COURSE DETAILS
Course Code: F29OC
Full Course Title: Operating Systems & Concurrency
SCQF Level: 9
SCAF Credits: 15
Available as Elective: No

DELIVERY LEVEL
Undergraduate: Yes  Postgraduate Taught: Yes  Postgraduate Research: No

COURSE AIMS
For the Operating system part: To provide an introduction to operating systems, their basic principles and shell programming.

For the Concurrency part: To introduce the theory and practice of concurrent hardware and software systems

LEARNING OUTCOMES – SUBJECT MASTERY
For the Operating systems part:

• Understanding of the concepts and structures present in modern operating systems.

For the Concurrency part:

• Broad and integrated knowledge and understanding of concurrency concepts, techniques and problems
• Critical understanding of predominant concurrency pattern and their implementation on modern architectures
• Hands-on experience

LEARNING OUTCOMES – PERSONAL ABILITIES

• Critically evaluate the problematic and concepts related to operating systems.
• Analysis of the different possible solutions to leveraging concurrency for parallel execution.

SYLLABUS
For the Operating system part: overview on operating systems concepts and structures, processes, threads, classical inter-process communication problems, memory management
For the Concurrency part: Concurrency, Parallelism, Pthreads. Parallelism Pattern: Pipelining, Data-Parallelism, Nested Data-Parallelism, Flattening, Task-Parallelism, Data-Flow.

### COURSE RELATIONSHIPS

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<tr>
<th>Course Code</th>
<th>Level</th>
<th>Title</th>
<th>School</th>
<th>Type</th>
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<td>F28DA</td>
<td>8</td>
<td>Data Structures and Algorithms</td>
<td>School of Math and Comp Sci.</td>
<td>Pre-Requisite</td>
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<td>Programming Languages</td>
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### LOCATION AND ASSESSMENT METHODS

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ALP - Assessment is 100% examination. Summative coursework will be assessed by the ALP and moderated by HWU. All summative coursework must be completed to a satisfactory standard (Grade D) for a student to pass the course but will not form part of a student’s final grade.