SHIVAJI UNIVERISTY, KOLHAPUR-416 004. MAHARSHTRA
PHONE : EPABX-2609000 GRAM : UNISHIVAJI

website- www.unishivaji.ac.in FAX 0091-0231-2691533 & 0091-0231-2692333 –
BOS - 2609094

B

Accredited By NAAC

(2009)

शिवाजी विद्यापीठ, ल्हापूर - ४१६ ००४.

दुरध्वी: (ईपीएबीएक्स) २६०९००० (अभ्यास मंडळे विभाग– २६०९०९४) तार : युनिशिवाजी

फॅक्स : ००९१-०२३१-२६९१५३३ व २६९२३३३.e-mail:bos@unishivaji.ac.in

----

Ref.No./SU/BOS/Engg./1430   Date: 22/05/2012

To
       The Principal,
       All Affiliated Engineering Colleges,
       Shivaji University, Kolhapur.

Subject : Regarding Syllabi of the additional elective subject "Introduction to Mainframes" for Sem. VIII of B.E. Information Technology & B.E. Computer Science & Engineering under the Faculty of Engineering & Technology.

Sir,

      With reference to the subject mentioned above, I am directed to inform you that the University authorities have accepted and granted approval to the Syllabi of the additional elective subject "Introduction to Mainframes" for Sem. VIII of B.E. Information Technology & B.E. Computer Science & Engineering under the Faculty of Engineering & Technology.

      The syllabi will be implemented from the academic year 2012-2013 (i.e. from June 2012) onwards. A CD containing syllabi, is enclosed herewith. This syllabi is also available on university website www.unishivaji.ac.in.

      You are therefore requested to bring this to the notice of all students and teachers concerned.

   Thanking you,

                                  Yours faithfully,

                                  Sd/-

                                Dy. Registrar

Copy f.w.cs to :
  1) Dean, Faculty of Engineering & Technology   for information only

2) Chairman, Ad-hoc Board in Computer Science & Engg.

3) Chairman, Ad-hoc Board in . Information of Technology   under faculty of Engg & Tech

Copy to :

1) Appointment Section

2) O.E.- 4 Section   for information and

3) Affiliation Section   necessary action.

4) Computer Centre.

Syllabus of
Introduction to Mainframes Elective-II

(CSE & IT)

As a part of

MoU between Shivaji University & Infosys

To be introduced from the academic year 2012-13

Sem- II

Sr. No.	Subject Name	L	T	P	Total	Theory Marks	T/W	Total Marks
1	Introduction to Mainframes	3	1	--	4	100	25	125

1. Introduction to Mainframes

Lectures: 3 hours/week   **Theory: 100 Marks**
Tutorials: 1 hour/week   **Term work: 25 Marks**

SECTION – I

1. **Evolution of Mainframe hardware :** Overview of Computer Architecture - Classification of Computers - micro, mini, mainframes and super computer - Mainframe computer - key features - benefits - Evolution of Mainframes - Different hardware systems. Mainframes OS and Terminology: Operating systems on mainframes, Batch processing vs. online processing - mainframe operating system. - evolution - concepts of Address space, Buffer management - Virtual storage - paging - swapping - Dataset management in mainframes. (4)

2. **z/OS and its features :** Z-operating system (Z/OS) - Virtual storage - Paging process - storage Managers - Program execution modes - Address space - Multiple virtual system(MVS) , MVS address space, Z/OS address space - Dataset - sequential and partial dataset - Direct access storage device(DASD) -Access methods - Record formats - Introduction to virtual storage access methods(VSAM) - Catalog – VTOC (6)

3. **Introduction to JCL:** Introduction to Job Control language - Job processing - structure of JCL statements - Various statements in JCL - JOB statement - EXEC statement - DD statement - JCL procedures and IBM utility programs. (7)

SECTION – II

4. **COBOL Programming 1:** Introduction – History, evolution and Features, COBOL program Structure, steps in executing COBOL. Language Fundamentals – Divisions, sections, paragraphs, sections, sentences and statements, character set, literals, words, figurative constants, rules for forming user defined words, COBOL coding sheet.. Data division – Data names, level numbers, PIC and VALUE clause, REDEIFNES, RENAMES and USAGE clause. Procedure Division – Input / Output verbs, INITIALIZE verb, data movement verbs, arithmetic verbs, sequence control verbs. (5)

