Background and Aims

This unit is an introduction to the principles and methods of project management as applied in various engineering and infrastructure projects. It is designed to be immediately applicable to physical and non-physical projects at a small and medium scale, and to provide a framework on which project management skills for large-scale projects can be developed.

After completing this unit participants will:

- understand how, when and why to use the principles of project management,
- appreciate the importance of the careful initial selection and evaluation of projects,
- understand the uses of the Statement of Work (SOW) and the Work Breakdown Structure (WBS),
- know how to represent a project in network format, and how to develop and refine a project time schedule,
- know how to estimate the cost of a project, and how to develop a cost budget and a cash-flow budget,
- understand the concepts of project risk, and know how to quantify and analyse project risk,
- understand the techniques involved in project execution and control, including Earned Value Analysis, and
- appreciate the causes of project success and failure.

Details of the structure of the unit are provided over the page

Enrolment Options

Enrol in the Master of Infrastructure Engineering and Management or as a single unit. Exit options are also available for the Graduate Certificate in Infrastructure Engineering and Management or the Graduate Diploma in Infrastructure Engineering and Management.

Off-Campus Study Mode

The program is taught by off-campus learning which means you can balance your work and study while attaining your qualification with Monash University. There are no classes to attend so you can study where and when you like. Students from all over the world study in the postgraduate program, thanks to its flexible off-campus learning mode. Students and graduates can be found throughout Australia, New Zealand, the Middle East, Europe, North America and Africa.

A combination of printed study material and electronic communications are used in the delivery of the program. Academic assistance can be obtained by email or telephone. Discussion groups and other forms of on-line communication are also available for communicating with staff and other students.

Unit Co-ordinator

Tony Richardson holds BE (Civil) and MEngSc (Transp) degrees from the University of NSW and a PhD in transport planning from Monash. He has 30 years experience in academia, research, government and consulting. He has taught at Monash and RMIT Universities, the Universities of Melbourne and Sydney and Cornell University, USA. He has also worked for the ARRB, the Victorian Ministry of Transport and in his own consulting practices. He is presently a Director of The Urban Transport Institute, Victoria, Australia and an Adjunct Professor in the Dept of Civil Engineering at Monash.

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**Structure**

*The unit is structured around 13 topics which are generally associated with one week of study*

<table>
<thead>
<tr>
<th>Topic</th>
<th>After completing this topic, participants will:</th>
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| 1. Introduction to Project Management | • know the major components of Project Management  
• understand when Project Management techniques may be useful |
| 2. Project Selection | • know how to define a problem, search for alternative solutions, and obtain a practical design for a solution |
| 3. Project Feasibility | • understand the fundamentals of economic evaluation and multi-objective evaluation |
| 4. Project Scoping and Work Breakdown | • understand the importance of defining the goals and scope of a project  
• know the contents of a Statement of Work as an official description of a project  
• be able to describe a project in terms of its Work Breakdown Structure |
| 5. Project Schedule Development | • know how to estimate the time required for various types of activities  
• be able to construct various types of network representations of a project  
• be able to calculate the estimated duration of a project  
• be able to identify critical and non-critical activities in the project |
| 6. Schedule Optimisation | • know how to minimise the time and/or cost needed to complete a project  
• know how to undertake a project with constraints on available resources |
| 7. Project Cost Estimation | • know how to estimate projects costs using top-down and bottom-up methods  
• be able to budget for expenditures over the life of the project  
• be able to estimate cash-flows over the life of a project |
| 8. Project Risk Assessment | • understand the sources of project risk and know how it can be quantified and analysed  
• understand how risk can be accounted for in project network analysis |
| 9. Quality Management and Other Project Planning Issues | • understand the way in which ISO9000 can be applied in developing a Quality Plan for project management  
• understand the issues involved in developing an Organisational and Communication Plan  
• know how to write a formal Project Plan |
| 10. Project Execution | • understand the tasks involved in Project Execution  
• be aware of the skills required of successful project managers |
| 11. Project Control | • understand the scope of Project Control  
• understand the role of Earned Value Analysis in Project Control |
| 12. Project Changes and Project Closure | • understand the importance of documenting all project changes  
• be aware of the tasks to be taken at the end of a project |
| 13. Do’s and Don’ts of Project Management | • be aware of some common problems in project management  
• understand the reasons for project success and failure |

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