Punjab University College of Information Technology

Allama Iqbal Campus (Old Campus), University of the Punjab, Lahore
Tell: 99210969, 99210885, 99211630 Fax: 99212505
Tel Exchange: 99212506, 99212240, 99212250

Dr. Muhammad Shahid Soroya,
The Director General,
The Punjab Higher Education Commission
10th Flour, Arfa Software Technology Park,
346-B, Ferozepur Road, Lahore

P.U. College of Information Tech.
D. No. 653 /PUCIT
Dated: 11-05-17

Subject: **List of Courses for 2nd Semester Associate Degree Program**

This is with reference to your letter having reference number PHEC/(QA)5-2/2016/926 dated April 5, 2017. The list of courses for 2nd semester Associate Degree Program is given blow:

COURSE CODE	COURSES NAME	CREDIT HOURS
IT-102	Programming Fundamentals	3
MATH-132	Calculus-II	3
PHY-122	Electricity and Magnetism	3
PST-111	Pakistan Studies	2
IT-104	Digital Logic Design	3
IT-105	Digital Logic Design Lab	1
IT-103	Programming Fundamentals Lab	1

The details of the Courses/Curriculum for 2nd semester of BS IT program for the Community Colleges is attached as annexure-I.

11.05.17

Prof. Dr. Syed Mansoor Sarwar
Principal PUCIT

Semester 2

Programming Fundamentals — 3 Credit Hours

Objective
Computer programming is an art of developing computational solutions to precisely describable problems. The purpose of this course is to introduce students with basic concepts of structured programming. After completing this course, they should be able to write elegant structured programs to solve different computational problems. Programs are demonstrated using the C++ programming language. However, the concepts are taught in a language-independent fashion. Note that the basic purpose of this course is to learn programming instead of a particular programming language. The following topics will be covered in this course: Introduction to Programming Languages and Compilers; Flowcharts, Pseudo-code; Data Storage; Introduction to C++, Classes, Objects, and UML; Control Statements; Functions and Recursion; Debugging; Command Line Arguments; Preprocessor; Arrays; Pointers and Pointer-Based Strings; File Processing; Structures and Unions; Self-Referential Classes.

Prerequisites
CS100 / IT 100 – Introduction to Computing

Text Book
- Deitel & Deitel, *C++ - How to Program 5th Edition*, Pearson – Prentice Hall (2005), ISBN: 0130384747

Reference Books
- Walter Savitch, *Problem Solving with C++: The Object of Programming*, Addison-Wesley, ISBN-10: 0321268652
- Robert Lafore, *Object-Oriented Programming in C++*, ISBN-10: 0672323087

Programming Fundamentals Lab — 1 Credit Hours
Relevant to the above topics

Calculus II — 3 Credit Hours

Objective
The objective of this course is to prepare the students for coordinating problems by various viewpoints and to encourage and motivate the students to think abstractly, and explore possibilities in field of computer science, in particular, computer graphics. Class assignment will be given at the end of each lecture, and Software MATLAB/MATHEMATICA/MAPLE will be used to demonstrate the visualization of surfaces. The following topics will be covered in this course: Motivation and applications of the course, Rectangular coordinates in 3-space, spheres, cylindrical surfaces, Vectors, Scalar (dot) products, projections, Vector (cross) products, Parametric Equations of Lines, Planes in 3-space, Quadric surfaces, Spherical and cylindrical coordinates, Introduction to vector-valued functions, Calculus of vector-valued functions, Change of parameter, Arc length, Unit tangent, normal, and binormal vectors, Curvature, Functions of two or more variables, Partial derivatives, The Chain rule, Directional derivatives and Gradients, Tangent planes and normal vectors, Maxima and minima of functions of two variables, Lagrange multipliers, Double integral , Parametric surfaces; Surface area, Triple integral, Line integrals, Green's Theorem, Surface integrals; application of surface integrals, Divergence Theorem, Stoke's Theorem.

