F21SC Industrial Programming

COURSE DETAILS
Course Code: F21SC
Full Course Title: Industrial Programming
SCQF Level: 11
SCAF Credits: 15
Available as Elective: No

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

COURSE AIMS
• To develop proficiency in contemporary industrial programming languages and platforms;
• To enable the elaboration and combination of system components in different languages;
• To enable an agile and flexible response to changes in industrial practices;
• To enable participation by industrial practitioners to provide context and applicability.

LEARNING OUTCOMES – SUBJECT MASTERY
• Critical appreciation of role of different programming paradigms in programming/managing systems
• Autonomous problem analysis/solution
• Critical understanding of core characteristics of contemporary operating systems and virtual machines
• Detailed knowledge of key abstractions across programming languages
• Technical proficiency in advanced language techniques in different programming paradigms.

LEARNING OUTCOMES – PERSONAL ABILITIES
• Ability to choose/deploy/combine appropriate languages, architectures and tools
• Ability to employ an agile approach to software development

SYLLABUS
• Programming in a modern general purpose language e.g. C#, C++11
• Programming for concurrency using state-of-the-art libraries and language extensions
• Rapid prototyping in a major scripting language with associated libraries and frameworks, e.g. Python, PHP, Ruby, Lua
• Coverage of advanced language features where languages have been met in earlier courses
• Foresight of emerging programming language technologies
• Practical experience with standard environments (Unix, Windows), virtual machines (.NET) and tools (e.g. compilers, debuggers, libraries, shell)

Pre-requisites: Programming skills in an object-oriented language such as Java or C++
Part of the coursework-based assessment of the course are 2 class-tests (on C# and Python), each contributing 15% to the overall mark.

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