

Engineering Applications & Study Skills (Core) ACMA4007

Course Contents

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Module Aims

- To introduce the student to workshop and laboratory skills and safety practices through the media of degree pathway specific technology whilst allowing them to critically evaluate and apply theoretical engineering concepts to specific applications and problem-solving exercises.
- Accelerate their learning process and strategies.

Learning Outcomes

Upon the successful completion of this module, the student should be able to:

- demonstrate knowledge and understanding of specific engineering concepts and how their theoretical characteristics are used in discipline-specific engineering applications;
- apply practical engineering skills and demonstrate know-how of practices, skills, safety and standards with respect to laboratory and workshops, and key transferable skills in terms of written and oral presentation, personal development, reflective abilities and proficiency in appropriate engineering software
- Demonstrate key transferable skills in the creation of a personal development plan, manage their own learning; avoid plagiarism and create independent work; master referencing conventions; communicate information, ideas, problem and solutions to both specialist and non-specialist audiences; apply a range of key transferable study and communication skills to produce assignment work.

Engineering council AHEP Outcomes

Engineering Council AHEP3 Learning Outcomes Assessed in this Module	
SM2b	Knowledge and understanding of mathematical and statistical methods necessary to underpin their education in their engineering discipline and to enable them to apply mathematical and statistical methods, tools and notations proficiently in the analysis and solution of engineering problems
EA3b	Ability to apply quantitative and computational methods in order to solve engineering problems and to implement appropriate action
D6	Communicate their work to technical and non-technical audiences
EL5	Awareness of the relevant legal requirements governing engineering activities, including personnel, health & safety, contracts, intellectual property rights, product safety and liability issues
P3	Ability to apply relevant practical and laboratory skills
P8	Ability to work with technical uncertainty
G1	Apply their skills in problem solving, communication, information retrieval, working with others and the effective use of general IT facilities
G2	Plan self-learning and improve performance, as the foundation for lifelong learning/CPD

Introduction Engineering Applications & Study Skills

Assessment:

Mode of Assessment	Volume	Weight
Technical Report	2000 words (or equivalent)	40%
Practical (Matlab)	3000 words (or equivalent)	60%

Activity type	Hrs	%
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning	0	0
TOTAL	200	100%

Reading list:

Essential	Cottrell, S., The Study Skills Handbook (Red Glob Press, 2019)
Essential	Van Emden, J., Writing for Engineers (Red Globe Press, 2017)
Essential	Bird, J., Mechanical Engineering Principles (Routledge, 2019)
Essential	Shigley, J., Mechanical Engineering Design - 10th Edition (McGraw Hill, 2014)

Further	Bolton, W., Mechanical Science, Wiley-Blackwell (2006)
Further	Hannah, J. and Hillier, M. J., Mechanical Engineering Science (Prentice Hall, 1999)
Further	Sizemore, J., MATLAB for dummies (John Wiley & Sons, 2015)
Further	Health and Safety Executive www.hse.gov.uk

Indicative Content

- Understanding the learning process and identifying skills (eg self-evaluation, skills needed for higher education, transferable skills, action plans for personal development).
- Organising study (eg time management, organising space, organising resources)
- Structuring study and sourcing information - effective note taking, using the library and the internet, referencing convention. Revision and examination techniques.
- Communicating and presenting information (eg presentation techniques, styles, the appropriate use of graphs, charts, measures of central tendency)
- Developing an appropriate writing style (eg planning and structuring essays and reports, linking ideas together, using facts, opinions or arguments, analytical thinking, etc.)
- Fundamentals of Statistics and Probability.
- Fundamentals of computing language.
- Develop proficiency of appropriate general and engineering specific software.
- Implementation of Matlab to solve statistics practice problems.
- Familiarity with basic electronic and mechanical components, laboratory and workshop equipment and their real-world applications and behaviour.
- Health & Safety procedures and legislations, personal protective equipment and safe working practice.
- Workshop / machine-shop practical exercises