

BSc Honours & MComp Computing  
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### **Level 5 Professional Projects**

#### **Where does the course fit in your curriculum?**

*[In what year do students commonly take the course? Is it compulsory? Does it have pre-requisites, required following courses? How many students take it?]*

Around 280 students across all awards within the Honours degree computing programme take a compulsory **20-credit** module during their second year of undergraduate study (**level 5**), entitled "**Professional Project**" (each award can have a route specific version\*). Over 50% of these students will undertake a paid 48-week Industrial Placement in the following year. The Professional Projects modules are designed to allow students to develop and demonstrate their skills in their chosen discipline, and to expose the students to "real-world" issues that arise when developing new IT products.

One award within the programme has had such a module for five years. Others are introducing it as validation opportunities arise. This paper details the version due to be delivered on the **BSc Honours Computing** degree from September 2013. This award is oriented towards business computing / databases / systems integrations.

#### **What is covered in the module?**

*[A short description, and/or a concise list of topics - possibly from your course syllabus. (This is likely to be your longest answer)]*

This is a projects-based module where students work in groups, bidding for and then delivering project work for real clients (internal or external to the university).

The University has a specialist service, **Venture Matrix**<sup>1</sup> which brokers requests for project assistance against student groups looking for project experience. The Venture Matrix facility offers a rich set of resources available to modules. One example is a procedure by which clients' real payments can be converted into 'virtual cash' which then can be used by groups to buy physical resources or cover actual costs, accompanied by resources for teaching students about accounting procedures. A second example is a set of templates for legal contracts are available .... together with a set of Law students who for their "Law Clinic" Professional Projects explain responsibilities and liabilities to students.

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<sup>1</sup>

<http://www.shu.ac.uk/employability/work-experience/venture-matrix/>

We ask our students to form “companies”, which then make competitive bids for Venture Matrix projects. Forming the companies involves student creating portfolios of CVs and authoring demonstration products to show the competencies of the group. Clients found through Venture Matrix often interview potential supplier-groups. Our companies/groups can subcontract work outside of their expertise back into the Venture Matrix. This means many students get interview experience from both sides of the table. Many projects are inter-departmental.

Strict quality criteria are applied at all stages. A “company” is not permitted to progress towards more advanced (higher mark) achievements until it has properly achieved the agreed quality criteria for the current step. We show companies how to structure their working method to have a strong quality control (i.e. peer review) system.

The following illustrates the sequence of steps expected of “companies”:-

1. Company formation:	Skills assessment and clear peer acceptance of roles
2. Proof of Competency:	Companies work on a tutor-set project, designed to test working procedures
3. Pitching and bidding:	Once a company has meet the Competency threshold, it may bid (in a competitive market) for a client-sponsored project
4. Contract negotiation:	A firm agreement, including legal issues, must be signed off by the Venture Matrix staff
5. Project delivery:	An Agile sprints-based method is used for the company to continually refine the delivery target.

Groups that fail to get Venture Matrix projects can continue to work on their demonstrator tasks, and can pass the module. However, reasons why their competitive bids failed will be critically reviewed.

A consequence of insisting on a strong focus on achieving quality before progress is that some groups observe and learn that industry does not accept low-quality work. In educational terms, it is emphasised to students the importance of putting time into mastering the basics before more advanced work is attempted. In entrepreneurial terms, the module frequently asks students to consider what commercial clients are really looking for. .

### **What is the format of the course?**

*[Is it face to face, online or blended? How many contact hours? Does it have lectures, lab sessions, discussion classes?]*

This module is resourced at the standard levels for a 20-credit module, which is 48 class hours per students and 152 hours of out-of-class study.

For 35 students, rather than booking a lecture room and one-hour labs for two groups, the module is timetabled as a single three-hour session, where students may work in the labs, or (often) may hold group meetings in a nearby open-space café area. These sessions include scheduled meetings with their tutors. Other than visiting speaker talks, tutor-led sessions tend to be “stand-up” briefings, as befits Agile-style daily briefs.

It is not the role of the module tutor to teach students IT technologies themselves. We have found it important that the module tutors are strongly aware of what other modules either have taught or will be teaching, so they can remind students about where technical options can be drawn from .

### **How are students assessed?**

*[What type, and number, of assignments are students are expected to do?. How long do you expect students to spend on completing assessed work?]*

As discussed above, progress on the module is stepwise against a defined structure, with quality thresholds for each step identified with the tutors as the module progresses. Students do not “fail” steps and move on. Poor quality means reworking that step. In consequence there is loss of time to progress to higher marks.

Students are expected to work for 200 hours on the module. Company timesheets evidence what each student has done. These are signed off regularly by the quality systems.

Peer review is built in to the group quality systems, and individual marks derived from company records regarding contribution is applied by tutors to their final marking.

### **Course textbooks and materials**

*[A brief description of materials used (e.g., textbooks, programming languages, environments etc)]*

Visiting speakers and some videos are used to support the Agile Programming approach.

Students groups progress towards Venture Matrix support at a varied rate, so much of this material is on-line, consumed at the time the group is ready. The URL is on the previous page.

### **Why do you teach the course this way?**

*[A description of the course rationale and goals. If you know, please indicate the history and background of the course and when it was last reviewed/revised. Do students typically consider this course to be challenging?]*

The business/enterprise courses within the Department have integrated the Venture Matrix resource across all three years of the Undergraduate course in a theme entitled “*Entrepreneurial Theory & Practice*”. Students strongly appreciate how this three-year approach allows time for ideas to gestate and develop. Students comment that they can look back to earlier years and see how much they have learned.

At the next revalidation opportunity I would like to see this multi-years approach adopted more widely into the Computing courses.

### **Integration**

*[Are there explicit links with other elements in the curriculum?]*

The Venture Matrix system has strong links with the University's ideas "hatchery" system. Investments of up to £5000, plus office facilities, are available for taking ideas forward. The Hatchery also provides contact details and bid-writing experience for local, regional and larger funding opportunities.