Suggestions for equipment to support delivery of units in the
9209 Level 4 and 5 qualifications for Electronic and Electrical Engineering

Comment

The major emphasis in the qualifications is the provision of a sound understanding of the relevant engineering science and mathematical theory required for the unit topics. Where feasible, it is desirable that this is supported with laboratory equipment that enables learners to apply the theory in laboratory settings to demonstrate and reinforce their understanding of the subject matter. Experimental activity with the equipment will also give learners the opportunity to develop and apply practical skills that are relevant to the practice of engineering and to the needs of industry. However, in order to do this properly it will be necessary to increase the hours available in the unit to accommodate the additional practical activities. As an example, in most universities, a single laboratory test would require a period of at least three hours for experimentation and report preparation. In some units, several such tests may be necessary. This should be borne in mind when deciding to include practical work in a unit. Since the experimental work is primarily intended to support the teaching programme, the learning outcomes are unlikely to need much changing. However, the aims of the unit should be revised to reflect the additional practical content.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Level</th>
<th>Equipment</th>
<th>Comment</th>
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<tbody>
<tr>
<td>401</td>
<td>4</td>
<td>Computers</td>
<td>Provide access to a mathematical software package such as derive, Mathcad, Matlab Or Maple</td>
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<tr>
<td>402</td>
<td>4</td>
<td>Computers</td>
<td>Emulation/simulation programs e.g. Pspice</td>
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<td>403</td>
<td>4</td>
<td>None</td>
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<td>404</td>
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<tr>
<td>406</td>
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<td>Computers</td>
<td>Provide access to a statistical software package such as Minitab, SAS, SPSS, Excel</td>
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<tr>
<td>407</td>
<td>4</td>
<td>Computers</td>
<td>Provide access to a modern 3D CAD software package</td>
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<tr>
<td>408</td>
<td>4</td>
<td>Computers, LAN hardware, serial bus analyser/bus analyser, RF/microwave analyser,</td>
<td>Communication emulator</td>
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<tr>
<td>409</td>
<td>4</td>
<td>Transformer testers, 3-phase electrical supplies, a motor/generator test bench</td>
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<td>Transformer testers, 3-phase electrical supplies, a motor/generator test bench</td>
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<td>Code</td>
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<tr>
<td>410</td>
<td>4</td>
<td>Computers, cable-fault detection equipment</td>
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<td>411</td>
<td>4</td>
<td>Computers, electrical multifunction testers, clamp meters, digital and analogue multimeters</td>
<td>Electrical installation design simulation</td>
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<tr>
<td>412</td>
<td>4</td>
<td>Computer, secondary current injection test set</td>
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<tr>
<td>413</td>
<td>4</td>
<td>Power and quality energy analyser, micro-Ohmmeters, oscilloscopes, logic analysers, storage scopes</td>
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<tr>
<td>414</td>
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<td>Computers, PLC development software</td>
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<td>415</td>
<td>4</td>
<td>Computers</td>
<td>Emulation/simulation programs e.g. Pspice</td>
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<td>416</td>
<td>4</td>
<td>Computers</td>
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<td>Provide access to a 2D CAD software package</td>
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<tr>
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<td>C programming development tools</td>
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<tr>
<td>502</td>
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<td>Computers</td>
<td>Emulation/simulation systems e.g. Pspice</td>
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<tr>
<td>503</td>
<td>5</td>
<td>Project specific</td>
<td>This unit should be an applications-based project with the learner given hands-on control</td>
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<tr>
<td>504</td>
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<td>Computers</td>
<td>Provide access to project management software</td>
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<tr>
<td>505</td>
<td>5</td>
<td>Table-top equipment for experimentation with experimentation with systems</td>
<td>To support developing skills with measurement systems and control system design</td>
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<tr>
<td>506</td>
<td>5</td>
<td>Computers, LAN hardware serial bus analyser/bus analyser, RF/microwave analyser</td>
<td>Communication emulator</td>
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<tr>
<td>507</td>
<td>5</td>
<td>Computers</td>
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<td>508</td>
<td>5</td>
<td>Computers</td>
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<tr>
<td>509</td>
<td>5</td>
<td>Computers, transformer testers, 3 phase electrical supplies, a motor/generator test bench</td>
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<td>510</td>
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<td>Computers</td>
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