**TEMPLATE FOR PROGRAMME SPECIFICATION**

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| HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW |

**PROGRAMME SPECIFICATION**

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| This Programme Specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the programme. |

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| University of Baghdad / Alkhwarizmi College of Engineering | 1. Teaching Institution |
| Biomedical Engineering Department | 2. University Department/Centre |
| B.Sc. Biomedical Engineering | 3. Programme Title |
| B.Sc. Biomedical Engineering | 4. Title of Final Award |
| Full Time | 5. Modes of Attendance offered |
| ABET | 6. Accreditation |
| None | 7. Other external influences |
|  | 8. Date of production/revision of this specification |
| 9. Aims of the Programme | |
| This program aims to support the health sector in the country with specialized engineers who are needed to improve methods for the Healthcare of patients and the fruitful usage of engineering in the field of medicine.  The program is dedicated to preparing the graduated engineers for the professional employment in areas such as the medical device industry, engineering consulting, biomechanics, biomedical imaging and signal processing, and biotechnology.  The professional Biomedical Engineer requires a sound knowledge of the engineering principles and other skills of engineering science in parallel with their application in the biomedical field. These engineering skills include modeling of systems, mechanical analysis, electrical and electronic circuits, medical imaging, biomaterials, medical sensors, medical measurements, medical instrumentation and biomechanics.  These skills will be brought together in the design projects through the degree and in the penultimate year group project and final year project. The Biomedical Engineering degree will allow the graduate to progress into a career in biomedical engineering or engineering or in the research field based on the knowledge developed throughout the degree.  Furthermore the graduate will be equipped to develop their skills through continued personal development. | |

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| 10. Learning Outcomes, Teaching, Learning and Assessment Methods |
| 1. **Knowledge and Understanding**   Graduates will be able to:  **A1**. Use their knowledge and understanding of the appropriate mathematical, scientific and computational tools that underpin Biomedical Engineering, to solve, in depth, analytical, design or theoretical problems in the field of Biomedical Engineering;  **A2**. Apply their knowledge and understanding of physical and biochemical laws, mathematics and numerical analysis in order to model Biomedical Engineering and similar systems;  **A3**. Draw on materials from a range of courses and wider reading in Biomedical Engineering principles and in Mechanical, Electrical and Biomedical Engineering and the Biological Sciences in order to solve problems in Biomedical Engineering including demonstrating depth and breadth to their learning;  **A4**. Explain the role of Biomedical Engineers in society and the constraints within which their engineering judgment will be exercised. |
| **B. Subject-specific skills**  **B1**. Plan and execute safely a series of experiments in both the engineering and biomedical context;  **B2**. Design, from requirement, market need or specification, a biomedical engineering device implant or system, up to the preliminary design stage, and present this design via a series of poster, written and oral presentations from both group and individual work;  **B3**. Use laboratory and workshop equipment to generate data, including both engineering and physiological measurements, with appropriate rigor;  **B4**. Prepare technical drawings and technical reports;  **B5**. Write computer programs and use computational tools and packages, selecting the appropriate “state of the art” tools to solve Biomedical Engineering problems. |
| **Teaching and Learning Methods** |
| Staff involved in the degree program utilize a wide range of teaching methods that they deem the most appropriate for a particular course. These include:  **•** Lectures where the students write information presented to them via slide show, overhead or written by the lecturer;  **•** Lectures where the students have some printed notes/handouts and may annotate, or expand these during a spoken lecture;  **•** Lecture material placed on web-pages or other e-learning environment;  **•** Small group and large group tutorial sessions;  **•** Question and answer sessions during lectures or staff Office Hours;  **•** Laboratory sessions. |
| **Assessment methods** |
| ***Assessment Methods to be used are:***  • Written examinations (Summative assessment);  • Oral presentations of individual and group work;  • Individual written project report(s) of both individual and group projects;  • Homework;  • Take home exams;  • Practical skills will be assessed through laboratory experiments, write – ups, coursework reports, project reports and presentations;  • Experimental, research and design skills will be assessed through laboratory experiments write-ups, coursework reports, project reports and presentations;  • Presentation skills through group presentations and poster presentations. |
| 1. **Thinking Skills**   **C1**. Apply appropriate quantitative mathematical, scientific and engineering tools to the analysis of problems;  **C2**. Analyze and solve engineering problems;  **C3**. Design a Biomedical Engineering system, component or process to meet a need;  **C4**. Integrate knowledge and understanding of other scientific, mathematical, computational or engineering disciplines in order to support their engineering specialization. |
| **Teaching and Learning Methods** |
| • External lectures from industry or clinicians;  • Feedback given to students during tutorials;  • Small group and large group tutorial sessions;  • Question and answer sessions during lectures or staff Office Hours;  • Guided reading of texts, journal articles etc., for individual and group projects;  • Completion of web-based exercises or computer based laboratory sessions; |
| **Assessment methods** |
| • Individual written project report(s) of both individual and group projects;  • Group written project report(s) of group projects;  • Interview of group project manager and assessment of group project minutes;  • Poster presentation of group project work;  • Practical skills will be assessed through laboratory experiments, write-ups, coursework reports, project reports and presentations;  • Experimental, research and design skills will be assessed through laboratory experiments write-ups, coursework reports, project reports and presentations;  • Presentation skills through group presentations and poster presentations. |

