# CI9.S.2.1 Optimising systems and networks: urban energy systems

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| **Other contributors:** | Dr James Keirstead |
| Term: | Summer  |
| Contact hours: | 25 |

## 1.0 Aims

This module aims to build on earlier understanding of systems to provide the student with an overview of system optimisation techniques. The module introduces the large system optimisation techniques used in process engineering design and the use of computer optimisation packages. The module then focuses on the issues raised in applying systems optimisation to large spatially distributed systems such as CHP and urban energy systems more generally

## 2.0 Syllabus

* Urban scale energy systems and their optimisation
* The GAMS optimisation technology
* Application to scheduling control of M&E systems
* Interpreting optimisation outputs in real world engineering contexts

## 2.0 Intended learning outcomes

* A grasp of the idea of optimisation applied to M&E systems
* Familiarity with modern process engineering computer optimisation techniques
* A knowledge of concepts in urban scale energy systems and their optimisation

## 4.0 Assessment

* Assessment of this module is in the form of progress tests usually given as in class group work.

## 5.0 Recommended textbooks

Category as defined by Central Library:

C = Core, S = Supplementary

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| C | Keirstead, J. and Shah, N. (2013) *Urban Energy Systems – An Integrated Approach*, London, Routledge – Chapter 1 |
| S | Williams, H.P. (1999) *Model Building in Mathematical Programming*, 4th ed. John Wiley & Sons Ltd., Chichester, England. – Chapter 1 |