

## Subject Description Form

<b>Subject Code</b>	BRE366
<b>Subject Title</b>	Analytical Skills and Methods
<b>Credit Value</b>	2
<b>Level</b>	3
<b>Pre-requisite / Co-requisite / Exclusion</b>	Pre-requisite: Level 2 core subjects Co-requisite / Exclusion: Nil
<b>Objectives</b>	To prepare students for undertaking a manageable piece of research leading to a dissertation.
<b>Intended Learning Outcomes</b>	Upon completion of the subject, students will be able to: <ul style="list-style-type: none"> <li>a. Describe and appraise the key concepts, elements and requirements in research.</li> <li>b. Describe the meaning of plagiarism and demonstrate the proper ways to avoid it.</li> <li>c. Apply the knowledge of fundamental statistics in collecting, organizing, summarizing, presenting and analyzing data, as well as drawing valid conclusions.</li> <li>d. Conduct hypothesis testing and valid multiple regression analysis with its diagnostic tests.</li> <li>e. Produce a dissertation research proposal with researchable topic related to the fields of construction and real estate.</li> </ul>
<b>Subject Synopsis/ Indicative Syllabus</b>	<ol style="list-style-type: none"> <li>1. Concepts: Philosophy of sciences, theory, hypothesis, methodology, method, research objective, problem statement, classification of research, etc.</li> <li>2. Process: Literature search and review, referencing and plagiarism, work plan, authorship skills, data assembly, time management, writing up, etc.</li> <li>3. Qualitative research: Strategy, approaches, methods, analysis, examples, limitations, etc.</li> <li>4. Quantitative research methods: Descriptive and inferential statistics, normal distribution, basic quantitative statistical techniques, hypothesis testing and decision making, correlation and regression analysis, and application of computer softwares/programs to handle statistical problems and calculations, etc. (<i>Remarks: Students are expected to learn these statistical techniques in more details and many other relevant quantitative techniques by their own initiatives.</i>)</li> <li>5. Writing out a dissertation proposal.</li> </ol>
<b>Teaching/Learning Methodology</b>	In the lectures, teachers will introduce the course materials, explain the key theories and concepts and showcase examples of the methodology, elements and possible loopholes in doing a piece of research. The essential concepts and principles of various key subject areas under the qualitative and quantitative research methods will be presented in the lectures, leading to the preparation of initial dissertation proposals for submission. Tutorials will be used for discussion, problem-solving, hands-on demonstration and library visits. Interactive multi-media self-accessed learning materials will be provided via the department's computer network (e.g. LEARN@PolyU blackboard subject websites). Coursework will be designed to assess the students' ability to demonstrate their understanding of the course materials and their abilities to achieve the learning outcomes.

<b>Assessment Methods in Alignment with Intended Learning Outcomes</b>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)				
			a	b	c	d	e
	1. Continuous Assessment	100%	√	√	√	√	√
	Total	100%					
<p>The subject “Analytical Skills and Methods” or "Research Methods" is a major component leading to the learning and completion of Dissertation. Students must complete and pass each of the four assessment components of the subject in order to obtain an overall pass of the subject. Forty percent (40%) of the total coursework mark will be devoted to qualitative research methods, and the other 40% to quantitative research methods. Qualitative and quantitative research methods are complementary and supplementary to each other. They are not complete in themselves. Students need to demonstrate their learning outcomes, at pass levels, on both of them to complete the subject. Ten percent (10%) will be evaluated according to the attendance of the required library seminar/workshop and the rest of 10% as the marks of a series of related on-line quizzes. Marks will be allocated on an individual basis.</p> <p>The subject will be assessed on a continuous basis and no examination is required. The approach to coursework assessment is guided by two principles. First, the need to assess the extent to which the students have achieved the learning outcomes with respect to grading criteria. Second, the assessment itself should contribute in some way towards reflection and learning of the importance of research methods in Dissertation. The total coursework mark will be based on a portfolio comprising a series of problem-based assignments, on-line quizzes and in-class written tests, library seminar/workshop and discussion. These assessment tools attempt to test the level of students’ knowledge and application of fundamental qualitative research concepts and statistical techniques, in manipulating data for presentation, analysis and decision-making.</p>							
<b>Student Study Effort Required</b>	Class contact:						
	▪ Lectures		10 Hrs.				
	▪ Tutorials		5 Hrs.				
	Other student study effort:						
	▪ Self-learning and recommended reading		80 Hrs.				
	Total student study effort		95 Hrs.				