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| **D. General and Transferable Skills (other skills relevant to employability and personal development)**  **D1**. Apply in depth problem solving and analytical thinking to a diverse range of problems;  **D2**. Use appropriate multi-disciplinary skills to solve Biomedical Engineering problems, combining the biological and engineering knowledge gained through the degree;  **D3**. Demonstrate numeracy and literacy in written reports, project work and examinations;  **D4**. Learn effectively for the purpose of continuing professional development and in a wider context throughout their career. |
| **Teaching and Learning Methods** |
| • Lectures where the students have some printed notes/handouts and may annotate, or expand these during a spoken lecture;  • Lecture material placed on web-pages or other e-learning environment;  • External lectures from industry or clinicians;  • Small group and large group tutorial sessions;  • Question and answer sessions during lectures or staff Office Hours;  • Guided reading of texts, journal articles etc., for individual and group projects;  • Completion of web-based exercises or computer based laboratory sessions. |
| **Assessment Methods** |
| • Group written project report(s) of group projects;  • Interview of group project manager and assessment of group project minutes;  • Poster presentation of group project work;  • Practical skills will be assessed through laboratory experiments, write-ups, coursework reports, project reports and presentations;  • Experimental, research and design skills will be assessed through laboratory experiments write-ups, coursework reports, project reports and presentations;  • Presentation skills through group presentations and poster presentations. |

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| 12. Awards and Credits | 11. Program Structure | | | |
| Credit  rating | Course or Module Title | Course or  Module  Code | Level/Year |
| Bachelor Degree  Requires (190 ) credits | 6 | Mathematics I | BME121 | First Year |
| 6 | Introduction to Biomedical Engineering | BME131 | First Year |
|  | 4 | Electronic Physics | BME132 | First Year |
| 3 | Anatomy | BME133 | First Year |
| 6 | Electrical Circuits | BME122 | First Year |
| 4 | Computer Science | BME123 | First Year |
|  | 2 | English | BME111 | First Year |
|  | 2 | Human Rights | BME112 | First Year |
|  | 4 | Engineering Drawing | BME124 | First Year |
|  | 6 | Mathematics II | BME221 | Second Year |
|  | 3 | Anatomy II | BME222 | Second Year |
|  | 4 | Biomaterial Science | BME231 | Second Year |
|  | 6 | Mechanics of Materials and Vibrations | BME232 | Second Year |
|  | 4 | Digital Techniques | BME233 | Second Year |
|  | 2 | Network and Digital Lab. | BME234 | Second Year |
|  | 4 | Biochemistry | BME223 | Second Year |
|  | 2 | Arabic | BME211 | Second Year |
|  | 2 | Freedom and Democracy | BME212 | Second Year |
|  | 3 | Anatomy II | BME321 | Third Year |
|  | 4 | Engineering and Numerical Analysis | BME322 | Third Year |
|  | 4 | Microelectronics | BME331 | Third Year |
|  | 4 | Computer Aided Design | BME323 | Third Year |
|  | 4 | Bioelectromagnetics | BME332 | Third Year |
|  | 4 | Biofluid and Thermodynamics | BME333 | Third Year |
|  | 6 | Neourobiology and Biology | BME324 | Third Year |
|  | 4 | Microwave, X-Rays and Gamma-Rays | BME341 | Third Year |
|  | 2 | Electronic Circuit Lab. | BME334 | Third Year |
|  | 4 | Artificial Limbs and Biotribology | BME431 | Fourth Year |
|  | 6 | Machine Design | BME441 | Fourth Year |
|  | 6 | Control System Design | BME442 | Fourth Year |
|  | 4 | Integrated Optics and Laser | BME443 | Fourth Year |
|  | 4 | Microprocessors and Microcomputers | BME432 | Fourth Year |
|  | 6 | Signal Processing | BME444 | Fourth Year |
|  | 4 | Medical Instrumentation and System I | BME445 | Fourth Year |
|  | 2 | Medical Measurements | BME446 | Fourth Year |
|  | 6 | Physiological Control and System | BME541 | Fifth Year |
|  | 4 | Clinical Engineering | BME542 | Fifth Year |
|  | 4 | Bio-digital Signal Processing | BME543 | Fifth Year |
|  | 6 | Medical Imaging | BME544 | Fifth Year |
|  | 6 | Biomedical Sensor | BME545 | Fifth Year |
|  | 6 | Medical Instrumentation and System II | BME546 | Fifth Year |
|  | 2 | Medical Engineering Lab. | BME547 | Fifth Year |
|  | 4 | Engineering Project | BME548 | Fifth Year |

