Faculty of Science
Sixth Semester - Bachelor of Science (Computer Science)

Subject: Computer Science

CODE: BSCC-601B

UNIT – I

Introduction to Internet &World Wide Web, Internet Addressing, Browsers, URL, Web Server, Web Site, Homepage, Domain Names- Basic Concept.Introduction to HTML- HTML Overview, Structure, Structure of HTML documents, Types of Documents, HTML Elements and Attributes. Basic Formatting of HTML documents layout-Font Lists, Paragraph, Break Rule, Horizontal Rule, Colors, Background, text elements, <PRE>, etc.

UNIT- II

Links in html –anchor elements and its attributes, images and anchors, using META information. HTML Media Types – media like elements <MARQUEE>, Audio& Video support in Web browsers. Table – layout. Elements and attributes , ROWSPAN, COLSPAN. Frames – using frames, layout of frame, problems using frames.

UNIT- III

Layers- Concept of layers, Positioned and Inflow Layers.Style Sheets – Basic Concept of Style sheet, using style sheet, Cascading style sheet(css), using style sheets- basic and properties, Positioning with style sheets.

UNIT –IV

Basic Interactivity in html: Forms- Concept of Forms, <FORM> elements, attributes, Controls Used for forms, examples of form design. Web Publishing – Concepts. Scripting- Purpose of Scripting, specifying scripts & designing events.

UNIT – V

DHTML: Overview of DHTML and Document objects Model, html & Scripting access, rollover Buttons. XML: Basic XML Structure, ways to use XML, rewriting html as xml. PHP (Hypertext Preprocessor): Introduction, syntax, Variables, Strings, Operators, if-else, loop, form , mail, file upload introduction to ASP. NET

TEXT BOOKS:

- **The Complete Reference to HTML- by Thomas A Powell, TMH, II Edition.**
- **Using HTML – by lee Anne Phillips, PHI**
- **“Web Technology and Design”, Xavier, New age Inter national**
- **Ullman, “PHP for the Web” Visual Quick Start Guide ”, Pearson Education**
- **PHP: beginner’s guide VikramVaswani McGraw Hill.**

Faculty of Science
Sixth Semester - Bachelor of Science (Computer Science)

Subject: Physics
Solid State Physics and Devices
CODE: BSCC-602B

UNIT-I

Solid State Physics-1

Crystal Structure and bonding: Crystalline and amorphous solids. Translational symmetry.Lattice and basis.Unit cell. Reciprocal lattice.Fundamental types of lattices (Bravias Lattice).Miller indices Lattice planes.Simple cubic. Face centered cubic. Body centered cubic lattices. Laue and Bragg's equations.Determination of crystal structure with X-rays, X-ray spectrometer.Ionic, covalent, metallic, van der Waals and hydrogen bon ding.Band theory of solids.Periodic potential and Bloch theorem.Kronig-Penny model (Qualitative).

UNIT-II

Solid State Physics-2

Lattice structure and propertie s: Dulong Petit, Einstein and Debye theories of specific heats of solids. Elastic and atomic force consta nts.Dynamics of a chain of similar atoms and chain of two types of atoms.Optical and acoustic mod es.Electrical resistivity.Specific heat of electron.Wiedemann-Franz law. Hall effect. Response of substances in magnetic field, dia-, para- and ferro magnetic materials.Classical Langevin theory of dia and paramagnetic domains.Curie's law.Weiss' the ory of ferromagnetism and ferromagnetic domains.Discussion of BH hysteresis.

UNIT-III

Semiconductor Devices-1

Electronic devices: Types of S emiconductors (p and n). Formation of Energy Bands, Energy level diagram.Conductivity and mobili ty.Junction formation, Barrier formation in p-n junction diode. Current flow mechanism in forward and reverse biased diode (recombination), drift and saturation of drift velocity. Derivation of mathema tical equations for barrier potential, barrier width.Single p-n junction device (physical explanation, cu rrent voltage characteristics and one or two applications).Two terminal devices.Rectification.Zener diod e.Photo diode. Light emitting diode. Solar cell.Three terminal devices.Junction field effect tr ansistor (JFET).Two junction devices.Tran sistors as p-n-p and n-p-n.Physical mechanism of current flow. Characteristics of transistor.

UNIT-IV

Semiconductor Devices-2

Amplifiers (only bipolar junctio n transistor).CB, CE and CC configuration s.Single stage CE amplifier (biasing and stabilization circuits), Q-point, equivalent circuit, input impedance, output impedance, voltage and current gain.Class A, B, C amplifiers (definitions). RC cou pled amplifiers (frequency response). Class B push-pull amp lifier.Feedback amplifiers.Voltage feedback and current feedback.Effect of negative voltage series feedba ck on input impedance.Output impedance a nd gain.Stability, distortion and noise.Principle of an Oscil lator,

Barkhausen criterion, Colpitts, RC p hase shift oscillators.Basic concepts of amplitude, frequency and phase modulations and demodulation.

UNIT-V

Nano Materials

Nanostructures: Introduction to nanotechnology, structure and size depend ent properties. 3D, 2D, 1D, 0D nanostructure materials and their density of states, Surface and Inter face effects. Modelling of quantum size effect.Synthesis of nanoparticles - Bottom Up and Top Dow n approach, Wet Chemical Method.Nanolithography.Metal and Semiconducting nanomaterials.Essential differences in structural and properties of bulk and nano materials (qualitative description).N aturally occurring nano crystals.Applications of nanomate rials.

