

## Subject Description Form

<b>Subject Code</b>	BRE222
<b>Subject Title</b>	Workshop Practices and Draftsmanship
<b>Credit Value</b>	3
<b>Level</b>	2
<b>Pre-requisite / Co-requisite / Exclusion</b>	Nil
<b>Objectives</b>	<ol style="list-style-type: none"><li>1. Provide students an opportunity to 'learn by doing' in terms of participating in practical construction work; and</li><li>2. Provide students with knowledge of principles and techniques of construction drawing both manually or using AutoCAD as a CAD tool and enable them to appreciate the use of engineering drawings as a communication medium in the construction industry.</li></ol>
<b>Intended Learning Outcomes</b>	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"><li>a. Identify good practices and workmanship for major trades in building projects.</li><li>b. Describe actual work sequences and methods in major builder's work.</li><li>c. Explain the technology impact on equipments, materials and work methods to keep abreast of technology development and building practices.</li><li>d. Prepare basic sketches, orthographic projections and working drawings and produce a simple building plan to recognized construction drawing standards.</li><li>e. Produce simple construction CAD drawing with AutoCAD.</li><li>f. Communicate using engineering drawings as media.</li></ol>

**Subject Synopsis/  
Indicative Syllabus**

**Workshop Practices**

Key concepts, appreciation and practice on building skills for major trades; characteristics and properties; trades tools and materials; reading of construction working drawings; measurement and setting out techniques; materials preparation; fabrication process; good site practices.

Area / Topic	Duration
<b>Brickwork</b> <ul style="list-style-type: none"><li>• Introduction to common types of brickwork, blockwork; wall finishes, tiling, plastering; and</li><li>• Bricklaying practice.</li></ul>	3 hrs
<b>Concrete</b> <ul style="list-style-type: none"><li>• Introduction to concrete materials, plants and concrete mixing process;</li><li>• Batching, mixing, placing of concrete; and</li><li>• Site quality control tests, e.g. slump test.</li></ul>	6 hrs
<b>Reinforcement</b> <ul style="list-style-type: none"><li>• Introduction to types of steel bars, RC details and bending scheduling;</li><li>• Cutting, bending and fixing of reinforcement bars of beam, column; and</li><li>• Site inspection on fixed bars.</li></ul>	6 hrs
<b>Formwork</b> <ul style="list-style-type: none"><li>• Introduction to types of forms, materials; tools and equipment;</li><li>• Simple formwork design; and</li><li>• Fabrication of timber formwork.</li></ul>	6 hrs
<b>Scaffolding</b> <ul style="list-style-type: none"><li>• Introduction to types of metal scaffolding and falsework, materials; tools and equipment; scaffolding safety; and</li><li>• Erection of simple scaffolding.</li></ul>	3 hrs
<b>Structural Steelwork</b> <ul style="list-style-type: none"><li>• Introduction to types of structural steel sections, material properties; tools and equipment;</li><li>• Cutting and jointing methods, welding, bolt &amp; nuts; and</li><li>• Appreciation of welding tests.</li></ul>	6 hrs
<b>Plumbing</b> <ul style="list-style-type: none"><li>• Introduction to types of plumbing materials, tools, pipes and fittings;</li><li>• Pipe fitting and jointing methods practice; and</li><li>• Pipe pressure testing.</li></ul>	3 hrs
<b>Total</b>	<b>33 hrs</b>

**Draftsmanship**

Key concepts, appreciation and practice on drafting skills on 2D construction drawings by manual and CAD software; drawing standards, common symbols; interpretation of construction working drawings; good practices.