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| 13. Personal Development Planning |
| Personal Development Planning is developed across the degree, it is an integral part of the Biomedical Engineering Department, and it is delivered and monitored through the personal tutor system.  In specific modules the student will be encouraged to review and reflect upon progression and develop an awareness of the personal and professional needs, to reflect and develop skills relevant to the role of the biomedical engineer.  Academic skills alone are clearly insufficient to meet the demands of the biomedical engineer. The development of additional interpersonal qualities is essential to enable students to initiate, direct and control events effectively.  To help students develop these skills, many of the tutorial activities and assignment work will provide them with the opportunity for practical project work, the development of problem solving skills and discussion and critical appraisal. Students are required to make oral presentations at intervals throughout their course. |
| 14. Admission criteria. |
| Applicants will normally be required to have passed the Baccalaureate Examination of the Secondary School / Scientific Branch according to the regulations stated by the Ministry of Higher Education and Scientific Research. |
| 15. Key sources of information about the program |
| Ministry of Higher Education and Scientific Research  [www.en.mohesr.gov.iq](http://www.en.mohesr.gov.iq)  University of Baghdad  [www.en.uobaghdad.edu.iq](http://www.en.uobaghdad.edu.iq)  Al-Khwarizmi College of Engineering  [www.kecbu.uobaghdad.edu.iq](http://www.kecbu.uobaghdad.edu.iq) |