References:

1 Introduction to Solid State Phys ics, C. Kittel, VIII th Edition, John Wiley and Sons, New York, 2005.

2 Intermediate Quantum theory of Crystalline Solids, A. O. E. Animalu, Pr entice−Hall of India private Limited, New Delhi 1977

3 Solid State Physics, N. W. Ashc roft, and N. D. Mermin, Harcourt Asia (P) Ltd. 2001

4 The Physics and Chemistry of Nanosolids: Frank J. Owens, and Charles P. Poole Jr., Wiley Inter Science, 2008

5 Physics of Low Dimensional Semiconductors: An introduction; J.H. Da vies, Cambridge University Press, U.K., 1998.

Faculty of Science
Sixth Semester - Bachelor of Science (Computer Science)

Subject: Mathematics
(Complex Analysis, Discrete Mathematics)
CODE: BSCC-603C

UNIT- I

Continuity and differentiability of Complex functions, Analytical function, Cauchy Riemann equation,

UNIT- II

Harmonic function, Mobius transformations, fixed points, cross ratio.

UNIT- III

Algebra of Logic, Tautologies and Contradictions, logical equivalence, Algebra of propositions, Quantifiers: Universal and Existential Quantifiers,

UNIT- IV

Boolean Algebra and its properties, Demorgan's law, Algebra of Electric circuits and its applications.

UNIT- V

Boolean Function, Disjunction and Conjunction Normal Forms, Bools Expansion Theorem. Binary Relations, Equivalence Relations, Partitions and Partial Order Relation.

Text Books:-

1. **Shanti Narayan, Theory of Functions of a Complex Variable, S. Chand & Co., New Delhi.**
2. **C.L.Liu, Elements of Discrete Mathematics, (Second Edition), McGraw Hill, International Edition, Computer Science series 1986.**

Reference Books:

1. **T.M. Apostol, Mathematical Analysis Narosa Publishing House, New Delhi 1985**
2. **S.C. Malik, Mathematical Analysis, Wiley Eastern Ltd., New Delhi.**
3. **R. V. Churchill & J.W. Brown, Complex Variables and Applications, 5th Edition, McGraw-Hili New. York. 1990**

Faculty of Science

Sixth Semester - Bachelor of Science (Computer Scienc

Subject: Programming In Scilab

CODE: BSCC-605A

UNIT: I

Introduction, overview of Scilab ,how to get and install Scilab : installing Scilab under Windows, installing Scilab Linux, installing Scilab Mac OS. Mailing list, wikiand bug report, getting help from Scilab demonstration and macros. Getting started : the console ,the editor,Docking ,using exec,batch processing .

UNIT : II

Basic elements of the Language : Creating real variables,Variable names ,comments and continuation lines ,elementary mathematical functions , pre defined mathematical variables, Booleans ,complex numbers : integers ,floting point integers ,the ans variable, string.

UNIT :III

Matrices : overview ,create a matrix of real value ,the empty matrix ,query matrices ,accessing the elements of a matrix , matrices are dynamics ,the dollar $ operator ,low level operations ,elements wise operations,multiplication of two vectors, comparing two real matrices .

UNIT :IV

Looping and branching : The if statement, The select statement, The for statement, The while statement, The break and continue statements. Functions: Overview, Defining a function, Function libraries, Managing output arguments, Levels in the call stack , The return statement.

UNIT V:

Plotting: Overview, 2D plot, Contour plots, Titles, axes and legends, Export.

References Books:

1] Atlas - automatically tuned linear algebra software

[2] Cecill and free software.

[3] C Bunks, J.-P. Chancelier, F. Delebecque, C. Gomez, M. Goursat, R. Nikoukhah, and S. Steer. Engineering and Scientific Computing With Scilab. Birkhauser Boston, 1999.

[4] Stephen L. Campbell, Jean-Philippe Chancelier, and Ramine Nikoukhah. Modeling and Simulation in Scilab/Scicos. Springer, 2006.

[5] J.-P. Chancelier, F. Delebecque, C. Gomez, M. Goursat, R. Nikoukhah, and S. Steer. Introduction `a Scilab, Deuxi`eme Edition ´ . Springer, 2007.

[6] The Scilab Consortium. Scilab. http://www.scilab.org.

Faculty of Science
Sixth Semester - Bachelor of Science (Computer Scienc

Subject: Android Programming

CODE: BSCC-605B

UNIT: I
About Android, Smartphones future installing the SDK, Creating Android Emulator, Installing Eclipse, Installing Android Development Tools, Choosing which Android version to use, Android Stack, Android applications structure.

UNIT :II
Creating a project , Working with the AndroidManifest.xml ,Using the log system ,Activities, Application context , Intents ,Activity life cycle , Supporting multiple screen sizes, Text controls , Button controls , Toggle buttons , Images.

UNIT:III
Parameters on Intents, Pending intents , Status bar notifications , Toast notifications, Localization , Options menu , Context menu, Alert dialog ,Custom dialog , Dialog as Activity , Using string arrays , Creating lists , Custom lists.

UNIT: IV
Google maps, Using GPS to find current location, Shared preferences, Preferences activity , Files access , SQLite database, View animation , Drawable animation. Content provider introduction, Query providers.

UNIT :V
Web Services , HTTP Client , XML and JSON, Service lifecycle , Foreground service, Preparing for publishing, Signing and preparing the graphics , Publishing to the Android Market.

REFERRENCES: