MODULE: **EMERGING TECHNOLOGIES**

CODE: **BSCH-3-2-10**
Stage: III
Credit Points: 4 semester credits / 6 quarter units

Overview and Aims

This module aims to give you the opportunity to study relatively new developments in Computer Science. The currently suggested topic is Agile Development.

Currently there is great interest in Web 2.0 technologies, AJAX being at the forefront, with CSS, Web Services and Javascript being also important. Additionally there is a growing realisation that, even for small to medium projects, costs for web development are prohibitive and the software generated is not of a sufficiently high standard. Agile Programming has been touted as a potential solution for these kinds of projects, particularly when supported by such frameworks as Ruby on Rails, Django(Python) or RIFE(Java).

The student would be firstly motivated with the need for new software methodologies and tools in an introductory section on Software Engineering. In this, Agile Programming and variants such as Extreme Programming, DSDM and Scrum are presented and discussed. Students are then given a grounding in Ruby and Python, before the frameworks are introduced. Through the use of the frameworks, CSS, AJAX, Web Services and Javascript will be utilised to give the student the ability to employ them in their chosen framework. Wherever possible, case studies will be presented to either show how a particular approach can be beneficial or detrimental to a project's success.

Upon successful completion of this module, you should be able to:

1. identify problems with existing software development strategies as applied to web-design
2. employ alternative Agile Development strategies
3. code competently in modern languages such as Python and Ruby
4. rapidly design and deploy prototypes in frameworks such as Django and Rails
5. use the standard components of Web 2.0 such as CSS, AJAX, Web Services and Javascript

Module Content

Software engineering

What is wrong with traditional models of software engineering in a web-development environment? Agile Programming. Extreme programming. Adaptive Software Development (ASD). Scrum. DSDM. Crystal Clear.

Scripting languages

Reliability vs. Productivity: Dynamic vs. Static Typed languages. Execution speed vs. Development Speed: Interpretation vs. Compilation. Coding in Python. Coding in Ruby. Contrasting Ruby/Python with Java/C++.

Web frameworks

Using the Django framework. Using the Rails framework. Suitable IDEs. Constructing projects in both.

Web 2.0 components

Consuming and publishing Web Services (SOAP, REST, XML-RPC), CSS, Javascript, AJAX.