Subject Description Form

<table>
<tr><td>Subject Code</td><td>COMP6704</td></tr>
<tr><td>Subject Title</td><td>Advanced Topics in Optimization</td></tr>
<tr><td>Credit Value</td><td>3</td></tr>
<tr><td>Level</td><td>6</td></tr>
<tr><td>Pre-requisite / Co-requisite/ Exclusion</td><td>Nil.</td></tr>
<tr><td>Objectives</td><td>• acquire fundamental knowledge in optimization;
• learn about (advanced) optimization methods and techniques;
• apply the knowledge in optimization and problem solving;</td></tr>
<tr><td>Intended Learning Outcomes</td><td>Upon completion of the subject, students will be able to:

(a) critically evaluate the literature of optimization;
(b) demonstrate a comprehensive understanding of optimization techniques and optimization solvers;
(c) tackle problems in one's research area by using optimization techniques and optimization solvers</td></tr>
<tr><td>Subject Synopsis/ Indicative Syllabus</td><td>This subject will focus on mathematical programming problems and solutions.

• Optimization Problems
• Optimality Conditions
• Unconstrained Problems and Solutions
• Linear Programming
• Quadratic Programming
• Nonlinear Programming</td></tr>
<tr><td>Teaching/Learning Methodology</td><td>39 hours of class activities including – lectures and tutorials.</td></tr>
<tr><td>Assessment Methods in Alignment with Intended Learning Outcomes</td><td>
<table>
<tr><td rowspan="2">Specific assessment methods/tasks</td><td rowspan="2">% weighting</td><td colspan="3">Intended subject learning outcomes to be assessed (Please tick as appropriate)</td></tr>
<tr><td>a</td><td>b</td><td>c</td></tr>
<tr><td>1. Quiz</td><td>20</td><td></td><td>✓</td><td></td></tr>
<tr><td>2. Assignment</td><td>25</td><td>✓</td><td></td><td></td></tr>
<tr><td>3. Examination</td><td>55</td><td>✓</td><td>✓</td><td>✓</td></tr>
<tr><td>Total</td><td>100 %</td><td colspan="3"></td></tr>
</table>

Quiz: assessment of the theoretic studies with respect to the understanding of the relevant subject matters including new concepts, algorithms and techniques by proving answers to the given questions
Assignment: assessment of the ability for problem solving through real case studies and implementation of a prototype system for demonstration
Exam assessment of the overall performance by written report and oral presentation.</td></tr>
</table>

Student Study Effort Expected	Class contact:	
	Lectures/Tutorials	39 Hrs.
	Other student study effort:	
	Self-study	83Hrs.
	Total student study effort	122Hrs.
Reading List and References	1. Nocedal, J. and S. Wright (2006) Numerical optimization. Springer, New York. 2. Boyd, S. and L. Vandenberghe (2004) Convex optimization. Cambridge University Press, Cambridge UK. 3. Sinha, S.M. (2006) Mathematical programming. Netherlands: North Holland.	