**Course Specification: Birmingham Metropolitan College**

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| **Course Summary Information** | | |
| **1** | **Course Title** | Foundation Degree in Electronic Engineering |
| **2** | **Course Code** |  |
| **3** | **Awarding Institution** | Birmingham City University |
| **4** | **Teaching Institution(s)**  (if different from point 3) | Birmingham Metropolitan College |
| **5** | **Professional Statutory or Regulatory Body (PSRB) accreditation** (if applicable) | Not applicable |

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| **6** | **Course Description** |
|  | The FdEng, Foundation Degree in Electronic Engineering will provide you with a good solid grounding in the theory and skills required to support a range of job roles in the electronics, communications engineering and related industries. Aimed at Senior Technician/Junior Engineer level, if you are currently employed in the industry, the course will increase your skills and knowledge to become a more effective practitioner and enhance your promotion prospects and open up more opportunities. If you are looking for employment in this field, then this course will provide you with the relevant technical knowledge, understanding of the industry and opportunities available and the skills required to be of interest to a range of employers.  The course seeks to strike a balance between the technological, practical aspects and the work-based learning applications necessary for a successful career, while considering the demands of employers and professional bodies for this discipline-specific course.    This course has been developed by a professional team with relevant industrial and foundation degree development and delivery experience covering many years, in consultation with several high profile employers, including a major UK National communications/broadcast infrastructure provider and a major European Vehicle Manufacturer. Guidance from appropriate professional bodies has also informed the content.    You will study at level 4 and 5, totalling 240 credits, which is equivalent to Stage 1 and 2 of a university honours degree. Upon successful completion of your foundation degree you will be able to progress onto stage 3 of an appropriate honours degree in engineering at Birmingham City University, subject to your final foundation degree classification.  The course is delivered at the university and approved partners which have run similar courses for number of years and has an excellent relationship with a wide range of major local, national and international companies, who each year send their trainees / apprentices to study a variety of foundation degree courses in engineering disciplines.  It is expected that the vast majority of students will be employed in the industry, however applications are also welcome from those are seeking employment in the field. Those not employed will be provided with appropriate work experience.  The course aims and learning outcomes fully reflect the educational requirements of UK-SPEC (UK Standard for Professional Engineering Competence) as outlined in AHEP3 – Accreditation of Higher Education Courses, Third edition, which means you’ll be equipped with the academic, practical and professional skills that employers are keen to find.  Students can opt to study one of two pathways leading to either a Foundation Degree in Electronic Engineering – Instrumentation and Control or Foundation Degree in Electronic Engineering – Communications.  The course covers a wide variety of core subjects in electronic engineering, including analogue and digital electronics, electrical and electronic principles, programming microcontrollers, and developing embedded systems. You will also apply mathematics and practical skills to predict performance, evaluate electronic systems and study data communication and computer networks. Emphasis is placed both on theory, design and evaluation by modelling/computer simulation or practical test. Supplementary to this is the study of business, management, corporate responsibility, research techniques, awareness of the industry and career planning.  Those following the Instrumentation and Control pathway will also study modules in programmable logic controllers (PLCs) and instrumentation and control. Here students will develop PLC programs, interfacing, fault finding techniques and analyse, test, and predict the performance of control systems. These are skills which find widespread application in a range of industries.  Those following the Communications Pathway will study modules in radio frequency and digital communication principles. These subjects include analysing transmission of analogue and digital signals over a range of transmission media and systems including optical fibres, modulation techniques, antennas, encoding of data in digital systems, and dealing with noise and errors to ensure quality of received signals are maintained with efficient use of network resources. This knowledge and that studied in data communication and networks underpins modern communications systems and has application in a wide range of industries, including broadcast, transport (Rail and Air) and automation.  In the final year of study, students on both pathways will have the opportunity to undertake a Level 5 Personal Project, linked to their employer, drawing upon technical, business and management knowledge gained from the course and the workplace. Work-based learning (WBL) is an important theme and through the project and several other modules, students will carry out research and apply knowledge and skills directly in the workplace. Students who are not employed in the industry will be provided with appropriate work experience to enable them meet the WBL requirements.  To ensure you are well prepared for the workplace you will also carry out a career development plan and research professional opportunities in the industry. |

