

Cambridge National

IT

## Curriculum Map for the redeveloped Cambridge National in IT (J836)



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## An overview of the course.

Examined assessment (40% of the course)	
<p><b>R050 IT in the digital world</b></p> <p>In this unit students will learn the theoretical knowledge and understanding to apply design tools for applications, principles of human computer interfaces and the use of data and testing in different contexts when creating IT solutions or products.</p> <p>Topics include:</p> <ul style="list-style-type: none"><li>• Design Tools</li><li>• Human Computer Interface (HCI) in everyday life</li><li>• Data and testing</li><li>• Cyber-security and legislation</li><li>• Digital Communications</li><li>• Internet of Everything (IoE).</li></ul> <p>This question paper has two parts:</p> <ul style="list-style-type: none"><li>• Part A – worth 15 marks. Includes closed response, multiple choice and short response questions</li><li>• Part B – worth 55 marks. Includes scenario based short, medium and extended response questions. One question will be a create style question [8 marks]. One extended response question [9 marks] will be assessed using a levels of response mark scheme.</li></ul> <p>Examination: 1 hour 30 minutes.</p>	<p>48 GLH</p> <p>70 Marks</p>

## Non-examined assessment (60% of the course)

### R060 Data manipulation using spreadsheets

This OCR-set assignment contains three to five practical tasks.

Topics include:

- Planning and designing the spreadsheet solution
- Creating the spreadsheet solution
- Testing the spreadsheet solution
- Evaluating the spreadsheet solution.

Centre-assessed and OCR moderated.

36 GLH

60 Marks

### R070 Using Augmented Reality to present information

This OCR-set assignment contains three to five practical tasks.

Topics include:

- Augmented Reality (AR)
- Designing an Augmented Reality (AR) model prototype
- Creating an Augmented Reality (AR) model prototype
- Testing and reviewing.

Centre-assessed and OCR moderated.

36 GLH

60 Marks

## (Curriculum Map)

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<b>Year 10</b>	<p><b>R050:</b> TA1 - Design tools (1.1 Types of design tools)</p> <p><b>R060:</b> TA1 - Planning and designing the spreadsheet solution (1.1 Design tools)</p>	<p><b>R050:</b> TA2 - Human Computer Interface in everyday life (2.1 Purpose, importance and use of HCI in application areas, 2.2 Hardware considerations, 2.3 Software consideration, 2.4 User interaction methods)</p> <p><b>R050:</b> TA3 - Data &amp; Testing (3.1 Information &amp; data, 3.2 Data use)</p> <p><b>R060:</b> TA1.2 HCI design conventions and principles</p>	<p><b>R060:</b> TA2 Creating the spreadsheet solution (2.1.1 Data handling &amp; manipulation, 2.1.2 Techniques to generate the outputs, 2.1.3 User interface)</p> <p><b>R060:</b> TA3 - Testing the spreadsheet solution (3.1 Test the user interface and technical aspects of the spreadsheet solution)</p> <p><b>R060:</b> TA4 - Evaluating the spreadsheet solution</p>	<p><b>R060:</b> NEA Assessment (working on)</p>	<p><b>R060:</b> NEA Assessment (working on)</p> <p><b>R060:</b> NEA Assessment (submit<sup>1</sup> for moderation)</p> <p><b>R050:</b> TA3 Data and testing (3.3 Data collection methods, 3.4 Storage of collected data)</p> <p><b>R050:</b> TA5 - Digital communications (5.1 Types, 5.2 Software, 5.3 Digital devices, 5.4 Distribution channels, 5.5 Audience demographics)</p> <p><b>R070:</b> TA2 - Designing an AR model prototype</p>	<p><b>R050:</b> TA6 - Internet of Everything (IoE) (6.1 Use of IoE, 6.2 Application areas in everyday life)</p> <p><b>R070:</b> TA3 - Creating and AR model prototype (3.1 AR model prototype, 3.2 Triggers, 3.3 Layers/ user interaction, 3.4 Information output)</p>
<b>Year 11</b>	<p><b>R070: Recap</b> - TA2 - Designing an AR model prototype (2.1 Planning and design consideration, 2.2 Design tools)</p>	<p><b>R070:</b> NEA Assessment (working on)</p> <p><b>R050:</b> TA3 testing Recap</p>	<p><b>R070:</b> NEA Assessment (submit<sup>1</sup> for moderation)</p> <p><b>R050:</b> TA3 - Data and testing (3.5</p>	<p><b>R050:</b> TA4 - Cyber-security and legislation to the use of IT systems)</p>	<p><b>R050:</b> Exam Revision</p>	

	<p><b>R070: Recap - TA3 -</b> Creating and AR model prototype (3.1 AR model prototype, 3.2 Triggers, 3.3 Layers/ user interaction, 3.4 Information output)</p> <p><b>R070: TA4 - Testing and reviewing</b> (4.1 Testing, 4.2 Reviewing the process of creating the AR model prototype)</p>		<p>Application of testing to a range of contexts)</p> <p><b>R050: TA4 – Cyber security &amp; legislation</b>4.1. Threats. 4.2. Impact</p>	<p><b>R050: Exam Revision</b></p>		
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## More detail on the curriculum