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|  | | **Curriculum Skills Map** | | | | | | | | | | | | | | | | | | | |
|  | | **please tick in the relevant boxes where individual Program Learning Outcomes are being assessed** | | | | | | | | | | | | | | | | | | | |
|  | | **Program Learning Outcomes** | | | | | | | | | | | | | | | |  | | | |
| General and Transferable Skills (or) Other skills relevant to employability and personal development | | | | | Thinking Skills | | | | Subject-specific skills | | | | | Knowledge and  understanding | | | | Core (C)  Title or Option  (O**)** | Course Title | Course  Code | Year / Level |
| **D4** | **D3** | | **D2** | **D1** | **C4** | **C3** | **C2** | **C1** | **B5** | **B4** | **B3** | **B2** | **B1** | **A4** | **A3** | **A2** | **A1** |
|  |  | |  | **√** |  |  |  | **√** | **√** |  |  |  |  |  |  | **√** | **√** | **C** | **Mathematics I** | **BME121** | **First Year** |
|  |  | | **√** |  | **√** |  |  |  |  |  |  |  | **√** |  | **√** | **√** |  | **C** | **Introduction to Biomedical Engineering** | **BME131** |
|  |  | |  | **√** |  |  |  | **√** |  |  | **√** |  | **√** |  |  | **√** | **√** | **C** | **Electronic Physics** | **BME132** |
|  |  | |  | **√** |  |  |  | **√** | **√** |  |  |  |  |  |  | **√** | **√** | **C** | **Engineering Mechanics** | **BME133** |
|  |  | |  | **√** |  |  |  | **√** |  |  | **√** |  | **√** |  |  | **√** | **√** | **C** | **Electrical Circuits** | **BME122** |
|  |  | |  | **√** |  |  |  | **√** | **√** |  |  |  |  |  |  |  | **√** | **C** | **Computer Science** | **BME123** |
|  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **√** | **C** | **English** | **BME111** |
|  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **√** | **C** | **Human Rights** | **BME112** |
|  | **√** | |  |  |  |  |  | **√** |  | **√** |  |  |  |  |  |  | **√** | **C** | **Engineering Drawing** | **BME124** |
|  |  | |  | **√** |  |  |  | **√** | **√** |  |  |  |  |  |  |  | **√** | **C** | **Mathematics II** | **BME221** | **Second Year** |
|  |  | | **√** |  | **√** |  |  |  |  |  |  |  | **√** |  | **√** | **√** |  | **C** | **Anatomy I** | **BME222** |
|  |  | | **√** |  | **√** |  |  |  |  |  | **√** |  | **√** |  | **√** | **√** |  | **C** | **Biomaterial Science** | **BME231** |
|  |  | |  | **√** |  |  | **√** | **√** | **√** |  | **√** |  |  |  | **√** | **√** |  | **C** | **Mechanics of Materials and Vibrations** | **BME232** |
|  |  | | **√** | **√** |  |  | **√** | **√** |  |  | **√** |  |  |  |  | **√** | **√** | **C** | **Digital Techniques** | **BME233** |
|  | **√** | |  | **√** |  |  | **√** | **√** |  | **√** | **√** |  |  |  |  | **√** | **√** | **C** | **Network and Digital Lab.** | **BME234** |
|  |  | |  | **√** | **√** |  |  |  |  |  |  |  | **√** |  | **√** |  |  | **C** | **Biochemistry** | **BME223** |
|  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **√** | **C** | **Arabic** | **BME211** |
|  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **√** | **C** | **Freedom and Democracy** | **BME212** |
|  |  | | **√** |  | **√** |  |  |  |  |  | **√** |  | **√** |  | **√** | **√** |  | **C** | **Anatomy II** | **BME321** | **Third Year** |
|  | **√** | |  | **√** |  |  | **√** | **√** | **√** |  |  |  |  |  |  | **√** | **√** | **C** | **Engineering and Numerical Analysis** | **BME322** |
|  |  | |  | **√** |  |  | **√** | **√** |  |  | **√** |  |  |  |  | **√** | **√** | **C** | **Microelectronics** | **BME331** |
