

## Complex Networks and Web (COMP0123)

### Description

#### Aims:

This module introduces essential concepts and methods in the interdisciplinary research area of network science, with a particular focus on the Internet, the World Wide Web and online social media networks.

Topics covered include graphic properties and metrics of complex networks, mathematical models of networks, evolution of Internet topology, structures of the Web, network community detection, epidemic spreading models, analysis of social media networks, temporal networks, spatial networks, signed networks and network controllability.

#### Learning outcomes:

On successful completion of the module, a student will be able to:

1. Define and calculate essential network metrics;
2. Describe the structure of the Internet and the Web;
3. Relate graphic properties to network functions;
4. Explore new angles to understand network collective behaviours;
5. Design and conduct analysis on large networks;

#### Content:

Complex networks;  
Network graphic properties;  
Random networks;  
Small-world networks;  
Scale-free networks;  
Generative network models;  
Rich-club coefficient;  
Network mixing patterns;

### Key information

<b>Year</b>	2018/19
<b>Credit value</b>	15 (150 study hours)
<b>Delivery</b>	PGT L7, Campus-based
<b>Reading List</b>	<a href="#">View on UCL website</a>
<b>Tutor</b>	<a href="#">Dr Shi Zhou</a>
<b>Term</b>	Term 1
<b>Timetable</b>	<a href="#">View on UCL website</a>

### Assessment

BAD ASSESMENT DATA

### Find out more

For more information about the department, programmes, relevant open days and to browse other modules, visit [ucl.ac.uk](http://ucl.ac.uk)

Network structural constraints;  
Network centrality;  
Internet topology and models;  
The Web structure;  
Network visualisation;  
Network community structure;  
Epidemic spreading models;  
Network controllability;  
Document networks;  
PageRank;  
Temporal networks;  
Spatial networks;  
Signed networks;  
Twitter botnets;  
Online social network analysis;

**Prerequisites:**

In order to be eligible to select this module, students must have a strong competency in programming.

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