# Mechatronics and Autonomous Systems Project

# Module Information

**2022.01, Approved**

## Summary Information

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| Module Code | 6656ELEICB |
| Formal Module Title | Mechatronics and Autonomous Systems Project |
| Owning School | Engineering |
| Career | Undergraduate |
| Credits | 40 |
| Academic level | FHEQ Level 6 |
| Grading Schema | 40 |

**Teaching Responsibility**

| LJMU Schools involved in Delivery |
|---|
| LJMU Partner Taught |

**Partner Teaching Institution**

| Institution Name |
|---|
| International College of Business and Technology |

## Learning Methods

| Learning Method Type | Hours |
|---|---|
| Seminar | 4 |
| Tutorial | 22 |

## Module Offering(s)

| Display Name | Location | Start Month | Duration Number Duration Unit |
|---|---|---|---|
| PAR | PAR | | 12 Weeks |

## Aims and Outcomes

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| Aims | The project aims to provide a supervised but student led learning activity in a relevant area of engineering or technology. It aims to develop the academic, technical and organisational skills required to undertake a substantial individual engineering project from specification to conclusion.The Project activity should reflect Mechatronic Systems development. |

**After completing the module the student should be able to:**

**Learning Outcomes**

| Code | Number | Description |
|---|---|---|
| MLO1 | 1 | Conceptualise and plan a supervised but self-led project |
| MLO2 | 2 | Carry out a self-managed programme of work according to good project management practices |
| MLO3 | 3 | Research and analyse the established body of knowledge relevant to the project |
| MLO4 | 4 | Demonstrate deep technical understanding of their project |
| MLO5 | 5 | Communicate technical information clearly and concisely in written and oral forms |
| MLO6 | 6 | Critically evaluate all aspects of a project and formulate justified conclusions |

## Module Content

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| Outline Syllabus | Projects may involve experiment, analysis, design and/or computation and should allow a student to demonstrate achievement of the module learning outcomes. |
| Module Overview | |
| Additional Information | UNESCO Sustainable Development GoalsQuality EducationGender EqualityIndustry, Innovation and InfrastructurePartnerships for the GoalsUK SPEC AHEP 4CEng. M2 Formulate and analyse complex problems to reach substantiated conclusions. This will involve evaluating available data using first principles of mathematics, statistics, natural science and engineering principles, and using engineering judgment to work with information that may be uncertain or incomplete, discussing the limitations of the techniques employed.M3 Select and apply appropriate computational and analytical techniques to model complex problems, discussing the limitations of the techniques employed.M4 Select and critically evaluate technical literature and other sources of information to solve complex problems.M5 Design solutions for complex problems that evidence some originality and meet a combination of societal, user, business and customer needs as appropriate. This will involve consideration of applicable health and safety, diversity, inclusion, cultural, societal, environmental and commercial matters, codes of practice and industry standardsM6 Apply an integrated or systems approach to the solution of complex problems.M7 Evaluate the environmental and societal impact of solutions to complex problems (to include the entire lifecycle of a product or process) and minimise adverse impacts.M8 Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct.M9 Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity.M15 Apply knowledge of engineering management principles, commercial context, project and change management, and relevant legal matters including intellectual property rights.M17 Communicate effectively on complex engineering matters with technical and non-technical audiences, evaluating the effectiveness of the methods used.IEng.B1 Apply knowledge of mathematics, statistics, natural science and engineeringprinciples to broadly-defined problems. Some of the knowledge will be informed by current developments in the subject of study.B2 Analyse broadly-defined problems reaching substantiated conclusions using first principles of mathematics, statistics, natural science and engineering principles.B3 Select and apply appropriate computational and analytical techniques to model broadly-defined problems, recognising the limitations of the techniques employed.B4 Select and evaluate technical literature and other sources of information to address broadly-defined problems.B5 Design solutions for broadly-defined problems that meet a combination of societal, user, business and customer needs as appropriate. This will involve consideration of applicable health and safety, diversity, inclusion, cultural, societal, environmental and commercial matters, codes of practice and industry standards.B6 Apply an integrated or systems approach to the solution of broadly-defined problems.B8 Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct.B9 Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activityB10 Adopt a holistic and proportionate approach to the mitigation of security risksB11 Recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion.B15 Apply knowledge of engineering management principles, commercial context, project management and relevant legal matters.B17 Communicate effectively with technical and non-technical audiences. |

## Assessments

| Assignment Category | Assessment Name | Weight | Exam/Test Length (hours) | Module Learning Outcome Mapping |
|---|---|---|---|---|
| Report | Interim Report | 20 | 0 | MLO1, MLO2, MLO3, MLO5 |
| Dissertation | Final Report | 50 | 0 | MLO2, MLO3, MLO4, MLO5, MLO6 |
| Presentation | Presentation, Viva and Poster | 30 | 0 | MLO4, MLO5, MLO6 |

## Module Contacts