|  | **√** | |  | **√** |  | **√** |  | **√** | **√** | **√** | **√** |  |  |  | **√** | **√** |  | **C** | **Computer Aided Design** | **BME323** |
|  |  | | **√** | **√** |  |  | **√** | **√** | **√** |  |  |  |  |  | **√** | **√** |  | **C** | **Bio-electromagnetics** | **BME332** |
|  |  | | **√** | **√** |  |  | **√** | **√** |  |  | **√** |  |  |  | **√** | **√** |  | **C** | **Biofluid and Thermodynamics** | **BME333** |
|  | **√** | | **√** |  | **√** |  |  |  |  |  | **√** |  | **√** |  | **√** |  |  | **C** | **Neurobiology and Biology** | **BME324** |
|  |  | | **√** | **√** | **√** |  |  | **√** |  |  | **√** |  |  |  | **√** | **√** |  | **C** | **Microwave, X-Rays and Gamma-Rays** | **BME341** |
|  | **√** | |  | **√** |  |  | **√** | **√** |  | **√** | **√** |  | **√** |  |  | **√** |  | **C** | **Electronic Circuit Lab.** | **BME334** |
| **√** |  | | **√** | **√** | **√** | **√** |  |  | **√** | **√** |  | **√** |  |  | **√** | **√** |  | **C** | **Artificial Limbs and Biotribology** | **BME431** | **Fourth Year** |
| **√** |  | | **√** | **√** |  | **√** | **√** |  | **√** |  |  | **√** |  |  |  | **√** | **√** | **C** | **Machine Design** | **BME441** |
|  | **√** | | **√** | **√** |  | **√** | **√** |  | **√** |  |  | **√** |  |  | **√** | **√** |  | **C** | **Control System Design** | **BME442** |
|  |  | | **√** | **√** | **√** | **√** |  |  |  | **√** | **√** |  |  |  | **√** | **√** |  | **C** | **Integrated Optics and Laser** | **BME443** |
|  |  | | **√** | **√** | **√** | **√** |  |  | **√** |  | **√** |  |  |  |  | **√** | **√** | **C** | **Microprocessors and Microcomputers** | **BME432** |
| **√** |  | | **√** | **√** |  | **√** | **√** |  |  |  | **√** |  | **√** |  | **√** | **√** | **√** | **C** | **Signal Processing** | **BME444** |
| **√** |  | | **√** | **√** | **√** | **√** | **√** |  |  |  | **√** | **√** | **√** | **√** | **√** | **√** |  | **C** | **Medical Instrumentation and System I** | **BME445** |
| **√** | **√** | | **√** | **√** | **√** | **√** | **√** |  |  |  | **√** | **√** | **√** | **√** | **√** | **√** |  | **C** | **Medical Measurements** | **BME446** |
| **√** |  | | **√** | **√** | **√** | **√** |  |  |  |  |  | **√** | **√** |  | **√** | **√** |  | **C** | **Physiological Control and System** | **BME541** | **Fifth Year** |
| **√** | **√** | | **√** |  | **√** | **√** |  |  |  | **√** | **√** | **√** |  | **√** |  | **√** |  | **C** | **Clinical Engineering** | **BME542** |
| **√** | **√** | | **√** |  |  | **√** | **√** |  |  |  | **√** | **√** | **√** |  | **√** | **√** |  | **C** | **Bio-digital Signal Processing** | **BME543** |
| **√** | **√** | | **√** |  |  | **√** | **√** |  |  |  | **√** | **√** | **√** | **√** | **√** | **√** |  | **C** | **Medical Imaging** | **BME544** |
| **√** |  | | **√** | **√** | **√** | **√** | **√** |  |  |  | **√** | **√** | **√** |  | **√** | **√** |  | **C** | **Biomedical Sensor** | **BME545** |
| **√** | **√** | | **√** | **√** | **√** | **√** | **√** |  |  | **√** | **√** | **√** | **√** | **√** | **√** | **√** |  | **C** | **Medical Instrumentation and System II** | **BME546** |
|  | **√** | | **√** |  | **√** | **√** |  |  |  | **√** | **√** | **√** | **√** |  | **√** | **√** |  | **C** | **Medical Engineering Lab.** | **BME547** |
| **√** | **√** | | **√** | **√** | **√** | **√** | **√** | **√** | **√** | **√** | **√** | **√** | **√** | **√** | **√** | **√** | **√** | **C** | **Engineering Project** | **BME548** |

