SURV C1508: Materials, Building and Land Surveying

Module Title:	Materials, Building and Land Surveying
Language of Instruction:	English

Credits:	10

NFQ Level:	6

Module Delivered In	3 programme(s)

Teaching & Learning Strategies:	Lectures Projects Practical's Private study Blackboard

Module Aim:	The aims of the Materials section of this module are: (1) to prepare students for participation in the quality control of materials used in construction projects; (2) To give students a basis for further study of material. The aims of the Building & Land Surveying section of this module are: (1) to provide students with the theoretical and practical knowledge of building and land surveying and setting out (2) to develop practical skills in the use of specialist surveying equipment.

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	Describe and examine the (a) source and origin of various construction materials including aggregates, timber, metals and cement; (b) physical properties associated with aggregates, cement, timber, metals and fresh and hardened concrete; (c) impact that sustainability, carbon footprint and circular economy has on our choice of construction materials;
LO2	Demonstrate (a) an awareness of (i) manufacturing technologies associated with aggregates, cement, concrete, timber and metals; (ii) various construction products available including admixtures etc.; (b) the skills developed in: (i) checking conformity of laboratory results with specifications and in accordance with codes of practice; (ii) preparation of laboratory reports; (c) an understanding of Health and Safety;
LO3	Demonstrate knowledge of modern Total Station instruments.
LO4	Identify and address the procedures for setting out construction works
LO5	Identify and address the standard methods employed for collecting and plotting survey details.

Pre-requisite learning
Module Recommendations *This is prior learning (or a practical skill) that is recommended before enrolment in this module.*
No recommendations listed
Incompatible Modules *These are modules which have learning outcomes that are too similar to the learning outcomes of this module.*
No incompatible modules listed
Co-requisite Modules
No Co-requisite modules listed
Requirements *This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.*
No requirements listed

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Module Content & Assessment

Indicative Content
(1) Sustainability (a) Principles of Sustainability (b) Carbon Footprint, CO2 emissions, Kyoto Protocol, embodied carbon (c) Life Cycle/Circular Economy, Construction Waste
(2) Aggregates (a) Origin and geological classification of rock. (b) Sources of aggregates. (c) Sampling of aggregates. (i) Sampling (ii) Riffling (iii) Quartering (d) Physical properties and classification of aggregates. (i) Particle size analysis (ii) Fines Content (iii) Flakiness Index Test (iv) Moisture Content (e) Typical Laboratory Experiments Aggregates (i) Sampling (ii) Quartering & Riffling (iii) Particle size analysis (iv) Fines Content Test (v) Flakiness Index Test (vi) Moisture Content
(3) Cement (a) Composition, types and manufacturing process. (b) Setting times. (c) Soundness (d) Strength
(4) Introduction To Concrete (a) Constituents and mix design (b) Basic Properties of fresh concrete (c) Basic Properties of hardened concrete (d) Typical Laboratory Experiments Concrete (i) Workability – Slump Test (ii) Making Cubes (iii) Curing Cubes (iv) Demoulding Cubes (v) Measuring Cubes (vi) Crushing Cubes
(5) Timber (a) Growth and structure of trees (b) Classification of wood (c) Moisture content and seasoning (d) Natural and handling defects (e) Insect and fungal attack (f) Preservation (g) Stress grading (h) Timber products (i) Typical Laboratory Experiments Timber (i) Physical identification and examination of natural wood samples (ii) Physical identification and examination of manufactured board samples (iii) Microscopic examination of hardwood and softwood (slides) structure that is radial, tangential and longitudinal sawn cuts (iv) Moisture content measurement by both Oven and Meter testing (v) Physical examination of defects and deterioration in timber samples (vi) Physical examination and measurement of Knot / Area ratio on timber samples (vii) Physical examination of both Pressure and Brush applied preservative treatments to timber samples
(6) Metals (a) Ferrous/non–ferrous (b) Processes, treatments (c) Properties and use (d) Typical Laboratory Experiments (i) Physical identification and examination of various metal samples (ii) Microscopic examination of structure of various metal samples (iii) Metals material testing for Stress and Strain and Hardness tests
(7) Building Surveying (a) Building and condition surveys (b) H&S in building surveying (c) Maps and Plans (d) The planning process
(8) Land Surveying (a) Whole circle and reduced bearings (b) Latitudes and departures (c) Setting-out building works (d) Conduction of a detail Survey
(9) Instrument Instruction (a) Total Station Instruments (b) Controlling vertically in buildings
(10) Practical Work n/a

Assessment Breakdown	%
Continuous Assessment	60.00%
Practical	40.00%

Continuous Assessment

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Case Studies	n/a	1,2,3,4,5	60.00	n/a

No Project

Practical

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Practical/Skills Evaluation	n/a	1,2,3,4,5	40.00	n/a

No End of Module Formal Examination

SETU Carlow Campus reserves the right to alter the nature and timings of assessment

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Module Workload

Workload: Full Time		
Workload Type	*Frequency*	*Average Weekly Learner Workload*
Lecture	12 Weeks per Stage	3.00
Practicals	12 Weeks per Stage	5.00
Estimated Learner Hours	12 Weeks per Stage	12.83
	Total Hours	250.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_CMOPT_B	Bachelor of Science (Honours) in Construction Management	2	Mandatory
CW_CMQSU_B	Bachelor of Science (Honours) in Quantity Surveying	2	Mandatory
CW_CMBSE_D	Bachelor of Science in Construction Management	2	Mandatory