Melbourne Energy Institute

Energy Systems Short Course

8 - 25 July 2026

Melbourne Energy Institute

THE UNIVERSITY OF MELBOURNE

Energy Systems Short Course

Learn skills in analysing the financial, technical, and environmental performance of energy projects.

The Energy Systems Short Course teaches skills in energy investment decision making. The course centres on practical, hands-on modelling exercises. Participants develop their own spreadsheet models, and learn how to answer questions such as:

- Is a proposed wind farm or gas turbine a good investment?
- What is the probability that it will earn a commercial rate of return?
- What is the best financing structure for the project?
- How do you handle project risk and uncertainty?

Topics covered

Students will participate in lectures and tutorials covering the following topics:

- The fundamentals of finance
- The Levelised Cost of Electricity (LCOE)
- Sensitivity analyses of financial investment models
- Tools for financial analysis under uncertainty
- Problem-based learning based on investment case studies

Course delivery

All classes in the Energy Systems Short Course are scheduled outside of business hours. Students are expected to attend in person at the University of Melbourne campus.

A certificate of completion will be issued to participants with an attendance rate of 90% or higher.

Location

Location, directions, and instructions for attending campus will be provided to successful candidates in the days preceding the course.

Prerequisites and eligibility

There are no prerequisites for entry into the Short Course. However, participants should have a basic understanding of financial and commercial principles.

The Short Course is open to the University of Melbourne graduate students, partner organisations, and all other external applicants.

Note for University of Melbourne students: Preference is given to final year PhD students, however all graduates are welcome to apply.

Cost

Participation in the Short Course is free of charge for University of Melbourne graduate students. The cost to external applicants is $5,000 (excluding GST) per place.

How to apply

It is essential that students participate in each session, as the content is complex and demanding. We therefore urge that only those that can commit to all the sessions apply.

Applicants are requested to click APPLY NOW and complete the form. Applications must be registered by **11:59pm on Tuesday 9th June 2026**.

Successful candidates will be notified by email. Instructions on how to participate will be issued to the nominated email of successful candidates, one week before commencement.

APPLY NOW 〉

Contact

For further information, please contact the Melbourne Energy Institute at mei-info@unimelb.edu.au or visit http://energy.unimelb.edu.au/study/short-course.

Course details:
Learning modules

Module 1: Introduction and basics of investment decision making and company financing

Module 2: Financing – capital, debt and equity, cost of capital, discounted free cash flow, NPV, Internal Rate of Return, and Capital Asset Pricing Model

Module 3: Investment analysis of electricity generation technologies, now and in the future

Module 4: Unconventional natural gas extraction technology

Module 5: Financial analysis through Real Option Value (ROV)

Please note: Students are expected to attend all module lectures and tutorials in person.

Course details:

Schedule

Date	Module	Activity
Wednesday 8 July 6pm-9pm	Module 1	**Lecture:** Introduction and basics of investment decision making and company financing. **Tutorial:** Evaluation of selected company balance sheets and profit and loss statements.
Thursday 9 July 6pm-9pm	Module 2	**Lecture:** Financing – capital, debt and equity, cost of capital, discounted free cash flow, NPV, Internal Rate of Return, Capital Asset Pricing Model. **Tutorial:** Investment in sustainable energy generation from wastewater.
Saturday 11 July 9am-12pm *Lunch break* 1pm-4pm	Module 3	**Lecture:** Investment analysis of electricity generation technologies, now and in the future. Determination of a range of Levelized Costs of Electricity (LCOE) for these technologies, including renewables and other low-carbon methods for electricity generation, including the effects of externalities, taxes, and incentives. **Tutorial:** Detailed investment evaluation of several electricity generation technologies. Students self-organise into working/breakout groups to evaluate a selection of these technologies, including: 〉 Coal fired HELE super-critical investment, with and without CCS, and gas-fired generation technologies. 〉 Solar PV with alternatives: battery storage, solar thermal, or gas-fired backup. 〉 Wind generation from wind data and turbine characteristics, including offshore wind. 〉 Hydro generation, including Snowy 2.0 and other proposed pumped-hydro projects. 〉 Nuclear power, including Small Modular Reactors. 〉 Analysis of Australia's net zero emissions by 2060 by Net Zero Australia, including estimated total cost and LCOE as a function of quantum, costs and investment rate of return.
Wednesday 15 July 6pm-9pm	Module 3 (cont.)	**Tutorial:** Finalisation of analyses followed by feedback presentations from each tutorial group.
Thursday 16 July 6pm-9pm	Module 4	**Lecture:** Unconventional natural gas extraction technology – introduction and preliminary information.
Saturday 18 July 9am-12pm *Lunch break* 1pm-4pm	Module 4 (cont.)	**Tutorial:** Analysis of unconventional natural gas investment in both USA and Australia. Tutorial groups work on different aspects of the investment decision-making process: 〉 Drilling and extraction, well and field gas flow, financial data, environmental and social risks. 〉 Focus on Australia and in particular on proposed new shale gas extraction (e.g. in the Northern Territory).
Wednesday 22 July 6pm-9pm	Module 4 (cont.)	**Tutorial**: Finalisation of analyses followed by feedback presentations from each tutorial group.
Thursday 23 July 6pm-9pm	Module 5	**Lecture:** Financial analysis through Real Option Value (ROV) - Introduction.
Saturday 25 July 9am-12pm *Lunch break* 1pm-4pm	Module 5 (cont.)	**Tutorial**: Analysis through ROV of future sustainable hydrogen production through Wind and Solar PV electrolytic electricity generation ('green' hydrogen), and hydrogen production from natural gas coupled to CCS ('blue' hydrogen). Finalisation and presentation of the results on an 'Options Space Diagram'.

Meet the presenters

Jonathan Anderson

Sustainability Mobility Manager
Keolis Downer

Jonathan Anderson is a Sustainability Manager with Keolis Downer, and former Senior Engineer with international engineering consultancy Arup. He has extensive experience across renewable energy generation and storage, water and wastewater management, mining, waste, agribusiness, freight and logistics, and process automation.

Jonathan was a student of the 2018 Energy Systems Short Course and has assisted Dr. John Burgess with teaching the course since 2020. Jonathan will be leading the course in 2026.

Dr John Burgess

Honorary Professorial Fellow, University of Melbourne
Adjunct Professor, University of Queensland
Fellow, Academy of Technological Sciences and Engineering (ATSE)

Dr. John Burgess is a chemical engineer with extensive industrial and research experience. This includes a long and distinguished career at BHP, where he rose to senior executive level. He was also recently the Chair of the CSIRO Energy Advisory Committee for a number of years.

John is an Honorary Professorial Fellow at the University of Melbourne, an Adjunct Professor at the University of Queensland, and a Fellow of the Academy of Technological Sciences and Engineering (ATSE).

John has been teaching the Energy Systems Short Course since it began in 2018, and will now provide his expertise to support Jonathan Anderson in the course delivery.

Contact Us

Melbourne Energy Institute
University of Melbourne
Level 1, Melbourne Connect
700 Swanston Street, Carlton VIC 3053

mei-info@unimelb.edu.au
energy.unimelb.edu.au

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