**TEMPLATE FOR COURSE SPECIFICATION**

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| HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW |

**COURSE SPECIFICATION**

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| This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification. |

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| University of Baghdad / Alkhwarizmi College of Engineering | 1. Teaching Institution |
| Biomedical Engineering Department | 2. University Department/Centre |
| Anatomy I | 3. Course title/code |
| B.Sc. Biomedical Engineering | 4. Programme(s) to which it contributes |
| Full Time | 5. Modes of Attendance offered |
|  | 6. Semester |
| 3 | 7. Number of hours tuition (total) |
|  | 8. Date of production/revision of this specification |
| **9. Aims of the Course** | |
| The goal of Anatomy is to explain the physical and Anatomical factors that are responsible for the origin, development and progression of life. Anatomy course present tremendous challenges to both students& teachers for acquisition of the basic facts is essential to the study of Anatomy, but also important for students to develop the ability to solve practical, real life problems related to the knowledge they have acquired. | |

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| **10· Learning Outcomes, Teaching ,Learning and Assessment Method** |
| 1. **Knowledge and Understanding**   Graduates will be able to:  **A2**. Apply their knowledge and understanding of physical and Anatomy of human body, mathematics and numerical analysis in order to model Biomedical Engineering and similar systems;  **A4**. Explain the role of Biomedical Engineers in society and the constraints within which their engineering judgment will be exercised. |
| **B. Subject-specific skills**  **B2**. Design, from requirement, market need or specification, a biomedical engineering device implant or system, up to the preliminary design stage, and present this design via a series of poster, written and oral presentations from both group and individual work;  **B3**. Use laboratory and workshop equipment to generate data, including both engineering and physiological measurements, with appropriate rigor; |
| **Teaching and Learning Methods** |
| Staff involved in the degree program utilize a wide range of teaching methods that they deem the most appropriate for a particular course. These include:  **•** Lectures where the students write information presented to them via slide show, overhead or written by the lecturer;  **•** Lectures where the students have some printed notes/handouts and may annotate, or expand these during a spoken lecture;  **•** Small group and large group tutorial sessions;  **•** Question and answer sessions during lectures or staff Office Hours;  **•** Laboratory sessions. |
| **Assessment methods** |
| 1. Seminar presented and discussed.   ***Assessment Methods to be used are:***  • Written examinations (Summative assessment);  • Oral presentations of individual and group work;  • Individual written project report(s) of both individual and group projects;  • Homework;  • Take home exams;  • Practical skills will be assessed through laboratory experiments, write – ups, coursework reports, project reports and presentations;  • Experimental, research and design skills will be assessed through laboratory experiments write-ups, coursework reports, project reports and presentations;  • Presentation skills through group presentations and poster presentations.  Quizzes and exams. |
| **C. Thinking Skills**  **C2**. Analyze and solve engineering problems;  **C3**. Design a Biomedical Engineering system, component or process to meet a need;  **C4**. Integrate knowledge and understanding of other scientific, mathematical, computational or engineering disciplines in order to support their engineering specialization. |
| **Teaching and Learning Methods** |
| • External lectures from industry or clinicians;  • Feedback given to students during tutorials;  • Small group and large group tutorial sessions;  • Question and answer sessions during lectures or staff Office Hours;  • Guided reading of texts, journal articles etc., for individual and group projects;  • Completion of web-based exercises or computer based laboratory sessions; |
| **Assessment methods** |
| • Individual written project report(s) of both individual and group projects;  • Group written project report(s) of group projects;  • Interview of group project manager and assessment of group project minutes;  • Poster presentation of group project work;  • Practical skills will be assessed through laboratory experiments, write-ups, coursework reports, project reports and presentations;  • Experimental, research and design skills will be assessed through laboratory experiments write-ups, coursework reports, project reports and presentations;  • Presentation skills through group presentations and poster presentations. |

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| D. General and Transferable Skills (other skills relevant to employability and personal development) |
| **D2**. Use appropriate multi-disciplinary skills to solve Biomedical Engineering problems, combining the biological and engineering knowledge gained through the degree;  **D3**. Demonstrate numeracy and literacy in written reports, project work and examinations;  **D4**. Learn effectively for the purpose of continuing professional development and in a wider context throughout their career. |

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| --- | --- | --- | --- | --- | --- |
| **11. Course Structure** | | | | | |
| Assessment Method | Teaching  Method | Unit/Module or Topic Title | ILOs | Hours | Week |
|  |  | Introduction to Anatomy |  | 3 | 1 |
|  |  | Anatomy & Imaging |  | 3 | 2 |
|  |  | Back, conceptual overview, function |  | 3 | 3 |
|  |  | component parts, vertebral canal… |  | 3 | 4 |
|  |  | Regional anatomy, skeletal framework |  | 3 | 5 |
|  |  | joints, Synovial, Ligaments |  | 3 | 6 |
|  |  | back muscles |  | 3 | 7 |
|  |  | intermediate group of back muscles |  | 3 | 8 |
|  |  | Introduction to upper limp |  | 3 | 9 |
|  |  | Relationship to other regions |  | 3 | 10 |
|  |  | Bones of the shoulder |  | 3 | 11 |
|  |  | muscles of the shoulder |  | 3 | 12 |
|  |  | nerve , brachial plexus, and blood supply of the lower limp |  | 3 | 13 |
|  |  | muscles of arms and hands |  | 3 | 14 |
|  |  | Term exam |  | 3 | 15 |

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| 12. Infrastructure | |
| **.1.** **Anatomy for Sneal (2012).**  **2. Grays anatomy for student, 2005, rechard L. Dark, Wayne Vogl, adam W.M. Mitchell**  3-Atlas of Anatomy , 2011, ritchard Harvey and Dennise Ferreier  4. Seely, Stephens, Tate (1998) Anatomy physiology . Mc Graw-Hill, New York | Required reading:  · CORE TEXTS  · COURSE MATERIALS  · OTHER |
| Check the new modern websites talking about the new modifications | Special requirements (include for example workshops, periodicals, IT software, websites) |
|  | Community-based facilities  (include for example, guest  Lectures , internship , field studies) |

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| 13. Admissions | |
| BME 541 | Pre-requisites |
| 20 | Minimum number of students |
| 30 | Maximum number of students |