

1.	<b>Name of Subject</b> : Problem Solving in Programming and System Design					
2.	<b>Subject Code</b> : PSP0015					
3.	<b>Status of Subject</b> : Core					
4.	<b>Stage</b> : Foundation					
5.	<b>Version</b> : Date of Previous Version:- December 2010 Date of Current Version – November 2011					
6.	<b>Name (s) of academic staff</b> : Abdul Malik Abdullah, Nurhayati Yusoff, Khairol Nizat Lajis, Fauziah Kamarulzaman, Mawar Madiah, Robiatun Adawiah, Suhaini Nordin, Lilian a/p Anthonysamy, Khairi Shazwan Dollmat					
7.	<b>Rationale for the inclusion of the subject in the programme:</b> To equipped Foundation in Information Technology students with the ability to exhibit analytical and problem-solving skills to solve IT related problems.					
8.	<b>Semester and Year offered</b> : Trimester 2					
9.	<b>Total Student Learning Time (SLT)</b>	<b>Face to Face</b>				<b>Total Guided and Independent Learning</b>
	L = Lecture T = Tutorial P = Practical O = Others (Presentation + Final)	L 22	T 7	P 8	O 4	Guided = 41 Independent = 89 Total =130
10.	<b>Credit Value:</b> 3 (130/40 = 3.25)					
11.	<b>Prerequisite (if any)</b> : NIL					
12.	<b>Learning outcomes</b> : i. Define problem solving in programming (Cognitive Level 1) ii. Prepare documentations for program and system development cycle (Cognitive Level 3) iii. Differentiate the importance of ethical values in computing and engage in life-long learning (Affective Level 3) iv. Demonstrate communication skill in various computing application (Affective Level 3)					
13.	<b>Synopsis:</b> Students will learn the phases involved in the programming development lifecycle (PDLC) and software/system development life cycle (SDLC). Students will be introduced to the problem solving techniques in programming using flow chart and psuedocode. Students will be introduced to the problem solving techniques in software/system design using E-R diagram and data flow diagram.					
14.	<b>Mode of Delivery</b> : Lecture, Tutorial, Practical (hands-on)					
15.	<b>Assessment Methods and Types</b> : i. Class Discussion            10 % ii. Assignment                 15 % iii. Project                        15 % iv. Presentation                10 % v. Final Examination         50 % <b>Total                                100 %</b>					
16.	<b>Mapping of the subject to the Programme Learning Outcomes :</b>					<b>% of contribution</b>
	• To acquire basic knowledge and fundamental principles of computer technology and sciences for IT students.					25
	• To apply basic techniques, skills and modern IT tools, through class activities and project work.					25
• To understand moral and professional ethics and responsibilities.					13	

	<ul style="list-style-type: none"> <li>To communicate effectively and work independently, and as a member/leader of a team in various context.</li> </ul>	12			
	<ul style="list-style-type: none"> <li>To acquire analytical and problem-solving skills.</li> </ul>	13			
	<ul style="list-style-type: none"> <li>To acquire the lifelong learning skills and information management skills.</li> </ul>	12			
17.	<b>Content outline of the subject and the SLT per topic :</b>				
	<b>TOPIC</b>	<b>Content Outline</b>	<b>SLT</b>		
			Lecture	Tutorial	Self-study
	<b>1</b>	<b>Introduction</b> Problem solving in programming. Generation of Programming languages. Programming language used today. Job prospect in programming.	2	1	4
	<b>2</b>	<b>Program Development Cycle (PDLC)</b> Introduction phases in PDLC: requirements analysis, design, implementation, testing, documentation.	4	1	6
	<b>3</b>	<b>Problem solving approach</b> Flowchart, pseudocode. Example of problem solving.	4	1	6
	<b>4</b>	<b>Control Structure</b> Sequence control. Selection control. Repetition control. Example of control structure problem. Introduction to C++.	4	1	6
	<b>5</b>	<b>Information System Development (SDLC)</b> Introduction to information system. The role of system analysis and design. Introduction to system development lifecycle: planning, analysis, design, implementation, support / documentation.	2	1	4
	<b>6</b>	<b>Analysis Phase of SDLC</b> Enterprise modelling tools. Entity-relationship diagram. Data flow diagram.	3	1	6
	<b>7</b>	<b>Design Phase of SDLC</b> Introduction, System prototype, Project – Designing simple prototype (input, output, interface and process).	3	1	6
	<b>8</b>	<b>Class Discussion</b>	-	-	6
	<b>9</b>	<b>Assignment</b>	-	-	5
	<b>10</b>	<b>Project and Presentation</b>	2	-	10
	<b>11</b>	<b>Final</b>	2		20
		<b>Total</b>	26	7	79
	<b>TOPIC</b>	<b>Content Outline (Laboratories)</b>	<b>SLT</b>		
			Practical	Self-study	
	<b>1</b>	<b>Introduction to C++</b> Sequence control. Selection control. Repetition control.	8	10	

		<b>Total</b>	8	10
18.	<b>Teaching and Learning Activities/Total Student Learning Time (SLT):</b>			
		<b>Face to Face</b>	<b>Self Learning</b>	
	<b>Lecture</b>	22	24	
	<b>Tutorial</b>	7	14	
	<b>Laboratories</b>	8	10	
	<b>Class Discussion (3)</b>		6	
	<b>Assignment (1)</b>		5	
	<b>Project and Presentation</b>	2	10	
	<b>Final (1)</b>	2	20	
	<b>Sub-total</b>	41	89	
	<b>Total SLT(hours)</b>	130		
19.	<p><b>Main references supporting the course :</b>  Sprankle, M., &amp; Hubbard, J. (2009). <i>Problem solving &amp; programming concepts</i> (8<sup>th</sup> ed.). Upper Saddle River, NJ: Pearson Education.</p> <p><b>Additional references supporting the course :</b>  Dennis, A., &amp; Wixom, B. H. (2003). <i>Systems analysis &amp; design</i> (2<sup>nd</sup> ed.). NY: John Wiley &amp; Sons.</p> <p>Gaddis, T. (2008). <i>Starting out with programming logic &amp; design</i> (1<sup>st</sup> ed.). USA: Pearson Addison Wesley.</p> <p>Hoffer, A.J., George, J.F., &amp; Valacich, J.S. (2002). <i>Modern systems analysis &amp; design</i> (3<sup>rd</sup> ed.). Upper Saddle River, NJ: Prentice Hall.</p> <p>Kendall, K. (2007). <i>System analysis and design</i> (7<sup>th</sup> ed.). Upper Saddle River, NJ: Prentice Hall.</p> <p>Savitch, W. (2008). <i>Problem solving with C++</i>. (7<sup>th</sup> ed.). USA: Pearson Addison Wesley.</p> <p>Shelly, G. B., &amp; Rosenblatt, H. J. (2010). <i>Systems analysis and design</i> (8<sup>th</sup> ed.). USA: Cengage Learning.</p>			