

Subject Description Form

Subject Code	BRE466
Subject Title	Capstone Project
Credit Value	6
Level	4
Pre-requisite	BRE366
Objectives	<p>The aim of the Capstone Project is to provide students with the opportunity of demonstrating research competence by providing them with a vehicle through which they can reveal a full understanding and evaluation of an issue or a topic that they choose to investigate. The Project is in the form of a final year Dissertation, or any other format to be decided by the Scheme Committee from time to time. In the case of a Dissertation, the issue or the topic should be based on their programme, award or major, in studies relevant to the construction and real estate industry and of particular concern to Hong Kong and its neighbouring environments. The study might include an extensive literature review; the discovery, development or enhancement of a research model; the development of a measurement instrument, such as a questionnaire; or the comparison of statistical models for the evaluation of existing data. Where appropriate, students might join a departmental research group where they would be able to assist staff by working in a particular field of study. In cases other than the Dissertation, the format of the Project will be announced prior to its commencement.</p>
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to complete a capstone project. They should be able to:</p> <p><u>Generally</u></p> <ul style="list-style-type: none"> a) display a culminating set of personal, academic and professional experiences/learning; b) synthesize, integrate and/or apply previous knowledge instead of solely acquiring new knowledge/skills; c) apply general education principles; d) engage in an interdisciplinary inquiry of at least two or more disciplines; <p><u>Specifically in the case of a final year Dissertation</u></p> <ul style="list-style-type: none"> e) produce a research proposal related to a topic in the field of construction and real estate; f) apply an appropriate research methodology to the chosen topic; g) conduct a critical and comprehensive literature review; h) analyse data and evaluate findings; i) communicate their ideas in a clear, concise and precise manner; and j) produce a dissertation that is based on their research and written in good English.

<p>Subject Synopsis/ Indicative Syllabus</p>	<p>In the case of a final year Dissertation: (i) Property Management and Surveying students will identify a topic in the field of construction and real estate to study in depth in the final year. The Dissertations are grouped into a number of study areas within the research theme of the Department such as real estate investment and finance, land and construction economics, construction management and construction technology and science, and property and facilities management. (ii) BEM students will be advised to identify a topic in the field of Building Engineering and Management. The topic should be engineering-oriented or engineering related area in construction. The Dissertations are grouped into a number of study areas within the research themes of the Department such as construction technology and science, production engineering, production and contract management, engineering economics, construction quality in engineering works, application of information technology in the building industry, engineering materials, etc. Occasionally, if a student proposes a topic which is not within the context of engineering orientation, consideration and prior approval need to be sought from the BEM Programme Management Team.</p>
<p>Teaching/Learning Methodology</p>	<p>Academic leadership is provided by the Capstone Project Committee comprising Capstone Project Co-ordinators and Scheme Chair. The Committee is assisted by the supervisors who are BRE academic staff with research experience.</p> <p>In the case of final year Dissertation, each student will work under the guidance of a supervisor and, if necessary, a second supervisor may be appointed to assist in project supervision. The project supervision is timetabled for one hour per two weeks over the whole dissertation study period, but students are expected to devote about a day per week of their own time to carry out study and research work. Students are encouraged to formulate a testable hypothesis with theoretical model or justifications; carry out an empirical test on the hypothesis; and draw inference(s) on research and practical implications from the findings.</p>

Assessment Methods in Alignment with Intended Learning Outcomes

Specific assessment methods/tasks in the case of final year Dissertation	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)					
		a	b	c	d	e	f
1. Final Proposal	15 %	✓	✓	✓			
2. Progress and Efforts	15 %		✓	✓	✓		
3. Completed Dissertations	70 %		✓	✓	✓	✓	✓
Total	100 %						

Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

The assessment of each of the three tasks (Final Proposal, Progress and Efforts, and Completed Dissertations) will be made based an “Assessment Rubrics” that will be adopted and approved by the Dissertation Committee. The “Assessment Rubrics” will be made available for reference by both students and supervisors on the Dissertation Guide web-pages. The main criteria are underlined as listed below.

Final Proposal

The Final Proposal should include a problem statement, a preliminary literature review, the study’s aim and objectives, an outline of the research methodology, means of data analysis, and a reference list.

- (1) Problem Statement A concise and precise explanation of the problem that the research intends to address and an outline of the scope of study. This in effect provides the purpose of the study.
- (2) Literature Review A summary of the relevant theories, research evidence, and descriptive materials bearing on the proposed research, including all information, published or otherwise, that aids in understanding and helps to explain the background to the research.
- (3) Aim and Objectives Linking of the problem statement and literature review should be made through a precise statement of a research aim and a number of specific objectives. If a testable question (hypothesis) is to be used then this should be clearly stated. This section is a critical part of the research proposal because the aim and objectives need to be consistent with the purpose of the study.
- (4) Research Methodology A statement describing the research design and data collection techniques must be provided. The description must be sufficiently detailed to permit an understanding of the proposed study without discussion with the student. If a questionnaire survey is to be conducted, a provisional questionnaire should be included. Sources of data and sampling technique should be identified along with any restrictions on confidentiality and possible problems in data collection. The time required for phases of the study should be specified.
- (5) Data Analysis The way in which the data will be analyzed, including any statistical analysis, should be outlined. If a non-standard form of data analysis is to be used, justification should be given. If computer programs are to be used, they should be identified.

(6) Reference and Bibliographic List Students are recommended to use the Harvard referencing system. Alternatively, students can refer to the Student Handbook for other referencing systems, provided that consistency is adhered to.

Progress and Efforts

During the progress of the research, the student and Supervisor will meet for consultation. It is the responsibility of students to arrange meetings with their supervisors in order that they may report and discuss their progress. It is expected that students devote sufficient time to the Dissertation bearing in mind the requirements outlined in the subject syllabus.

