Subject Description Form

Subject Code	BRE210
Subject Title	Information and Data Analysis
Credit Value	3
Level	2
Pre-requisite / Co-requisite / Exclusion	Nil
Objectives	This subject is intended to develop the ability of students to understand and apply statistical concepts and computer & IT software packages in manipulating data for presentation, analysis, information modelling and decision-making throughout the process of construction and real estate developments.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: a. Apply the knowledge of fundamental statistics in collecting, organizing, summarizing, presenting and analyzing data, as well as drawing valid conclusions. b. Use computer information management /modelling systems to search information, analyze and building up information models, as well as make reasonable decisions. c. Communicate effectively and work in collaboration with other members of the project team in a professional context. d. Adopt professional skills to identify, analyze and solve problems. e. Adopt desirable forms of learning for the university study and make aware of academic integrity and plagiarism.
Subject Synopsis/ Indicative Syllabus	**Information Technology** Introduction to computers, networks and information systems. Building Information Modelling (BIM). Searching on the Internet and construction IT. Computer applications in information control/ electronic Documentation. Study of construction integrated management system. Presentation of information with multimedia. Introduction to profession-specific information systems for building surveying, construction management, quantity surveying and real estate. **Data Analysis** Descriptive statistics. Probability theory. Random variables and probability distributions. Sampling theory and sampling distributions. Hypothesis testing and decision making. Introduction to statistical programs.
Teaching/Learning Methodology	Lectures will be used to present essential concepts and principles of the various subject areas. Tutorial and laboratory sessions, where appropriate, will be used for discussion, problem-solving, hands-on demonstration and presentation. Interactive multimedia self-accessed learning materials will be provided via the department's computer network.

Assessment Methods in Alignment with Intended Learning Outcomes

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%						

The subject will be assessed on a continuous basis and no examination is required. Information technology and data analysis will constitute equal proportions of the total coursework mark of the subject respectively. The total coursework mark will be based on a portfolio comprising a series of problem-based assignments, written tests, group reports and presentations. Marks will be allocated on both group effort and individual basis.

The problem-based assignments, written tests, group reports and presentations attempt to test the level of students' knowledge and application of fundamental statistical concepts and computer programs/ information management systems, in manipulating data for presentation, analysis and decision-making throughout the process of construction and real estate developments. Effectiveness of communication and teamwork, together with the application of professional skills in problem solving, will also be tested through all these assessment tools.

The assessment for the intended learning outcome (e) is for awareness of the expected honest academic behaviour and of the importance of academic integrity. Students are required to complete the online tutorial on academic integrity within the first 5 weeks of the subject. Students who cannot complete the online tutorial will fail the whole subject.
Information of the online tutorial can be found using the link http://www.polyu.edu.hk/ogur/academic_integrity/Student_Guide.pdf

Student Study Effort Expected

Class contact:	
- Lectures	26 Hrs.
- Tutorials / Laboratory sessions	13 Hrs.
Other student study effort:	
- Self-learning and recommended reading	130 Hrs.
Total student study effort	169 Hrs.

Reading List and References

Recommended:

Information Technology

Construction Industry Computing Association (1995). *Building IT 2005: A Multi-media Presentation of Experts' View on Information Technology in the Construction Industry to the Year 2005*. CICA.

Derfler, F.J. and Freed, L. (1993). *How Networks Work*. CA: Ziff-Davis Press.

Krol, E. and Ferguson, P. (1995). *The Whole Internet: User's Guide and Catalogue*. O'Reilly & Associate.

Wong, A.K.D. (2006). "Use of Smart Card for Enhancing Construction Site Human Resources Management". *Journal of Building and Construction Management*, Volume 10, Number 1, June, ISSN 1024-9540, 63-68.

Wong, A.K.D. (2006). "E-tendering in Anti-corruption in the Hong Kong Construction Industry". *Proceedings of the CIB W89 BEAR (Building Education and Research) 2006 International Conference on Construction Sustainability and Innovation*, 10-13 April 2006, Hong Kong, Abstract on page 93.

Wong, A.K.D., Wong F.K.W. and Abid Nadeem (2009). "Attributes of Building Information Modelling and its Development in Hong Kong". *The HKIE Transactions*, Volume 16, Number 2, June, ISSN 1023-697x, 38-45.

Wong K.D., Wong K.W., Abid Nadeem (2010). "Attributes of Building Information Modelling Implementation in Various Country". Journal of Architectural Engineering and Design Management, Special Issue in Integrated Design and Delivery Solutions, page 288-302, Volume 6(4), November 2010, ISBN 978-1-84971-275-0.

Wong K.D., Wong K.W., Abid Nadeem (2011). "Government Roles in Implementing Building Information Modelling Systems: Comparison between Hong Kong and the United States", Journal of Construction Innovation: Information, Process, Management, Vol. 11 No. January, 2011 pp. 61-76 Emerald Group Publishing Limited 1471-4175 DOI 10.1108/14714171111104637.

Wong K.D., Wong K.W., Abid Nadeem (2011). "Building Information Modelling for Tertiary Construction Education in Hong Kong", Journal of Information Technology in Construction (ITcon), 2011 Vol. 16, pp. 467-476, http://www.itcon.org/2011/27.

Journal of Information Technology in Construction (ITcon): http://www.itcon.org

Data Analysis

Berenson, M.L., Levine, D.M. and Krehbiel, T.C. (2004). *Basic Business Statistics – Concepts and Applications*, 9th 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*, Dexbury.

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.

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

	Supplementary: Biow, L. and Wattenmaker, P.D. (1993). *How to Use Your Computer*. CA: Ziff-Davis Press. CIOB, *Construction Computing*. CIOB. December, J. (1996). *HTML 3.2 and CGI Unleashed: Professional Reference*. Sams Net. Edding, J. (1994). *How the Internet Works*. C.A: Ziff-Davis Press. Norusis, M.J. (2002). *SPSS for Windows 11.0 Guide to Data Analysis*, Prentice Hall Inc., New Jersey, USA. Stephen, M. (1995). *Powerpoint Made Simple*. Made Simple. Venditto, G. (1984). *Best Uses for Your Computer*. CA: Ziff-Davis Press. West, B. (1994). *Basic Computing Principle*. Oxford: NCC Blackwell.