

<div class="printBefore">
<h1 class="pageTitle">COMP47550 How Computers Work</h1>
<h2>Academic Year 2019/2020</h2>

In order to teach Computer Science at second level teachers require an in-depth understanding of how computers work. In the modern world of Cloud Computing this extends beyond the software and hardware in a laptop, to cover networks, servers and virtualisation.

The course will give a general overview of the basic elements and functional components of computing systems. The material to be covered divides into three parts, foundations of computing at the CPU level, network computing and the Web and scalability and cloud computing. The introduction to the foundation of computing and the CPU will cover Boolean algebra, the operation of a CPU and memory and storage. The section on networking and the Web will introduce the key concepts in network computing and Web services. The final section will cover large scale computing and the concepts underlying cloud computing.

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<div style="text-align:center;"><p>Curricular information is subject to change</p></div>

What will I learn?

Learning Outcomes:

<p>On completing the module the student should understand the following:1. CPU and Peripherals- The fundamentals of the Boolean algebra and basic digital arithmetic.- The operation of a central processing unit (CPU), performance metrics.- Memory hierarchy: primary memory, cache memory, secondary memory- Data storage, RAID the move to SSDs. 2. Modern Web Services Architectures - Basic ideas in Network Computing- Fault Tolerance and Scalability- Vertical vs Horizontal Scalability- Load Balancing- Caching / Distributed Caching- Data Partitioning, Master-Slave DB Replication, Sharding3. Scalability and Moving to the Cloud- Multiprocessing, parallelisation- Cluster computing- Virtualization- Elastic Compute Services (Amazon EC2)</p>

How will I learn?

Student Effort Hours:

Student Effort Type	Hours
Lectures	15
Tutorial	15
Autonomous Student Learning	80
Total	110

Am I eligible to take this module?

<div class="subHeadCB">Requirements, Exclusions and Recommendations</div>

<p>Not applicable to this module.</p>

<div class="subHeadCB">Module Requisites and Incompatibles</div>

Not applicable to this module.

How will I be assessed?

Assessment Strategy

Description	Timing	Open Book Exam	Component Scale	Must Pass Component	% of Final Grade
Examination: Closed-book written exam	Varies over the Trimester	No	Graded	No	70
Continuous Assessment: Coursework	Varies over the Trimester	n/a	Graded	No	30

<div class="row">
<div class="col-sm-6">Carry forward of passed components
No</div>
</div>

What happens if I fail?

Resit In	Terminal Exam
Autumn	Yes - 2 Hour

Assessment feedback

<div class="subHeadCB">Feedback Strategy/Strategies</div>
<p>* Feedback individually to students, post-assessment
* Online automated feedback
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<div class="subHeadCB">How will my Feedback be Delivered?</div>
<p>Feedback for CA will be individual, post-assessment. Online automated feedback may also be used depending on the trimester.</p>

Reading List

Associated Staff

Name	Role
Dr Brett Becker	Lecturer / Co-Lecturer

<div class="pageBreak"><nav class="white-box no-left-arrow zero-top-margin">
<h1 class="printOnly"> UCD Course Search
How Computers Work (COMP47550) </h1><h3 class="printOnly">Academic Year 2019/2020</h3><p class="printOnly">The information
contained in this document is, to the best of our knowledge, true and accurate at the time of publication, and is solely for informational purposes.
University College Dublin accepts no liability for any loss or damage howsoever arising as a result of use or reliance on this information.</p>
<h4 class="noPrint">How Computers Work (COMP47550)</h4>
<dl>
<dt>Subject:</dt>
<dd>Computer Science</dd>
<dt>College:</dt>
<dd>Science</dd>
<dt>School:</dt>
<dd>Computer Science</dd>
<dt>Level:</dt>
<dd>4 (Masters)</dd>
<dt>Credits:</dt>
<dd>5.0</dd>

<dt>Trimester:</dt>
<dd>Summer</dd>
<dt>Module Coordinator:</dt>
<dd>Dr Brett Becker</dd>
<dt>Mode of Delivery:</dt>
<dd>Face-to-Face</dd>
<dt>Internship Module:</dt><dd>No</dd>

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<dt>How will I be graded?</dt>
<dd>Letter grades </dd>

</dl>
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<span style="font-size:0.8em"><em>(<a href="https://www.google.com/chrome/" target="_blank">Google Chrome</a> is recommended when printing
this page)</em></span></div>

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