Prerequisites
MA 101 – Calculus I

Text Book
Anton, Bivens and Davis, *Calculus*, 7th Edition, John Wiley and sons, 2002.ISBN: 9971-51-431-1

Reference Books

- Thomas and Finney, *Calculus with Analytic Geometry,* Addison Wesley, 9th Ed, 1999. ISBN: 0201163209

Electricity and Magnetism — 3 Credit Hours

Objectives

The primary objective of the course is to teach student calculus based general physics, particularly basic concepts of thermodynamics, electricity, and magnetism. The following topics will be covered in the course: Temperature, Thermal expansion, Kinetic theory and the ideal gas, Heat and First law of thermodynamics, Entropy and Second law of thermodynamics, Review of Vectors, Electric Charge and Coulomb's law, Electric field, Gauss's law, Electric potential, Capacitors and dielectrics, Current and resistance, Ohm's Law, Simple resistive circuits (series and parallel), Magnetic field, Ampere's law, Faraday's law of induction, Lien's Laws, Ampere's Law and its applications.

Prerequisites

Mechanics and Wave Motion

Text Book

Halliday, Resnick, and Walker, *Fundamentals of Physics Extended*, Sixth Edition, ISBN: 978-0-471-32000-5

Reference Books

- Sears and Zemansky, *University Physics*, vol. 1 and 2. ISBN-10: 0201603365

Pakistan Studies — 2 Credit Hours

Objectives

The main objective of this course is to make the students familiar with the History of Pakistan, its ideology and all the Problems, which have been faced at the time of creation of Pakistan. All the great nations remember their history and it is very important to make the new generation familiar about it to achieve their goals and to set the future trends. Students will learn the reason behind the achievements of the Pakistan. The following topics will be covered in the course: Historical background of Pakistan: Muslim society in Indo-Pakistan, Ideology of Pakistan, Two Nation Theory, the movement led by the societies, the downfall of Islamic society, establishment of British Raj- Causes and consequences, Political evolution of Muslims in the twentieth century, Sir Syed Ahmed Khan, Muslim League, Nehru, Allama Iqbal, Independence Movement, Lahore Resolution, Creation of Pakistan and transfer of power, Pakistan culture and society, Constitutional and Administrative issues, Pakistan and its geo-political dimension, Pakistan and International Affairs, Pakistan and the challenges ahead.

Prerequisites

None

Text Book

Dr. Muhammad Sarwar, *A Text book of Pakistan Studies*, Ilmi Kitab Khana, Urdu Bazar, Lahore, 2003

Reference Material:

- Ikram ul Haq Raja *Pak. Studies*, Azeem Academy, Urdu Bazar Lahore 2001

Digital Logic Design — 3 Credit Hours

Objective

The primary objective of the course is to develop in students a thorough understanding of digital logic design principles. The following topics will be covered in the course: Number Systems, Codes (Parallel/Serial), Logic Gates, Boolean Algebra, Boolean Algebra, Positive/Negative Logic, Boolean Algebra (Dual/De-Morgan), Algebraic simplification, Combinational Logic, Truth Tables, Min/Max terms, Combinational Logic, K-Maps, Don't Cares, Multiple outputs, Combinational Logic, 5-6 K-Maps, Combinational Logic Design Practices, Negative numbers, Addition, multiplication, parity, decoders, Encoder, Multiplexor /Demux, Hazards, Tristate, Latches & Flip Flops, *Counters / Registers, Synchronous Counters,* Sequential Logic Design Principles (Wakerly), Mealy / Moore Design—Sequential Circuits—(Wakerly), *ROMS, SRAMS, DRAMS, Memory Organization,* ADC / DAC Interf Analog World, Digital Electronics, Characteristics, Parameters, *Digital Electronics, Logic Families, TTL, CMOS, BiCMOS, ECL, Low-Voltage Logic, Open/Tristate Wired Logic, Bus Tnterface Logic, Mixing CMOS/TTL*

Prerequisites
None

Text Book
M. Morris Mano, *Digital Design*, 3rd Edition, Pearson Education, 2004

Reference Books
T. L. Floyd, *Digital Fundamentals*, Prentice Hall, 8th Edition, 2002

Digital Logic Design Lab

1 Credit Hours

Objective
The primary objective of the course is to give students practice in designing, implementing, and testing simple digital circuits by using simulation tools and actual integrated circuits (ICs). Experiments must cover the use of following digital circuit elements: logic gates (AND, OR, NOT, NAND, NOR), half-adders, full-adders, multiplexers, demultiplexers, decoders, encoders, flip-flops, shift registers, counters, and RAM.

Prerequisites
None

Text Book
Laboratory Manual prepared by the institution.

Reference Books
None
