

SE4013 Design Methodologies

Module status in MSc Professional Engineering: Core Module credits: 15

Aims

To develop wide knowledge and comprehensive understanding (including benefits and limitations) of design processes and methodologies lying at the forefront of professional practice in the selected engineering domain, together with a high level of capability in applying those processes and methodologies in both routine and unfamiliar contexts.

Content

This is a generic module specification – whilst adhering to the broad principles set out here, the content of any particular delivery of the module will necessarily depend on the selected engineering domain and the learning contract agreed between the programme participant, Aston University and the participant’s professional engineering institution.

Illustrative content: Design principles and strategies. Underpinning science. Practical application in demonstration and industrially realistic contexts. Criteria for selection of methodologies: benefits, limitations, constraints.

Teaching

The module will normally be taught through work-based projects supplemented by appropriate individual learning (eg through directed reading) and supported by individual supervision and mentoring. Where appropriate and specified by the learning contract, formally taught elements from one or more level 4 modules forming part of another EAS MSc programme may be accessed by distance learning.

Assessment

Written reports and (where appropriate) other formal work products arising from the work-based project(s) will be assessed.

Where content has been accessed by distance learning, and if specified by the learning contract, a proportion of the module mark may be derived from formal assessments associated with the modules accessed.

If assessment is based entirely on work-based activities, the participant’s reports should total around 4000 words, or 10-15 pages including appropriate diagrams, tables, etc. Where formal assessment of distance learning provides part of the overall module assessment, reports on work-based activities should be limited to around 2500 words (about 6-9 pages) in total.

Module outcomes

What the participant should gain from successful completion of the module

Teaching/Learning Methods

Assessment Methods

Knowledge and Understanding

Ability to discuss the principles, systematic application, benefits and limitations of a broad range of design processes and methodologies

Work-based projects, supplemented by individual learning and distance learning as appropriate

Written reports and other appropriate formal work products, possibly supplemented by exam assessment of distance learning material

Intellectual Skills

Select and apply effectively a range of design techniques
Adapt design techniques to cope with unfamiliar situations

Professional/Subject-Specific Skills

Take account of commercial, industrial and professional constraints

Transferable Skills

Capacity for initiative and originality in tackling and solving complex problems

Learning resources

As appropriate to the selected engineering domain and any modules accessed by distance learning.

Other modules required in order to take this module

SE4001 Professional Development Audit