Course Code: F28HS
Full Course Title: Hardware-Software Interface
SCQF Level: 8
SCAF Credits: 15
Available as Elective: No

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

COURSE AIMS
• To gain an understanding of low-level, hardware-oriented and systems programming.
• To develop skills in resource-conscious programming.
• To develop programming skills in such languages.

LEARNING OUTCOMES – SUBJECT MASTERY
• Critical understanding of computer architecture concepts and their performance implication for low-level software.
• Detailed theoretical and practical understanding of hardware and operating system concepts, interfacing to low-level software.
• Ability to develop efficient, resource-conscious code, interfacing to hardware components.
• Practical skills in low-level, systems programming, with effective resource management.

LEARNING OUTCOMES – PERSONAL ABILITIES
Ability to articulate system-level operations and to identify performance implications of given systems

SYLLABUS
Low-level, assembler programming

Low-level, C programming

Advanced computer architecture issues impacting software performance (caches, multi-cores, etc)

Operating system interfaces for low-level software

Operating system concepts such as device handling, interrupts, BIOS etc
Embedded systems programming

Resource-conscious programming techniques (memory, performance; programming techniques, tools, monitoring)

### COURSE RELATIONSHIPS

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<td>School of Math and Comp Sci.</td>
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### LOCATION AND ASSESSMENT METHODS

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