|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | Lecturer | : | **Sazali Bin Ab Manaf** | | **Room No.** | : | **FSKSM, UTM (N28,306-20)** | | **Telephone No.** | : | **013-7530440(sms only)** | | **E-mail** | : | **sazaliam@utm.my** | |  |  |  | | **Synopsis** | : | As a fundamental subject, this course equips the students with theory and practice on problem solving techniques by using the structured approach. Students are required to develop programs using C++ programming language, in order to solve simple to moderate problems. The course covers the following: preprocessor directives, constants and variables, data types, input and output statements, text files, control structures: sequential, selection and loop, built-in and user-defined functions, one dimensional and two dimensional array. | |  | | | | **LEARNING OUTCOMES**  By the end of the course, students should be able to:   |  |  |  |  | | --- | --- | --- | --- | | **No.** | **Course Learning Outcome** | **Programme Learning Outcome(s) Addressed** | **Assessment Methods** | | 1.  2.  3.  4. | Solve problems systematically using problem solving methods.  Construct a C++ program correctly from the analyzed problems using structured approach.  Construct or develop complete C++ programs for simple to moderate problems individually.  Solve problems in a given time frame using C++ programming language and tools.  (T – Test ; Q – Quiz;LE – Labexercise ;Sbt – Skill-Based Test ;  A – Assignment;F – Final Exam) | PO1 (C3, P2, A2)  PO2(C3, P2, A2)  PO2 (C3, P2, A2)  PO2 (C3, P2, A2)  PO5 (CTPS1, CTPS2,CTPS3) | LE, Q, A, T, F  LE, Q, A  LE, A, T, F  Sbt, A, T | | | |   **STUDENT LEARNING TIME**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Teaching and Learning Activities** | | | **Student Learning Time (hours)** | | | Face to face Learning | * Lecturer Centered | Lecture | 28 |  | | * Student Centered | * Practical/Lab/Tutorial | 28 |  | |  | |  | | * Others |  | 0 |  | | **Sub Total** | | 56 | | | Self Learning | * Non Face to face or Student Centered Learning (SCL) | | 24 |  | | * Revision | | 14 | | * Assessment Preparation | | 15 | | * Others | | 0 | | **Sub Total** | | 53 | | | Formal Assessment | * Continuous Assessment | | 8 |  | | * Final Examination | | 3 | | * Others | | 0 |  | | **Sub Total** | | 11 | | |  |  |  |  |  | | **TOTAL SLT** | | | **120** | |  |  | | --- | | **TEACHING METHODOLOGY** | | Lecture and Discussion, Co-operative Learning, Lab Activities |   **WEEKLY SCHEDULE**     |  |  |  | | --- | --- | --- | | **Week** | **Topics** | **Activities/hours** | | **Week 1** | **1.0 Introduction to Computers and Programming**  1.1 Introduction to a Program  1.2 Computer Systems: Hardware and Software  1.3 Programs and Programming Languages  1.4 Procedural and Object-Oriented Programming  **2.0 Problem-solving process**  2.1 Input, Processing, and Output  2.2 The Programming Process  2.3 System Development  **3.0 Problem-solving techniques**  3.1 Pseudocode   * 1. Flowchart   3.3 Structured chart | **Assessment:**  Assignment 1 | | **Weeks 2** | **4.0 Introduction to C++**  4.1 Variables  4.2 Identifiers  4.3 Data types  4.4 Basic arithmetic operators   1. **Arithmetic Expression**   5.1 Mathematical Expressions  5.2 Type Conversion  5.3 Overflow and Underflow  5.4 Type Casting  5.5 Named Constants  5.6 Multiple Assignments and Combined Assignment  **6.0 Input/Output operations**  6.1 Formatting Output  6.2 Formatted Input  6.3 Focus on debugging: Hand tracing a Program  6.4 Focus problem solving: A case study  6.5 Introduction to File Input and Output | **Assessment:**  Lab Exercise 1  *Problem solving test* | | **Week 3** | **7.0 Control structure: Selection/Branch**  7.1 The if statement  7.2 The if/else statement  7.3 The if/else if statement  7.4 The switch statement  7.5 The break, continue statement | **Assessment:**  Quiz 1  Lab Exercise 2 | | **Week 4** | **8.0 Control structure: Loop**  8.1 The for loop  8.2 The while-do loop  8.3 The do-while loop  8.4 Nested loop | **Assessment:**  Assignment 2  Skill-Based Test | | **Week 5** | **9.0 Function:**  9.1 Predefined/library function  9.2 User-defined function  9.3 Sending data by value and  9.4 Sending data by reference | **Assessment:**  ***Test 1*** | | **Week 6** | **10.0 Array: One dimension**  10.1 Declaration and definition  10.2 Accessing arrays | **Assessment:**  Assignment 3 | | **Week7** | **11.0 Struct** | Quiz 2 | | **Week 8** | **STUDY WEEK**  **EXAMINATION WEEK** |  |  |  |  |  | | --- | --- | --- | | **REFERENCES** | : | **Courses Notes:**  Tony Gaddis, BarretKrupnow, *Starting out with C++*, 6th edition update. 2009. Pearson Addison-Wesley.  **Main Text:**  D.S. Malik, C++ Programming: Program Design Including Data Structures, 5th edition update. 2010. Cengage South-Western.  Tony Gaddis, BarretKrupnow, *Starting out with C++*, 6th edition update. 2009. Pearson Addison-Wesley.  **Lab Book:**  Faculty of Computer Science and Information Systems, *Programming Technique I – C++ Workbook (English – Malay)*, 3rd edition, 2009.  **Other References:**   1. Walter Savitch, *Problem Solving with C++,* 6th edition.2006. Pearson (Addison-Wesley). 2. BehrouzA.Forouzan, Richard F.Gilberg, *Computer Science: A Structured Approach Using C++*, 2nd edition. 2004. Brooks/Cole Thomson Learning. 3. H.M Deitel, P.J Deitel. *C++ How to Program,*  5th edition. 2005. Pearson Education. 4. Mohd. Aizaini Maarof, *Logik Pengaturcaraan Komputer*, 2006. Penerbit Universiti Teknologi Malaysia. 5. Norazah Yusof. *Modul Pengajaran Teknik Pengaturcaraan dalam bahasa C++.* 2004. |   **GRADING**   |  |  |  |  | | --- | --- | --- | --- | | **No.** | **Assessment** | **Number** | **% total** | | 1 | Assignments | 3 | 25 | | 2 | Quizzes | 2 | 10 | | 3 | Lab Exercises | 2 | 5 | | 4 | Problem solving test | 1 | 5 | | 5 | Mid-Semester Exam | 1 | 20 | | 6 | Skill base test | 1 | 5 | | 7 | Final Exam | 1 | 30 | |  | **Overall Total** |  | **100** | |