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| **7** | **Course Awards** | | |
| **7a** | **Name of Final Award** | **Level** | **Credits Awarded** |
|  | Foundation Degree in Electronic Engineering | Level 5 | 240 |
| **7b** | **Exit Awards and Credits Awarded** | | |
|  | Certificate of Higher Education in Electronic Engineering  Foundation Degree in Electronic Engineering- Instrumentation and Control  Foundation Degree in Electronic Engineering- Communications | Level 4  Level 5  Level 5 | 120  240  240 |

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| **8** | **Derogation from the University Regulations** |
|  | Not applicable |

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| **9** | **Delivery Patterns** | | | |
| **Mode(s) of Study** | | **Location(s) of Study** | **Duration of Study** | **Code(s)** |
| Part-Time (Day)\* | | James Watt College | 2 Years |  |
| Part-Time (Block)\*\* | | James Watt College | 3 Years |  |

\* Students will complete 120 credits per year, requiring attendance at college on one day per week over

two academic years. Students are required to undertake research and complete

coursework outside of college attendance. This mode of attendance is available on both

Instrumentation and Control, and Communications Pathways.

\*\* Students will Study 240 credits over three years, studying 120 Credits in Year 1,

100 credits in Year 2 and 20 Credits in Year 3 (Project Foundation Degree). This mode of attendance

is available on the Communications Pathway by arrangement with the employer.

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| **10** | **Entry Requirements** | | |
|  | **Home:** | | Candidates should have ONE of the following:   * A relevant level 3 qualification in Engineering, Science or IT such as a BTEC Level 3 Diploma or Extended Diploma with grades at MP or MPP or above * At least one A level in Mathematics or Physics * A pass on an Access to Higher Education course recognised by the College   GCSE English Language (grade 4) or equivalent is required.  International candidates for which English is not a first language should have an IELTS score of 6.0 or higher in addition to the above entry requirements.  Equivalent qualifications to the above are acceptable and  industrial experience will be taken into account. Successful  application is subject to an entry Interview.  A DBS Certificate is not required to join the course. |
|  | **EU:** | | IELTS Score of 6.0 |
|  | **International:** | | IELTS Score of 6.0 |
|  | **Access:** | | A Pass on an Access to HE Course in Engineering or Science |
| **11** | | **Course Learning Outcomes** | | |
|  | | **Knowledge and understanding** | | |
| **KU1** | | Explain the operation and requirements of a wide range of electronic and  communication systems and their subsystems. | | |
| **KU2** | | Understand fundamental concepts, theories and technologies that underpin  electronic and communications engineering; | | |
| **KU3** | | Use technologies for analysis, modelling, design, implementation and testing  of analogue electronics, digital electronics and embedded systems. | | |
| **KU4** | | Apply organisational, teamwork and management approaches required by professional engineers; | | |
| **KU5** | | Use commercial, ethical, regulatory and environmental factors that influence  engineering solutions; | | |
| **Skills and other Attributes**  **Intellectual Skills** | | | | |
| **IS1** | | Analyse and evaluate information from a variety of sources and in various  formats used in electronic and communications engineering; | | |
| **IS2** | | Specify requirements and devise and implement designs and solutions for  electronic and communications systems. | | |
| **IS3** | | Apply professional judgement to engineering decisions. | | |
| **IS4** | | Evaluate electronic engineering techniques and products and make reasoned  choices and recommendations. | | |
| **Practical Skills** | | | | |
| **PS1** | | Use laboratory and workshop equipment safely and record data competently; | | |
| **PS2** | | Apply tools and techniques for the design, implementation, testing and  maintenance of electronic systems; | | |
| **PS3** | | Use computer based systems and software for designing and modelling  electronic systems; | | |
| **PS4** | | Apply appropriate research techniques using a variety of sources and compile  findings; | | |
| **PS5** | | Manage an engineering project. | | |
| **Transferrable Skills** | | | | |
| **TS1** | | Monitor, record, present, analyse and interpret data; | | |
| **TS2** | | Communicate effectively using written, oral and ICT based media; | | |
| **TS3** | | Manage time and prioritise activities; | | |
| **TS4** | | Access and make use of numerical and statistical information; | | |
| **TS5** | | Apply research skills and make effective use of information and communication technologies, including word processing, spreadsheets, the internet, email and electronic information systems; | | |
| **TS6** | | Reflect on own learning and relate and work effectively with others in a group situation | | |
| **12** | | **Course Requirements** | | |
| **12a** | | **Level 4:**  ***In order to complete this course a student must successfully complete all the following CORE modules (totalling 120 credits):***   |  |  |  | | --- | --- | --- | | **Module Code** | **Module Name** | **Credit Value** | | TBC | Electrical and Electronic Principles | 20 | | ENG4102 | Mathematics for Engineering | 20 | | ENG4103 | Management of the Business Environment (WBL) | 20 | | TBC | Analogue and Digital Electronics | 20 | | TBC | Programming for Engineering | 20 |   ***In order to complete this course a student must successfully complete ONE 20 credit module from the following indicative list of OPTIONAL modules:***   |  |  |  | | --- | --- | --- | | **Module Code** | **Module Name** | **Credit Value** | | TBC | RF Communication Principles  (Communications Pathway) | 20 | | TBC | Programmable Logic Controllers  (Instrumentation and Control Pathway) | 20 | |  |  |  | |  |  |  |   **Level 5:**  ***In order to complete this course a student must successfully complete all the following CORE modules (totalling 120 credits):***   |  |  |  | | --- | --- | --- | | **Module Code** | **Module Name** | **Credit Value** | | ENG5112 | Corporate Responsibility and Personal Development (WBL) | 20 | | TBC | Embedded Systems Development | 20 | | ENG5119 | Signals and Systems | 20 | | ENG5121 | Project Foundation Degree (WBL) | 20 | | TBC | Data Communication and Networks | 20 |   ***In order to complete this course a student must successfully complete ONE 20 credit module from the following indicative list of OPTIONAL modules:***   |  |  |  | | --- | --- | --- | | **Module Code** | **Module Name** | **Credit Value** | | TBC | Digital Communication Principles  (Communications Pathway) | 20 | | ENG5110 | Mathematics and Control  (Instrumentation and Control Pathway) | 20 | |  |  |  | |  |  |  | |  |  |  | |  |  |  | | | |
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**12b Structure Diagram**s

