

SUMMARY OF INFORMATION ON EACH COURSE

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|----|---|--|
| 1. | Name of Course | Computer Programming |
| 2. | Course Code | TCP 1121 |
| 3. | Status of Course [Applies to (cohort)] | Common Core for B.IT (Hons) Data Communications and Networking B.IT (Hons) Information Technology Management B.IT (Hons) Artificial Intelligence B.IT (Hons) Security Technology B.Sc (Hons) Bioinformatics |
| 4. | MQF Level/Stage Note : <i>Certificate – MQF Level 3</i> <i>Diploma – MQF Level 4</i> <i>Bachelor – MQF Level 6</i> <i>Masters – MQF Level 7</i> <i>Doctoral – MQF Level 8</i> | Bachelor – MQF Level 6 |
| 5. | Version (State the date of the Senate approval – history of previous and current approval date) | Date of previous version: - Date of current version: June 2014 |
| 6. | Pre-Requisite | None |
| 7. | Name(s) of academic/teaching staff | Chong Siew Chin Roy Chang Kwang Yang |
| 8. | Semester and Year offered | Trimester 1, Year 1 |
| 9. | Objective of the course in the programme : | |

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|-----|---|---------------|------------|------------|------------|--------------|------------|------------|------------|------------|
| | To initiate skills to write algorithms and programs and to introduce various programming paradigms, programming methodology and object oriented language in C++. | | | | | | | | | |
| 10. | <p>Justification for including the course in the programme :</p> <p>Computer Programming is the first programming subject to equip the students with the basic knowledge of C++ language, where it would be the foundation for the students to cope with the other programming subjects and implement the programming applications.</p> | | | | | | | | | |
| 11. | Course Learning Outcomes : | Domain | | | | Level | | | | |
| | LO1 Identify basic structures of a high level programming language correctly. | Cognitive | | | | 1 | | | | |
| | LO2 Demonstrate the implementation of object oriented programming concepts. | Cognitive | | | | 3 | | | | |
| | LO3 Apply the basic notions and techniques for algorithm development. | Cognitive | | | | 3 | | | | |
| | LO4 Develop program in a high-level programming language correctly and effectively. | Cognitive | | | | 5 | | | | |
| 12. | Mapping of Learning Outcomes to Programme Outcomes : | | | | | | | | | |
| | Learning Outcomes | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| | LO1 | | X | | | | | | | |

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|-----|--|-----|---|-----|-----|-----|------------|--|--|
| | LO2 | | X | | | | | | |
| | LO3 | X | | | | | | | |
| | LO4 | X | | | | | | | |
| 13. | Assessment Methods and Types : | | | | | | | | |
| | Method and Type | | Description/Details | | | | Percentage | | |
| | Lab Test | | Laboratory Test | | | | 20% | | |
| | Assignment | | Demo and report | | | | 20% | | |
| | Quizzes | | Written quizzes | | | | 20% | | |
| | Final Exam | | Written examination | | | | 40% | | |
| 14. | Mapping of assessment components to learning outcomes (LOs) | | | | | | | | |
| | Assessment Components | LO1 | LO2 | LO3 | LO4 | | | | |
| | Lab Test | | 20 | 25 | 50 | | | | |
| | Assignment | | 20 | | 50 | | | | |
| | Quizzes | 33 | 20 | 25 | | | | | |
| | Final Exam | 67 | 40 | 50 | | | | | |
| 15. | Details of Course | | | | | | | | |
| | Topics | | Mode of Delivery (eg : Lecture, Tutorial, Workshop, Seminar, etc.) Indicate allocation of SLT (lecture, tutorial, lab) for each subtopic | | | | | | |
| | | | Lecture | | | Lab | | | |
| | C++ Fundamentals Structure chart. Flowchart. Pseudo code. Debugging and documentation techniques. Variables and Assignments. Input and Output. Data Types and Expressions. Flow of | | 6 | | | 4 | | | |

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|---|---|---|
| Control. Scope and Local Variables. | | |
| Arrays and Pointers One- and two-dimensional arrays. Simple sorting and searching on arrays. Pointers. | 6 | 4 |
| Functions Function Declaration. Function Definition. Passing variables in Function. Functions Calling Functions. Array in Functions. | 6 | 4 |
| Defining Classes Structures. Classes. Class declaration. Members. Constructors and destructors. Access functions constant objects. Member objects. Static members. Arrays of class objects. | 6 | 4 |
| Dynamic Memory Allocation Free store. New and delete operators. Dynamic Arrays. Class with pointer members. This pointer assignment. Initialization. Passing and returning objects. | 4 | 3 |
| Inheritance and Polymorphism | 6 | 4 |

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|---|--------------------------------|----------------------|
| <p>Operator overloading. Handling related types in C++ - derived class. Conversion between base and derived classes. Virtual functions. Dynamic binding. Pure virtual functions. Protected members. Public and private base classes. New, delete operators overloading. Inheritance applications.</p> | | |
| <p>Advanced Topic Function Template. Class Template. Vectors. Friend Functions. Overloading Operators. Exception Handling.</p> | 4 | 4 |
| <p>File Handling Concept of a file. Files and streams. Standard file handling functions. Binary files. Random access files.</p> | 2 | 1 |
| Total | 40 | 28 |
| Total Student Learning Time (SLT) | Face to Face / Guided Learning | Independent Learning |
| Lecture | 40 | 40 |
| Tutorials | 0 | 0 |
| Laboratory/Practical | 28 | 14 |
| Presentation | 0 | 0 |

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|-----|--|-------------------|----|
| | Assignment | 0 | 10 |
| | Mid Term Test | 2 | 4 |
| | Final Exam | 2 | 15 |
| | Quizzes | 5 times | 5 |
| | Sub Total | 72 | 88 |
| | Total SLT | 160 | |
| 16. | Credit Value | 160/40 = 4 | |
| 17. | Reading Materials : | | |
| | Textbooks | | |
| | 1. Walter Savitch. (2014). Problem Solving with C++ (9th ed.). Addison Wesley. | | |
| | Reference Material (including 'Statutes' for Law) | | |
| | 1. Tony Gaddis, Judy Walters, Godfrey Muganda. (2011). Starting out with C++: Early Objects (7th ed.). Addison Wesley. | | |
| | 2. Paul Deitel, Harvey Deitel. (2011). C++ How to Program (8th ed.). Prentice Hall. | | |
| | 3. Y. Daniel Liang. (2013). Introduction to Programming with C++ (3rd ed.). Prentice Hall. | | |

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Appendix (to be compiled when submitting the complete syllabus for the programme) :

1. Mission and Vision of the University and Faculty
2. Programme Objectives or Programme Educational Objectives
3. Programme Outcomes (POs)
4. Mapping of POs to the 8 MQF domain
5. Summary of the Bloom's Taxonomy's Domain Coverage in all the Los in the format below :

| Subject | Learning Outcomes (please state the learning Outcomes) | Bloom's Taxonomy Domain | | |
|---------|---|-------------------------|-----------|-------------|
| | | Affective | Cognitive | Psychomotor |
| ABC1234 | Learning Outcome 1 | | | |
| | Learning Outcome 2 | | | |
| | Learning Outcome 3 | | | |
| | Learning Outcome 4 | | | |
| DEF5678 | Learning Outcome 1 | | | |
| | Learning Outcome 2 | | | |
| | Learning Outcome 3 | | | |
| | Learning Outcome 4 | | | |

6. Summary of LO to PO measurement
7. Measurement and Tabulation of result for LO achievement
8. Measurement Tabulation of result for PO achievement