2m, EA4	P1, P1m, P2, P8			US1, US1m, US2, US2m, US3m, US4m
compulsory	3	EEE3012	D1m, D2m, D3, D4, D5, D6	EA1, EA1m, EA2, EA4	P1, P1m, P7	S1, S1m		US1, US1m, US2, US2m, US3, US3m, US4m
compulsory	3	EEE3015	D1, D1m, D2	EA1, EA2, EA4	P1, P4, P6, P7, P8	S1		US1, US2, US3,
compulsory	3	EEE8108	D2m, D3, D4, D6	EA1, EA2, EA3, EA4	P1, P2, P3, P4, P8	S2, S3	T1, T1m, T2, T3, T7, T7m	US1, US2m, US3m,
compulsory	3	EEE8111	D1m	EA1m	P1m, P4		T1, T1m	US2m,
compulsory	3	ENG2001			P3, P5, P7	S1, S2, S2m, S4		US4m

compulsory	4	EEE8100	D1m, D4, D6	EA1, EA2, EA2m, EA3, EA4	P1, P1m, P2, P2m, P8			US1, US1m, US2, US2m, US3m,
compulsory	4	EEE8101	D1, D1m, D2, D2m, D4	EA1, EA1m, EA2, EA2m, EA3, EA3m, EA4	P1, P1m, P2m, P3, P3m, P4, P7	S1, S1m, S2, S2m, S3		US1, US1m, US2, US2m, US3, US3m, US4m
compulsory	4	EEE8106	D4, D6	EA1, EA2, EA3, EA3m	P1, P2, P3, P8			US1m, US2m, US3m,
compulsory	4	EEE8113	D3, D4	EA1, EA2, EA3m	P2, P4, P8	S1m, S2	T1, T1m, T2, T3, T5, T5m, T7, T7m	US2m, US3m, US4m
compulsory	4	EEE8114	D2, D3, D4, D6	EA1, EA2, EA2m, EA3	P1, P2, P3, P3m, P8	S1, S2	T1, T1m, T2, T7, T7m	US1, US2m, US3m,
Automation and Control with Industrial Project								
compulsory	3	EEE3001	D1m, D2m	EA1, EA2, EA2m, EA3	P4			US1, US2, US2m, US3m,
compulsory	3	EEE3008		EA1, EA2, EA2m	P3m, P4	S1m, S3		US1, US2, US2m, US3m,
compulsory	3	EEE3011	D1	EA3	P1, P1m, P2m			US1, US2, US3, US3m,
compulsory	3	EEE3018	D1, D1m	EA2, EA2m	P1m	S1, S2m	T4	US1, US2, US2m, US3m,
compulsory	3	EEE8108	D2m, D3, D4, D6	EA1, EA2, EA3, EA4	P1, P2, P3, P4, P8	S2, S3	T1, T1m, T2, T3, T7, T7m	US1, US2m, US3m,
compulsory	3	EEE8111	D1m	EA1m	P1m, P4		T1, T1m	US2m,
compulsory	3	ENG2001			P3, P5, P7	S1, S2, S2m, S4		US4m

compulsory	4	EEE8105	D2	EA1, EA1m	P1, P1m, P4, P6	S1, S3, S4		US1, US2, US2m,
compulsory	4	EEE8106	D4, D6	EA1, EA2, EA3, EA3m	P1, P2, P3, P8			US1m, US2m, US3m,
compulsory	4	EEE8113	D3, D4	EA1, EA2, EA3m	P2, P4, P8	S1m, S2	T1, T1m, T2, T3, T5, T5m, T7, T7m	US2m, US3m, US4m
compulsory	4	EEE8114	D2, D3, D4, D6	EA1, EA2, EA2m, EA3	P1, P2, P3, P3m, P8	S1, S2	T1, T1m, T2, T7, T7m	US1, US2m, US3m,
compulsory	4	EEE8115	D2	EA1, EA1m	P1, P1m, P4, P6	S1, S3, S4		US1, US2, US2m,