

ES1B3-15 Professional Engineering Competencies

21/22

Department

School of Engineering

Level

Undergraduate Level 1

Module leader

Alireza Rezaei

Credit value

15

Module duration

24 weeks

Assessment

100% coursework

Study location

University of Warwick main campus, Coventry

Description

Introductory description

Professional Engineering Competencies are the foundations for Chartered Engineers and this module will enable students to plan and record self-learning and development as the foundation for lifelong learning/CPD.

Module aims

This module aims to inform the students about the five competencies core to the UK-SPEC (UK-Standard for Professional Engineering Competence). The UK-SPEC is the cornerstone of degree accreditation, initial and continuing professional development (CPD), and eventual professional registration via End Point Assessment (EPA). It is built around five fundamental competencies: (a) Knowledge and Understanding; (b) Design and development of processes, systems, services and products; (c) Responsibility, Management and Leadership; (d) Communication and Inter-personal Skills; (e) Professional Commitment.

The aim of this module is to induct the students into their degree, and show them that everything they are learning can be considered to support their development in (at least) one of the competencies. The module aims to create a culture of considered learning and self-reflection where students think about their learning strengths and weaknesses and take some ownership in

their development.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

Introduction to the module.

Engineering ethics.

Health and Safety.

Professional Commitment and Institutional Membership.

Competencies (IT skills; Reading, Note Taking and Research skills; Keeping a logbook and writing a reflective report; Writing and Presentation skills; Study skills; Exam skills; Development and Reflection skills; Sketching skills; Time Management skills).

Diversity and Equality.

Self-reflection.

The module includes compulsory on-line courses as defined by the Department.

Learning outcomes

By the end of the module, students should be able to:

- Identify what it means to be an Electromechanical Engineer and being a part of the engineering community through exposure to Professional Engineers coming from the industry, academics of the Engineering department, recent graduate students, and fellow undergraduate students.
- Plan self-learning and improve performance as the foundation for lifelong learning (CPD) to enable the EPA. Reflection will be informed by the work/practice and will contribute to the recognition of own work-based learning.
- Enable transferrable skills to inform own work/practice.
- Understand the challenges faced by society and how Electromechanical engineers can be technical and commercial leaders.
- Show knowledge and understanding of professional and ethical codes of conduct and associated responsibilities (related to own work/practice) as set out by professional engineering institutions.
- Analyse information and/or ideas contributing to the development of an informed evaluation of own work/practice.
- Identify and access relevant work/practice networks using appropriate interpersonal and networking skills.
- Understand and apply the communication and collaboration processes and procedures within the workplace.
- Demonstrate written communication skills for identified work/practice and/or academic audiences.

Indicative reading list

QAA 2015 Engineering Benchmark Statement ~ What is expected to be delivered and achieved in an engineering degree.

UK-SPEC Published by the Engineering Council UK ~ Guidance on what makes a graduate Chartered Engineer.

Publications from IMechE: <https://www.imeche.org/membership-registration/become-a-member>

IMechE Code of Conduct: <https://www.imeche.org/about-us/imeche-governance/governance-and-finance-reviews/code-of-conduct-explained>

Subject specific skills

Knowledge and understanding of the need for a high level of professional and ethical conduct in engineering and the use of technical literature, other information sources including appropriate codes of practice and industry standards

Knowledge of professional codes of conduct, how ethical dilemmas can arise, relevant legal and contractual issues.

Communicate technical information with others at all levels, including technical reports and the use of digital tools.

Comply with statutory and organisational safety requirements.

Transferable skills

Hold paramount the health and safety of themselves and others, and model health and safety conscious behaviour.

Self-motivated, work independently and take responsibility for their actions. Set themselves challenging personal targets and make own decisions.

Communicate confidently to create and maintain working relationships. Be respectful.

Work collaboratively as a team player. Able to work effectively within a team and interact with /help others when required.

Exercise responsibilities in an ethical manner, with openness, fairness and honesty.

Commit to personal learning and professional development.

Commit to professional standards (or codes of conduct) of their employer and the wider industry.

Study

Study time

| Type | Required |
|---------------------|-----------------------------|
| Lectures | 18 sessions of 1 hour (12%) |
| Seminars | 8 sessions of 1 hour (5%) |
| Work-based learning | 68 sessions of 1 hour (45%) |
| Other activity | 32 hours (21%) |
| Private study | 24 hours (16%) |
| Total | 150 hours |

Private study description

24 hours of guided independent learning (including VLE use).

Other activity description

4x3 hours online courses (Health & Safety, Plagiarism, Ethics, Matlab)

20 hours of individual tutorials (virtual or face-to-face) with Industry Mentor and/or Personal Tutor

Costs

No further costs have been identified for this module.

Assessment

You must pass all assessment components to pass the module.

Assessment group A

| | Weighting | Study time |
|--|------------------|-------------------|
| 2 * Reflective Reports Written Report | 30% | |
| Logbook | 30% | |
| Online course on 'Health and Safety' | 10% | |
| Online course on 'Plagiarism' | 10% | |
| Online course on 'Ethics' | 10% | |
| Online course on 'MATLAB' | 10% | |

Feedback on assessment

Personalised feedback on student performance on logbook and reflective reports.

Availability

Courses

This module is Core for:

- Year 1 of DESA-H360 Undergraduate Electromechanical Engineering (Degree Apprenticeship)