Discussions with Supervisors are essential to explore the challenges faced by the student as they learn about the research topic through the research process. Thus, students are required to produce evidence of their work at their meetings with their Supervisors, so that the problems encountered can be shared and solved together.

Assessment Pro-forma for “Proposal and Progress” (weighted 30% towards the overall grade)

Element	Criteria	Weighting
Final Proposal	Adequacy, structure, clarity, originality, length	15%
Progress Report	Consultations, diligence, enthusiasm, planning	15%
Total		30%

Completed Dissertation

The Dissertation should include a declaration, an abstract, an introduction, aim and objectives, methodology, literature review, data collection, analysis, and conclusions.

For the purpose of criterion-based assessment, the assessment of the completed Dissertation is divided into six elements, i.e. presentation, aim and objectives, research methodology, literature review, data collection and analysis, conclusions and findings, with a corresponding weighting.

- (1) Aim and Objectives A re-statement of the aim and objectives in the Final Proposal (may be included in the Introduction).
- (2) Methodology A clear statement of the planned research methods, as well as reporting of any ways in which the original methodology was modified as a result of constraints imposed in actually conducting the research. Some writers included this in the Introduction.
- (3) Literature Review The literature search should be fully described showing the keywords and scientific databases used. A strong emphasis should be placed on refereed journal papers which can provide evidence of existing knowledge of the selected topic, obtained through scientific methods. The review should not only describe relevant theories, previous research, and descriptive material that have a bearing on the study, but also evaluate its worth. Evidence of independent analysis of the available literature should also be demonstrated. A basis for the chosen research topic should be established.

(4) Data Collection This section should provide a clear and objective picture of the way in which the data was collected, including identification of any problems encountered and an explanation of the outcome obtained. The data should be summarized and presented in an appropriate form, such as tables and graphs, and not be evaluated or interpreted. Although some writers include analysis of the data in this section, others prefer to cover it separately.

(5) Analysis This section should include the analysis and interpretation of the results of the research. The discussion should explain the degree to which the research objectives were achieved, the possible reasons for non-attainment of some objectives, the ways in which the theories did or did not help to examine the problem, and an evaluation of the research results. In many reports, this section is the most important and often the longest in terms of words.

(6) Conclusions The conclusions or outcomes of the study should be presented in this section. Included should be the major results that the study has achieved, identification of unanswered questions and directions for further study, speculation about the importance of the findings to the body of knowledge in the construction and real estate fields and any other related items that the student wishes to emphasize.

Assessment Pro-forma for “Completed Dissertation” (weighted 70% towards the overall grade)

Element	Criteria	Weighting
Presentation	Syntax, clarity, conciseness, preciseness, structure, aesthetics, graphics, length	10%
Aim and Objectives	Appropriateness and accomplishment of stated aim and objectives, accuracy of application	5%
Research Methodology	Appropriateness, achievability, planning of research design, comprehensiveness, description	15%
Literature Review	Relevant parameters, adequate depth and breadth, accuracy, citations and references	15%
Data Collection and Analysis	Relevancy, accuracy, adequacy, coherence of data analysis, logicity of interpretation	15%
Conclusions and Findings	Validity, logicity, substantiveness, originality, degree of critique, new ideas or models	10%
Total		70%

Student Study Effort Required	Class contact:	
	▪ Guided study	10 Hrs.
	Other student study effort:	
	▪ Independent study	314 Hrs.
	Total student study effort	324 Hrs.
Reading List and References	<p>Essential:</p> <p>HKPolyU Building and Real Estate Department. <i>Dissertation Guide</i>. Continuously updated.</p> <p>Recommended:</p> <p>Bell, J. (1993) <i>Doing Your Research Project</i>, Open University Press.</p> <p>Blaikie, N (2000) <i>Designing Social Research: The Logic of Anticipation</i>. Cambridge: Polity.</p> <p>Booth, W.C., Colomb, G.G. and Williams, J.M. (2003) <i>The Craft of Research</i>, 2nd ed. Chicago: The University of Chicago Press.</p> <p>Chau K.W., Raftery J. and Walker A. (1998) The Baby and the Bathwater: Research Methods in Construction Management. <i>Construction Management and Economics</i>, 16:1, 99-104</p> <p>Fellows R. and Liu A. (1997) <i>Research Methods for Construction</i>, Blackwell-Science.</p> <p>Harris R. and Cundell I. (1995) Changing the Property Mindset by Making Research Relevant. <i>Journal of Property Research</i>, 12, 75-78.</p> <p>Holt G. (1998) <i>A Guide to Successful Dissertation Study for Students of the Built Environment</i>, 2nd edition. The Built Environment Research Unit, University of Wolverhampton.</p> <p>Hussey, J. and Hussey, R. (2003) <i>Business Research: A Practical Guide for Undergraduate and Postgraduate Students</i>, 2nd Edition. Basingstoke: Palgrave Macmillian, England.</p> <p>Kennedy, P. (2003) <i>A Guide to Econometrics</i>, 5th Edition, USA: Blackwell Publishing.</p> <p>Knight, A. and Ruddock, L. Ed. (2008) <i>Advanced Research Methods in the Built Environment</i>. Chichester: Wiley-Blackwell.</p> <p>Kumar R. (1996) <i>Research Methodology: A Step-by-Step Guide for Beginners</i>. Addison Wesley Longman.</p>	

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Raftery J., McGeorge D. and Walters M. (1997) Breaking Up Methodological Monopolies: A Multiparadigm Approach to Construction Management Research. *Construction Management and Economics*, 15:3, 291-97.

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