Knowledge and understanding	Practical activities
<p><b>IT in the digital world (R050)</b></p> <p>Students will learn the theoretical knowledge and understanding to apply design tools for applications, principles of human computer interfaces and the use of data and testing in different contexts when creating IT solutions or products. The unit content should provide an excellent opportunity to understand the uses of Internet of Everything and the application of this in everyday life, cyber-security and legislations related to the use of IT systems, and the different types of digital communications software, devices, and distribution channels.</p> <p>Different design tools, including types of design tools, could be taught as an introduction to the three units, and to set the overall scene of the qualification.</p> <p>Human Computer Interface (HCI) in everyday life, including purpose, importance and the use of HCIs. Students should be made aware of the hardware and software consideration along with user interaction methods. Here students could evaluate the impact on designing and developing HCIs for a range of interaction methods.</p> <p>Data and testing, including knowing the difference between data and information. Students can explore data in different contexts. Students can develop and evaluate the process of collecting, storing, validating and verifying data for a given purpose. Students can evaluate the importance of testing with a focus on types of test data and methods testing can be carried out.</p> <p>Cyber-security and legislation, including an understanding of the threats, impact and preventive measures that relate to cyber-security. Students should be able to understand how legislation relates to cyber-security and the wider subject of IT. Students could review the use of different types of cyber-attacks, how these break the law and how they can be prevented.</p>	<p><b>Planning and Design</b></p> <p>Students will be able to develop a deeper understanding of the design process through analysing a provided design specification with a focus on functionality, navigation systems, outputs and target audience of the system.</p> <p>Using appropriate design tools students will be able to apply Human Computer Interface (HCI) principles to a given scenario, considering types of outputs and HCI navigation that would allow for a positive interaction experience for the user. Through practice and refinement students should become confident in their selection choices and be able to justify the choices they make.</p> <p>Using planning and design consideration to analyse and apply layers and triggers using appropriate types of Augmented Reality (AR) and user interaction method and taking in accounts of design tools available to create an Augmented Reality (AR) model prototype.</p> <p><b>Product creation and development</b></p> <p>Using a range of techniques students should create spreadsheet solutions that are fit for purpose and meet the needs of the scenario and client requirements. Where applicable students should utilise a range of tools and techniques to enhance their final product with consideration given to cyber-security and legislation. Modelling can be utilised to refine the product until a workable final solution is found. Principles of HCI should be adhered to where user interaction is considered. This should build on theory knowledge within this qualification.</p> <p>Using a range of techniques and tools available through a chosen software development kit (SDK), students should create a model prototype to present</p>

Knowledge and understanding	Practical activities
<p>Digital communications, including types, software and devices that are used to communicate digitally. Students should evaluate the types of communication channels used for digital communication and how connectivity impacts on the medium chosen. Students can evaluate audience demographics and how the choice of digital communication type can impact on the demographic it reaches.</p> <p>Internet of Everything (IoE), this is an excellent opportunity for students to keep up to date with the emerging technologies of the IoE. Students can learn what IoE is, how it is developed and used and the industries that are involved with the IoE.</p> <p>Through integrating theory with practical activities required in NEA units, and using mock and practice assessments, students will be well prepared for the terminal examination in R050. They will be able to relate theory to practice, and to put into context responses to questions they are asked.</p>	<p>information given within the set assignment tasks ensuring it is appropriate to use with different device types</p> <p><b>Testing and Evaluation</b></p> <p>Developing and using a testing plan that utilises appropriate test data and testing types to test a developed spreadsheet solution and AR model prototype. Students can build on their theory knowledge to explore the most appropriate types of tests for a given scenario.</p> <p>Evaluation of a spreadsheet solution with consideration of the client, the effectiveness of the solution, how well testing has been applied and the impact of HCI navigation and interface methods.</p> <p>Students should be able to use design documentation to review their final digital product. Consideration can be given to the defined purpose of AR model prototype, the need to learn lessons from each project and the effectiveness of different approaches to a problem.</p>



## Integrating exam content into practical components

We show you below essential knowledge and understanding that students will need for the examined unit, as outlined in the specification. You should aim to include and reinforce this content in your teaching as much as you can.

