# Course descriptor F21SC

<table>
<thead>
<tr>
<th>Course code</th>
<th>F21SC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course title</td>
<td>Industrial Programming</td>
</tr>
<tr>
<td>Credits</td>
<td>15</td>
</tr>
<tr>
<td>School</td>
<td>Mathematical and Computer Sciences</td>
</tr>
<tr>
<td>SCQF Level</td>
<td>11</td>
</tr>
<tr>
<td>Semester</td>
<td>1</td>
</tr>
</tbody>
</table>

## 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.

## Syllabus
- Programming in a modern general purpose language e.g. C#, C++
- 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++

## 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.

### Personal Abilities
- Ability to choose/deploy/combine appropriate languages, architectures and tools
- Ability to employ an agile approach to software development

| Assessment method | 100% course work |