

## MODULE DESCRIPTOR

### Module Title

Asset Life Cycle Analysis

Reference	SUM303	Version	5
Created	January 2023	SCQF Level	SCQF 11
Approved	December 2007	SCQF Points	15
Amended	July 2023	ECTS Points	7.5

### Aims of Module

To develop a good understanding of the variables affecting the acquisition, running and replacement of an asset, and how the whole-life costs can be optimised.

### Learning Outcomes for Module

On completion of this module, students are expected to be able to:

- 1 Value an asset throughout its life cycle.
- 2 Analyse how the application of whole-life costing techniques can reduce operating costs, improve performance and hence enhance value.
- 3 Judge when an asset should be replaced or overhauled and how to prepare properly argued financial and technical papers for such course of action.
- 4 Critically appraise key contributions of the asset team in optimising whole-life costs of the asset.
- 5 Assess the key problems likely to arise in a whole-life costing analysis and to effectively manage those problems.

### Indicative Module Content

The importance of adopting a whole-life attitude in the design and management of physical assets. Historic and current developments of whole-life costing. The characteristics of long term financial decisions. Investment appraisal procedures. Whole-Life costing based decision-making rules and choice criteria. The principles of, and the procedures for, whole-life costing. Managing the difficulties facing the implementation of whole-life costing. Application of whole-life costing in design or purchasing physical assets. Application of whole-life costing to maintenance and replacement of physical assets. Effective risk analysis in whole-life costing studies. Extending the life-cycle framework to include non-financial attributes of assets. Whole-life costing tools: numerical methods, spreadsheets, computer software. Integrating various tools and techniques. Closing the feedback loop in the whole-life management of physical assets. Implementation models of whole-life costing. Industrial case studies, discussion groups and exercises with presentation.

**Module Delivery**

The module is delivered by online lectures, interactive group work, case study and tutorials and directed self-study.

**Indicative Student Workload**

	Full Time	Part Time
Contact Hours	N/A	70
Non-Contact Hours	N/A	80
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	N/A	150
<i>Actual Placement hours for professional, statutory or regulatory body</i>		

**ASSESSMENT PLAN**

*If a major/minor model is used and box is ticked, % weightings below are indicative only.*

**Component 1**

Type:	Coursework	Weighting:	100%	Outcomes Assessed:	1, 2, 3, 4, 5
Description:	A report or a case study where asset life cycle analysis be used to optimise whole-life costs (of an asset).				

**MODULE PERFORMANCE DESCRIPTOR****Explanatory Text**

The overall module grade is based on 100% weighting of the Component (Coursework). An overall minimum grade D is required to pass the module. Non-submission will result in an NS grade.

Module Grade	Minimum Requirements to achieve Module Grade:
<b>A</b>	A
<b>B</b>	B
<b>C</b>	C
<b>D</b>	D
<b>E</b>	E
<b>F</b>	F
<b>NS</b>	Non-submission of work by published deadline or non-attendance for examination

**Module Requirements**

Prerequisites for Module	None in addition to course entry requirements or equivalent.
Corequisites for module	None.
Precluded Modules	ENM605 Asset Life Cycle Analysis.

**INDICATIVE BIBLIOGRAPHY**

- 1 Shil, N. C. & Parviz, M., 2010. Cycle Costing: Techniques and Applications: Choosing the Most Economic Project. VDM Verlag Dr. M?uller.
- 2 Kishk, M., 2004. Combining various facets of uncertainty in whole-life cost modelling. Construction Management and Economics, 22(4), pp. 429-435.
- 3 Kishk M., Al-Hajj A., Pollock R., Aouad A., Bakis, N. and Sun, M., 2003. Whole-Life Costing in Construction - A State of The Art Review. The RICS Research Paper Series, 4(18).
- 4 Kishk M., Al-Hajj A. and Pollock R., 2002. An innovative integrated approach to whole life costing. Journal of Financial Management of Property and Construction, 7(1), pp. 31-40.