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Full-Time: Control and Communications Pathways (Delivered one day per week over two years)

**Level 4**

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| **Semester 1** | **Semester 2** |
| **Core:**  ENG4102 Mathematics for Engineering (20 Credits)  TBC Electrical and Electronic Principles (20 Credits)  ENG4103 Management of the Business Environment (20 Credits) | **Core:**  TBC Programming for Engineering (20 Credits)  TBC Analogue and Digital Electronics (20 Credits) |
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|  | **Optional:**  Control Pathway  TBC Programmable Logic Controllers  (20 Credits)  Communications Pathway  TBC RF Communication Principles  (20 Credits) |

**Level 5**

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| **Semester 1** | **Semester 2** |
| **Core**  ENG5112 Corporate Responsibility and Personal  Development (20 Credits)  TBC Embedded Systems Development  (20 Credits)  ENG 5121 Project Foundation Degree (20 Credits) | **Core**  ENG5119 Signals and Systems (20 Credits)  TBC Data Communication and Networks  (20 Credits) |
| **Optional:** | **Optional:**  Control Pathway  ENG5110 Mathematics and Control (20 Credits)  Communications Pathway  TBC Digital Communication Principles  (20 Credits) |

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| Structure Diagram: Instrumentation and Control, and Communication Pathways, delivered one day per week over 2 academic years | | | Semester | Level |
| Stage 1 Study | | |  |  |
| BMC4102 Mathematics for Engineering (20 Credits) | TBC Electrical and Electronic Principles (20 Credits) | BMC4103 Management of the Business Environment WBL) (20 Credits) | 1 | 4 |
| TBC Programming for Engineering  (20 Credits) | TBC Analogue and Digital Electronics  (20 Credits) | Control Pathway  TBC Programmable Logic Controllers (20 Credits)  Or:  Communications Pathway  TBC RF Communication Principles  (20 Credits) | 2 |
| Stage 2 Study | | | | |
| BMC5112 Corporate Responsibility and Personal Development  (20 Credits) | TBC Embedded Systems Development(20 Credits) | ENG5121 Project Foundation Degree (WBL)  (20 Credits) \* | 1 | 5 |
| Control Pathway  ENG5110 Mathematics and Control (20 Credits)  Or:  Communications Pathway  TBC Digital Communication Principles (20 Credits) | ENG5119 Signals and Systems (20 Credits) | TBC Data Communication and Networks (20 Credits) | 2 |

* Note that the Project – Foundation Degree will be delivered in Semester 1 as a taught module to prepare students for the research, project selection, planning, reporting etc. In Semester 2 students will then continue to work on their project in their own time, supported by 1 to 1 sessions. The module will be assessed at the end of Semester 2.

