1 MODULE AIMS

1. To introduce the student to the design of embedded microprocessor based systems.

2. To introduce the student to the hardware and software aspects of computer system interfacing.

3. To develop an understanding of the role of relevant tools used in the design, development and testing of microprocessor based systems

4. Further develop programming language skills for microprocessor based systems.

2 MODULE LEARNING OUTCOMES
By the end of the module you will be able to

1. Analyse a system requirements specification and choose appropriate computer systems and interfaces for subsequent implementation.

2. Demonstrate a structured, modular, top-down approach to software development in an embedded microprocessor based environment.

3. Design, implement and test systems, written in a high level programming language such as 'C' using appropriate programmable interface devices from an initial specification through to validation.
4. Demonstrate knowledge of the various tools available in the development and testing of an embedded computer system.

5. Document a problem, its solution and subsequent implementation.

3 INDICATIVE LEARNING, TEACHING AND ASSESSMENT ACTIVITIES

Students will acquire knowledge and skills through a combination of lectures, laboratory sessions and directed study material. The lectures will provide the basic facts, concepts and knowledge of the subject material. The laboratory sessions will provide students with problem solving exercises which will make use of the material covered in lectures along with practical skills and knowledge of the software development tools.

ASSESSMENT STRATEGY AND METHODS

<table>
<thead>
<tr>
<th>Task No.</th>
<th>TASK DESCRIPTION</th>
<th>SI Code</th>
<th>Task Weighting %</th>
<th>Word Count / Duration</th>
<th>In-module retrieval available</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Coursework</td>
<td>CW</td>
<td>50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Coursework</td>
<td>CW</td>
<td>50%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4 INDICATIVE MODULE CONTENTS / TOPICS

- Microprocessor and microcontroller architectures and systems.
- Microprocessor bus operation. Microprocessor instruction set and addressing modes.
- Input output methods: polling, interrupts and DMA.
- Interface devices, Digital I/O, parallel and serial., analogue I/O
- Standard interfaces
- Software development tools and the use of the 'C' programming language in embedded applications.

Further information about this module

- Further / additional information is available to support this module, including assessment criteria detailing how your performance in the module will be measured, how you will receive feedback, details of learning resources and key readings.

- This information can be found in

All materials will be accessed via the blackboard learning environment and the SHU student portal.

- Note that this additional information may be subject to change from year to year.
FINAL TASK

According to the Assessment Strategy shown in the Module Descriptor, which task will be the LAST TASK to be taken or handed-in? (Give task number as shown in the Assessment Strategy)

<table>
<thead>
<tr>
<th>Task No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
</tr>
</tbody>
</table>

MODULE REFERRAL STRATEGY

<table>
<thead>
<tr>
<th>Task for Task (as shown for initial assessment strategy)</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Referral Package for All Referred Students</td>
<td>N</td>
</tr>
</tbody>
</table>

REVISIONS

<table>
<thead>
<tr>
<th>Date</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 2012</td>
<td>Assessment Framework review</td>
</tr>
</tbody>
</table>