## Reading List and References

### Reference List:

#### Essential:

HKPolyU Building and Real Estate Department. *Dissertation Guide*. Continuously updated.

#### Recommended:

Bell, J. (1993) *Doing Your Research Project*, Open University Press.

Blaikie, N. (2000) *Designing Social Research: The Logic of Anticipation*. Cambridge: Polity.

Booth, W.C., Colomb, G.G. and Williams, J.M. (2003) *The Craft of Research*, 2<sup>nd</sup> Edition, Chicago: The University of Chicago Press.

Chau, K.W., Raftery, J. and Walker, A. (1998) The Baby and the Bathwater: Research Methods in Construction Management. *Construction Management and Economics*, Vol. 16, No. 1, pp. 99-104.

Fellows, R. and Liu, A. (2015) *Research Methods for Construction*, 4th Edition, John Wiley & Sons.

Harris, R. and Cundell, I. (1995) Changing the Property Mindset by Making Research Relevant. *Journal of Property Research*, 12, pp. 75-78.

Holt, G. (1998) *A Guide to Successful Dissertation Study for Students of the Built Environment*, 2nd edition. The Built Environment Research Unit, University of Wolverhampton.

Hussey, J. and Hussey, R. (2003) *Business Research: A Practical Guide for Undergraduate and Postgraduate Students*, 2nd edition. Basingstoke: Palgrave MacMillan, England.

Kennedy, P. (2003) *A Guide to Econometrics*, 5<sup>th</sup> Edition, USA: Blackwell Publishing.

Knight, A. and Ruddock, L. Ed. (2008) *Advanced Research Methods in the Built Environment*. Chichester: Wiley-Blackwell.

Kumar, R. (2014) *Research Methodology: A Step-by-Step Guide for Beginners*. London: Sage Publications.

Levin, R.I. and Rubin, D.S. (1998) *Statistics for Management*, 7th edition, Prentice-Hall.

Lizieri, C. (1995) Comment: Relevant Research and Quality Research: the Researcher's Role in the Property Market. *Journal of Property Research*, 12, pp. 163-166.

Lucey, T. (1992) *Quantitative Techniques ELBS*.

Mason, J (2002) *Qualitative Researching*. London: Sage.

Naoum, S.G. (2013) *Dissertation Research and Writing for Construction Students*, London: Routledge.

Pindyck, R.S. and Rubinfeld, D.L. (1998) *Econometric Models and Economic Forecasts*, 4<sup>th</sup> Edition, Boston: McGraw-Hill International Editions.

Raftery J., McGeorge, D. and Walters, M. (1997) Breaking Up Methodological Monopolies: A Multi-paradigm Approach to Construction Management Research. *Construction Management and Economics*, 15(3), pp. 291-297.

Render, B. and Stair, R.M. Jr (2000) *Quantitative Analysis for Management*, 7th Edition. Prentice Hall, New Jersey.

Tan, W. (2002) *Practical Research Methods*. Pearson Education Asia Pte Ltd., Singapore.

#### **References on Probability and Statistics:**

Berenson, M.L., Levine, D.M. and Krehbiel, T.C. (2004). *Basic Business Statistics – Concepts and Applications*, 9<sup>th</sup> Edition, Pearson Education, New Jersey, USA.

Bland, J.A. (1985). *Statistics for Construction Students*, Construction Press.

Devore, J.L. (2000). *Probability and Statistics for Engineering and the Science*, Duxbury.

Hogg, R.V. and Craig, A.T. (1989). *Introduction to Mathematical Statistics*, Maxwell MacMillan.

Lapin, L.L. (1990). *Probability and Statistics for Modern Engineering*, 2nd Edition, PWS-Kent Publishing Company, Massachusetts, USA.

Levin, R.I. and Rubin, D.S. (1994). *Statistics for Management*, Prentice-Hall, New Jersey, USA.

Lucey, T. (1992). *Quantitative Techniques*, D.P. Publications, London, U.K.

Mendenhall, W., Beaver, R.J. and Beaver, B.M. (1999). *Introduction to Probability and Statistics*, 10<sup>th</sup> Edition, Duxbury Press, California, USA.

Mendenhall, W., Reinmuth, J.E., Beaver, R. and Duhan, D. (1993). *Statistics for Management and Economics*, 7<sup>th</sup> Edition, Boston: Duxbury Press, USA.

Scheaffer, R.L. and McClave, J.T. (1995). *Probability and Statistics for Engineers*, 4<sup>th</sup> Edition, Duxbury Press, California, USA.