Topic area within examined unit that can be mapped to NEA:	Students must know and understand:	Students should be able to:
<p>TA1: Design tools</p> <p>TA1.1: Types of design tools</p>	<ul style="list-style-type: none"> <li>• Flowcharts</li> <li>• Mind maps</li> <li>• Visualisation diagrams</li> <li>• Wireframes</li> </ul>	<p>R060:</p> <p>1.1 design tools - exemplification</p> <p>Produce design documents to create the spreadsheet solution including:</p> <ul style="list-style-type: none"> <li>• Functionality</li> <li>• Navigation system</li> <li>• Outputs from the system.</li> </ul> <p>Selection and use of appropriate software tools and techniques to effectively plan the spreadsheet solution</p> <hr/> <p>R070:</p> <p>2.2 Design tools - exemplification</p> <p>Use of appropriate design tools to support the creation of an AR product, including:</p> <ul style="list-style-type: none"> <li>• Content design</li> <li>• Action design</li> <li>• House style.</li> </ul>
<p>TA2: Human Computer Interface (HCI) in everyday life</p>	<ul style="list-style-type: none"> <li>• Hardware considerations (2.2)</li> <li>• Software considerations (2.3)</li> <li>• User interaction methods (2.4)</li> </ul>	<p>R060:</p> <p>1.2 Human Computer Interface (HCI) design conventions and principles - exemplification</p> <ul style="list-style-type: none"> <li>• Design the functionalities for the solution</li> </ul>

Topic area within examined unit that can be mapped to NEA:	Students must know and understand:	Students should be able to:
		<ul style="list-style-type: none"> <li>• Design the calculations using flowcharts to enable others to understand calculations taking place</li> <li>• Design meaningful messages to be displayed to end users when errors occur</li> <li>• Be familiar with the creation of different types of outputs to meet user/client needs</li> <li>• Layout considerations of use of white space, alignment, location of navigation tools on the user interface.</li> </ul>
TA3: Data and testing	<ul style="list-style-type: none"> <li>• What data is (3.1)</li> <li>• What information is (3.1)</li> <li>• The relationship between data and information (3.1)</li> <li>• Use of data types in different contexts (3.2.1)</li> <li>• The difference between validation and verification (3.2.2)</li> <li>• Data validation and verification tools (3.2.3 and 3.2.4)</li> <li>• Data collection methods and storage of collected data (3.3 and 3.4)</li> <li>• Importance and purpose of testing (3.5.1)</li> <li>• Test data (3.5.2)</li> <li>• Types of testing (3.5.3).</li> </ul>	<p>R060:</p> <p>2.1 Use spreadsheet tools and techniques to create the solution</p> <ul style="list-style-type: none"> <li>• Data handling and manipulation (2.1.1)</li> </ul> <p>3.1 Test the user interface and the technical aspects of the spreadsheet solution</p> <ul style="list-style-type: none"> <li>• Testing during development <ul style="list-style-type: none"> <li>□ Technical testing</li> <li>□ Usability testing.</li> </ul> </li> <li>• Testing after development <ul style="list-style-type: none"> <li>□ Technical testing</li> <li>□ Usability testing.</li> </ul> </li> <li>• Test plan documentation</li> <li>• Types of test data <ul style="list-style-type: none"> <li>□ Extreme</li> <li>□ Invalid (Erroneous)</li> <li>□ Valid.</li> </ul> </li> </ul>

Topic area within examined unit that can be mapped to NEA:	Students must know and understand:	Students should be able to:
		<p>R070:</p> <p>4.1 Testing</p> <ul style="list-style-type: none"> <li>• How to carry out testing of an AR model prototype               <ul style="list-style-type: none"> <li>□ Technical testing</li> <li>□ User testing</li> </ul> </li> <li>• Using a test plan               <ul style="list-style-type: none"> <li>□ Test number</li> <li>□ What is being tested</li> <li>□ Expected result</li> <li>□ Actual result</li> <li>□ Remedial action.</li> </ul> </li> </ul>
<p>TA4: Cyber-security and legislation</p> <p>TA4.3: Prevention Measures</p>	<ul style="list-style-type: none"> <li>• Know how each prevention measure works</li> <li>• How the prevention measures keep data and devices secure</li> <li>• How the prevention measures can be used to mitigate against security risks.</li> </ul>	<p>R060:</p> <p>2.1.1 Data handling and manipulation - exemplification</p> <ul style="list-style-type: none"> <li>• Create a spreadsheet solution that is fit for purpose</li> <li>• Use of appropriate security measures such as lock cells, password protected workbook, worksheet editing.</li> </ul>

Topic area within examined unit that can be mapped to NEA:	Students must know and understand:	Students should be able to:
TA5: Digital communications	<ul style="list-style-type: none"> <li>• Types of digital communications (5.1)</li> <li>• Digital devices (5.3)</li> <li>• Know the purpose of each digital communication (5.1)</li> <li>• Advantages and disadvantages of each digital communication (5.1)</li> <li>• Types of distribution channels. (5.4.1)</li> </ul>	<p>R070:</p> <p>1.1 Purpose and uses of Augmented Reality (AR)</p> <ul style="list-style-type: none"> <li>• What AR is</li> <li>• The purpose of AR</li> <li>• Uses of AR – know how different sectors use AR</li> </ul> <p>1.2 Types of Augmented Reality (AR) and user interaction</p> <p>1.3 Devices used with Augmented Reality (AR).</p>