	<table border="1"> <thead> <tr> <th data-bbox="456 96 1254 132">Area / Topic</th> <th data-bbox="1254 96 1425 132">Duration</th> </tr> </thead> <tbody> <tr> <td data-bbox="456 132 1254 416"> <b>Manual Drafting</b> <ul style="list-style-type: none"> <li>• Introduction to construction drawing practices based on BS1192;</li> <li>• Orthographic projection techniques, sectioning;</li> <li>• Dimensioning and leaders, free hand sketching; and</li> <li>• Production of building floor plans and architectural details.</li> </ul> </td> <td data-bbox="1254 132 1425 416">13 hrs</td> </tr> <tr> <td data-bbox="456 416 1254 768"> <b>CAD by AutoCAD</b> <ul style="list-style-type: none"> <li>• Introduction to application of CAD in construction drawings;</li> <li>• Basic 2D geometry functions: point, line circle and arc; zoom, pan, fit and redraw; trim fillet and erase; dimensioning, text and label; line types, colour, layers and views; and</li> <li>• CAD exercise on building floor plan and architectural features.</li> </ul> </td> <td data-bbox="1254 416 1425 768">13 hrs</td> </tr> <tr> <td data-bbox="456 768 1254 804"><b>Total</b></td> <td data-bbox="1254 768 1425 804">26 hrs</td> </tr> </tbody> </table>	Area / Topic	Duration	<b>Manual Drafting</b> <ul style="list-style-type: none"> <li>• Introduction to construction drawing practices based on BS1192;</li> <li>• Orthographic projection techniques, sectioning;</li> <li>• Dimensioning and leaders, free hand sketching; and</li> <li>• Production of building floor plans and architectural details.</li> </ul>	13 hrs	<b>CAD by AutoCAD</b> <ul style="list-style-type: none"> <li>• Introduction to application of CAD in construction drawings;</li> <li>• Basic 2D geometry functions: point, line circle and arc; zoom, pan, fit and redraw; trim fillet and erase; dimensioning, text and label; line types, colour, layers and views; and</li> <li>• CAD exercise on building floor plan and architectural features.</li> </ul>	13 hrs	<b>Total</b>	26 hrs
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<b>Learning Methodology</b>	<p><b>Workshop Practices</b></p> <p>The course will be conducted on highly participative with both theory and hands-on practical sessions, good practices demonstration basis with theoretical supplement. The general principles, techniques and related technologies will be presented to students. Students learn the required skills through practical exercises and case studies. Their learning skills will be strengthened through group projects for developing their problem solving skills, integrating their learning and applying their learning techniques under real world environment.</p> <p><b>Draftsmanship</b></p> <ul style="list-style-type: none"> <li>• Demonstration of good practices of manual draftsmanship and AutoCAD Skills (2D) during lectures;</li> <li>• Hands-on practices on construction featured exercises by manual drafting and AutoCAD in computer training room;</li> <li>• Interactive feedback on hands-on exercises and assignments; and</li> <li>• Self-revision by reviewing the reading materials on webs developed by IC.</li> </ul>								

**Assessment Methods  
in Alignment with  
Intended Learning  
Outcomes**

Assessment Methods	% Weighting	Intended Learning Outcomes Assessed					
		a	b	c	d	e	f
1. Report (W/S Practice)	35%	√	√	√			
2. Quiz (W/S Practice)	15%	√	√	√			
3. Coursework (Draftsmanship)	30%				√	√	√
4. Test (Draftsmanship)	20%				√	√	√
Total	100%						

**Workshop Practices**

Experiential learning is emphasized in the training programme, 100% attendance is expected. Students are organized to work closely in small groups with IC training staff, wide range of construction process and good practices are exercised in workshops and lectures. Students will acquire skills through participation in different tasks and hands-on practices; their skills are recorded and assessed in their coursework and reports. Appropriate questions are set in the quiz to test the knowledge of the students gained in the module.

**Draftsmanship**

Student performance in this subject is entirely based on continuous assessment. A wide range of building drawings is used in the hands-on coursework. It enables students to familiarise with the skills and develop the competence of manual drafting and AutoCAD. The questions in the quizzes will embrace most of the syllabus and will be set to align with the intended learning outcomes.

<b>Student Study Effort Expected</b>	Class contact:	
	(Workshop Practices)	
	▪ Workshops / In-Class practice	33 Hrs.
	(Draftsmanship)	
	▪ Lectures	12 Hrs.
	▪ Tutorials / In-Class practice	14 Hrs.
	Other student study effort:	
	▪ Self-Development	5 Hrs.
	▪ Coursework (Workshop Practices)	2 Hrs.
	▪ Coursework (Draftsmanship)	14 Hrs.
	Total student study effort	80 Hrs.
	<b>Reading List and References</b>	<p><b>Essential Textbooks/ Reading Materials:</b></p> <p>Refers to the individual IC module description TM1219 and TM8028.</p> <p><b>References:</b></p> <p>HK Housing Society “Quality Field Practices”, HK Housing Society, 2003.</p>