

## Subject Description Form

<b>Subject Code</b>	COMP 5328
<b>Subject Title</b>	Data Center Fundamentals
<b>Credit Value</b>	3
<b>Level</b>	5
<b>Pre-requisite/ Exclusion</b>	Nil
<b>Objectives</b>	<p>The objectives of this subject are to enable students:</p> <ol style="list-style-type: none"> <li>1. to understand the needs and business requirements for data centers including existing market in Hong Kong and in the region;</li> <li>2. to become familiar with all aspects of a data center's physical components (i.e. data center infrastructure) so as facilitate the design, management, support, and functioning in a data center;</li> <li>3. to comprehend the key considerations in different aspects of the design of a data center;</li> <li>4. to envisage the global trends for data center development and technologies.</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) Select data center services according to business needs and industry practice;</li> <li>b) Understand different components configurations and their suitability for different needs and situations;</li> <li>c) Comprehend the essential elements in a data centre network;</li> <li>d) Calculate the Total Cost of Ownership of operating a data center;</li> <li>e) Master the essence of different data center standards and requirements for relevant certifications;</li> <li>f) Translate business needs to data center facility configurations that address business, financial, technology, regulatory, management, and operational needs;</li> <li>g) Comprehend the landscape of data center technologies development and the possible evolution to data center design.</li> </ol>
<b>Subject Synopsis/ Indicative Syllabus</b>	<ul style="list-style-type: none"> <li>• An introduction to data center.</li> <li>• Data center site selection and architectural requirements.</li> <li>• Data center layout and space allocation.</li> <li>• Data center power requirements and power system design.</li> <li>• Data center air-conditioning requirements and air-conditioning system design.</li> <li>• Data center network design principles, design, and cabling.</li> <li>• Data center environmental monitoring and control systems.</li> <li>• Data center security systems.</li> <li>• Data center standards and certifications.</li> </ul>

<b>Teaching/Learning Methodology</b>	<p>(1) Lecture: students learn the requirements, technologies, concepts, tools, and standards related to data center build-out and network design.</p> <p>(2) Tutorial: students review design examples to identify shortcomings and resolutions as well as the use of appropriate tools that facilitate the design of various components in the data center.</p>																																																		
<b>Assessment Methods in Alignment with Intended Learning Outcomes</b>	<table border="1" data-bbox="580 595 1315 1003"> <thead> <tr> <th data-bbox="580 595 820 757" rowspan="2">Specific Assessment Methods/Tasks</th> <th data-bbox="820 595 983 757" rowspan="2">% weighting</th> <th colspan="7" data-bbox="983 595 1315 712">Intended subject learning outcomes to be assessed</th> </tr> <tr> <th data-bbox="983 712 1031 757">a</th> <th data-bbox="1031 712 1078 757">b</th> <th data-bbox="1078 712 1126 757">c</th> <th data-bbox="1126 712 1174 757">d</th> <th data-bbox="1174 712 1222 757">e</th> <th data-bbox="1222 712 1270 757">f</th> <th data-bbox="1270 712 1315 757">g</th> </tr> </thead> <tbody> <tr> <td data-bbox="580 757 820 875">Assignments, Tests &amp; Projects</td> <td data-bbox="820 757 983 875">55</td> <td data-bbox="983 757 1031 875">✓</td> <td data-bbox="1031 757 1078 875">✓</td> <td data-bbox="1078 757 1126 875">✓</td> <td data-bbox="1126 757 1174 875">✓</td> <td data-bbox="1174 757 1222 875">✓</td> <td data-bbox="1222 757 1270 875">✓</td> <td data-bbox="1270 757 1315 875">✓</td> </tr> <tr> <td data-bbox="580 875 820 958">Final Examination</td> <td data-bbox="820 875 983 958">45</td> <td data-bbox="983 875 1031 958">✓</td> <td data-bbox="1031 875 1078 958">✓</td> <td data-bbox="1078 875 1126 958">✓</td> <td data-bbox="1126 875 1174 958">✓</td> <td data-bbox="1174 875 1222 958">✓</td> <td data-bbox="1222 875 1270 958">✓</td> <td data-bbox="1270 875 1315 958"></td> </tr> <tr> <td data-bbox="580 958 820 1003">Total</td> <td data-bbox="820 958 983 1003">100</td> <td colspan="7" data-bbox="983 958 1315 1003"></td> </tr> </tbody> </table>								Specific Assessment Methods/Tasks	% weighting	Intended subject learning outcomes to be assessed							a	b	c	d	e	f	g	Assignments, Tests & Projects	55	✓	✓	✓	✓	✓	✓	✓	Final Examination	45	✓	✓	✓	✓	✓	✓		Total	100							
Specific Assessment Methods/Tasks	% weighting	Intended subject learning outcomes to be assessed																																																	
		a	b	c	d	e	f	g																																											
Assignments, Tests & Projects	55	✓	✓	✓	✓	✓	✓	✓																																											
Final Examination	45	✓	✓	✓	✓	✓	✓																																												
Total	100																																																		
<b>Student study effort expected</b>	<p><b>Class Contact:</b></p> <table border="1" data-bbox="564 1088 1369 1126"> <tr> <td data-bbox="564 1088 1193 1126">Class activities (lecture, tutorial, lab)</td> <td data-bbox="1193 1088 1369 1126">39 hours</td> </tr> </table> <p><b>Other student study effort:</b></p> <table border="1" data-bbox="564 1160 1369 1198"> <tr> <td data-bbox="564 1160 1193 1198">Assignments, Quizzes, Projects, Exams</td> <td data-bbox="1193 1160 1369 1198">65 hours</td> </tr> </table> <p><b>Total student study effort</b> <b>104 hours</b></p>								Class activities (lecture, tutorial, lab)	39 hours	Assignments, Quizzes, Projects, Exams	65 hours																																							
Class activities (lecture, tutorial, lab)	39 hours																																																		
Assignments, Quizzes, Projects, Exams	65 hours																																																		
<b>Reading list and references</b>	<p>(1) Alger, D., 2005, Build the Best Data Centre Facility for Your Business, Cisco Press.</p> <p>(2) Snevely, R., 2002, Enterprise Data Centre Design and Methodology, Sun Microsystems Press.</p> <p>(3) Alger, D., 2012, The Art of the Data Center: A Look Inside the World's Most Innovative and Compelling Computing Environments, Prentice Hall.</p> <p>(4) Bishop, T., 2009, Next Generation Datacenters in Financial Services: Driving Extreme Efficiency and Effective Cost Savings, Elsevier Science.</p>																																																		