5. **COBOL Programming 2:** File processing – Field, physical / logical records, file, file organization (sequential, indexed and relative) and access mode, FILE-CONTROL paragraph, FILE SECTION, file operations. File handling verbs – OPEN, READ, WRITE, REWRITE, CLOSE.Table processing – Definition, declaration, accessing

elements, subscript and index, SET statement, SEARCH verb, SEARCH ALL verb, comparison. Miscellaneous verbs – COPY, CALL, SORT, MERGE, STRING, UNSTRING verbs.   (5)

6. **Overview of DB2 :** Introduction to DB2 – System Service component, Database Service component, Locking Service component, Distributed Data Facility Services component, Stored Procedure component, catalogs and optimizer. DB2 Objects and Data Types - DB2 Objects Hierarchy, Storage groups, Database, Table space, Table, Index, Clustered index, Synonyms and aliases, Views, Data Types. DB2 SQL programming – Types of SQL statements, DCL, DDL, DML, SPUFI utility. Embedded SQL programming – Host variable, DECLGEN utility, SQLCA, single/multiple row manipulation, cursors, and scrollable cursors.   (4)

7. **Mainframe Application Development guidelines :** COBOL coding standards, relation between a COBOL file handling program and JCL, Different types of ABEND codes, COBOL-DB2 program pre-compilation, DBRM (Database Request Module), Application plan/packages, program execution methods (EDIT JCL, foreground and background modes).   (4)

References:

1. MVS JCL, Doug Lowe, Mike Murach and Associates.
2. AS/400 Architecture and Application – The Database Machine by Jill T. Lawrence (SPD Publications)
3. Gary DeWard Brown, JCL Programming Bible (with z/OS) fifth edition, Wiley India Dream Tech, 2002.
4. z/OS   V1R4.0   MVS   JCL   Reference   found   online   at http://www-1.ibm.com/support/docview.wss?uid=pub1sa22759706
5. z/OS   V1R1.0   MVS   JCL   Reference   found   online   at http://publibz.boulder.ibm.com/cgibin/bookmgr_OS390/BOOKS/iea2b600/CCONTENTS
6. COBOL - Language Reference, Ver 3, Release 2, IBM Redbook.
7. COBOL - Programming Guide, Ver 3, Release 2, IBM Redbook.
8. Complete CL The Definitive Control Language Programming Guide by Ted Holt and Ernie Malaga (SPD Publication).
9. Nancy Stern & Robert A Stern, "Structured Cobol Programming", John Wiley & Sons, New York, 1973.
10. M.K. Roy and D. Ghosh Dastidar, "Cobol Programming", Tata McGraw Hill, New York, 1973.
11. Newcomer and Lawrence, Programming with Structured COBOL, McGraw Hill Books, New York, 1973.
12. Craig S Mullins, DB2 Developer's Guide, Sams Publishing, 1992.
13. Gabrielle Wiorkowski & David Kull, DB2 Design & Development Guide, Addison Wesley, 1992.
14. C J Date & Colin J White, A Guide to DB2, Addison Wesley.
15. IBM Manual: DB2 Application Programming and SQL guide.

16. IBM Manual: DB2 SQL Reference.
17. DB2 Version 7 Information Center found online at http://publib.boulder.ibm.com/infocenter/db2v7luw/index.jsp

Term Work:

It should consist of 10-12 assignments based on the syllabus with the following breakup preferably.

1. TSO/ISPF - 1 Assignments
2. JCL   - 2 Assignments
3. COBOL   - 5 Assignments
    1) Basic COBOL
    2) File Management : flat file
    3) File Management : index file
    4) File Management : relative file
    5) Using Subroutines
4. DB2   - 3 Assignments

   Note: Term work assignments should be carried out using the following tools :-
      1. ISPF Simulators   http://mainframesindia.com

      2. COBOL Simulators   http://mainframesindia.com
         More options are available like RMCOBOL, ANSICOBOL too.

      3. DB2   http://www.01.ibm.com/software/data/db2/linux-unix-windows/edition-express.html