Block Release: Communications Pathway delivered over 3 academic years (agreed with student employer)

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| --- | --- |
| **Academic Year 1 (Semester 1 and Semester 2, Subjects delivered concurrently)** | |
| **Core:**  ENG4102 Mathematics for Engineering (20 Credits)  TBC Programming for Engineering (20 Credits)  ENG4103 Management of the Business Environment  (20 Credits) | **Core:**  TBC Electrical and Electronic Principles (20 Credits)  TBC Analogue and Digital Electronics (20 Credits) |
|  | |
| **Optional:**  TBC RF Communication Principles (20 Credits) |  |

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| **Academic Year 2 (Semester 1 and Semester 2, Subjects delivered concurrently)** | |
| **Core**  ENG5112 Corporate Responsibility and Personal  Development (20 Credits)  TBC Embedded Systems Development  (20 Credits) | **Core**  ENG5119 Signals and Systems (20 Credits)  TBC Data Communication and Networks  (20 Credits) |
| **Optional:**  TBC Digital Communication Principles  (20 Credits) |  |

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| **Academic Year 3 (Semester 1 and Semester 2)** | |
| **Core**  ENG 5121 Project Foundation Degree (20 Credits) |  |
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**Essential Support Information (this page must be detached prior to publication)**

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| **A1** | **Applicable Cohorts** | 2019/20 |
| **A2** | **Faculty** | CEBE |
| **A3** | **School** | Engineering and the Built Environment |
| **A4** | **Department** | BMet – James Watt College |
| **A5** | **Course Leader** (maximum 1) | Kevin Whitehouse |
| **A6** | **Course Code** | *Course code generated by SITS:* |
| **A7** | **UCAS Code** (undergraduate only) | Not Applicable |
| **A8** | **JACS Code** | *For office only* |
| **A9** | **HECoS Code** | *For office only* |
| **A10** | **Language of Study** | English |
| **A11** | **Relevant subject benchmark statement(s)** | The course has been benchmarked against standards for Foundation Degrees in Engineering and AHEP3. |
| **A12** | **Date of initial course approval** | *The date the course was approved by ASQEC.* |
| **A13** | **Course specification version number and date** | Version: Insert V1.00  Date: 03/2019 |
| **A14** | **Assessment Regulations** | Undergraduate Regulations |
| **A15** | **Course costs which fees do not cover** | None |
| **A16** | **Number of this specification** (for SRS use) | *For Quality Assurance to assign.* |

**A17 Overall Student Workload and Balance of Assessment**

Overall student *workload* consists of class contact hours, independent learning and assessment activity, with each credit taken equating to a total study time of around 10 hours. While actual contact hours may depend on the optional modules selected, the following information gives an indication of how much time students will need to allocate to different activities at each level of the course.

* *Scheduled Learning* includes lectures, practical classes and workshops, contact time specified in timetable
* *Directed Learning* includes placements, work-based learning, external visits, on-line activity, Graduate+, peer learning
* *Private Study* includes preparation for exams

The *balance of assessment* by mode of assessment (e.g. coursework, exam and in-person) depends to some extent on the optional modules chosen by students. The approximate percentage of the course assessed by coursework, exam and in-person is shown below. Delete years where applicable.

**Level 4**

**Workload**

**18% time spent in timetabled teaching and learning activity**

|  |  |
| --- | --- |
| **Activity** | **Number of Hours** |
| Scheduled Learning | 216 |
| Directed Learning | 354 |
| Private Study | 630 |
| **Total Hours** | 1200 |

\* The total hours are in-line with that specified by the university for full-time study. Students that are

studying part-time and are employed will benefit from skills and knowledge gained in the workplace.

These hours can be taken into account when assessing the overall time commitment.

**Balance of Assessment**

|  |  |
| --- | --- |
| **Assessment Mode** | **Percentage** |
| Coursework | 62% |
| Exam | 35% |
| In-Person | 3% |

**Level 5**

**Workload**

**18% time spent in timetabled teaching and learning activity**

|  |  |
| --- | --- |
| **Activity** | **Number of Hours** |
| Scheduled Learning | 216 |
| Directed Learning | 313 |
| Private Study | 671 |
| **Total Hours** | 1200\* |

\* The total hours are in-line with that specified by the university for full-time study. Students that are

studying part-time and are employed will benefit from skills and knowledge gained in the workplace.

These hours can be taken into account when assessing the overall time commitment.

**Balance of Assessment**

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| --- | --- |
| **Assessment Mode** | **Percentage** |
| Coursework | 53% |
| Exam | 44% |
| In-Person | 3% |