P.G. Diploma in E-Learning & M-Learning

PROSPECTUS OF P.G. Diploma (One Year) in E-Learning & m-Learning SEMESTER-I Examination Winter 2012 and SEMESTER-II Summer 2013

2012

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SANT GADGE BABA AMRAVATI UNIVERSITY

SPECIAL NOTE FOR INFORMATION OF THE STUDENTS

(1) Notwithstanding anything to the contrary, it is notified for general information and guidance of all concerned that a person, who has passed the qualifying examination and is eligible for admission only to the corresponding next higher examination as an ex-student or an external candidate, shall be examined in accordance with the syllabus of such next higher examination in force at the time of such examination in such subjects papers or combination of papers in which students from University Departments or Colleges are to be examined by the University.

(2) Be it known to all the students desirous to take examination/s for which this prospectus has been prescribed should, if found necessary for any other information regarding examinations etc., refer the University Ordinance Booklet the various conditions/provisions pertaining to examination as prescribed in the following Ordinances.

Ordinance No. 1 : Enrolment of Students.
Ordinance No. 2 : Admission of Students
Ordinance No. 4 : National cadet corps
Ordinance No. 6 : Examinations in General (relevant extracts)
Ordinance No. 18/2001 : An Ordinance to provide grace marks for passing in a Head of passing and Improvement of Division (Higher Class) and getting Distinction in the subject and condonation of deficiency of marks in a subject in all the faculties prescribed by the Statute NO.18, Ordinance 2001.

Ordinance No. 9 : Conduct of Examinations (relevant extracts)
Ordinance No. 10 : Providing for Exemptions and Compartments
Ordinance No. 19 : Admission of Candidates to Degrees.
Ordinance No. 109 : Recording of a change of name of a University student in the records of the University.
Ordinance No. 6/2008 : For improvement of Division/Grade.

Dineshkumar Joshi
Registrar
Sant Gadge Baba
Amravati University.

PATTERN OF QUESTION PAPER ON THE UNIT SYSTEM.

The pattern of question paper as per unit system will be broadly based on the following pattern

(1) Syllabus has been divided into units equal to the number of question to be answered in the paper. On each unit there will be a question either a long answer type or a short answer type.

(2) Number of question will be in accordance with the unit prescribed in the syllabi for each paper i.e. there will be one question on each unit.

(3) For every question long answer type or short answer type there will be an alternative choice from the same unit. However, there will be no internal choice in a question.

(4) Division of marks between long answer and short answer type question will be in the ratio of 40 and 60

(5) Each short answer type question shall contain 4 to 8 short sub question with no internal choice.
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SYLLABUS
(Implemented from the Session 2010-2011)
PRESCRIBED FOR
ONE YEAR P.G. DIPLOMA IN E-LEARNING & M-LEARNING
SEMESTER I

1EM1 TECHNOLOGY FOR EDUCATION

Unit-I : Pedagogical strategies & approach :
Effective teaching, instructional analysis, assessment design, course evaluation, use of ICT in education, IPR & copyright issues, educational software’s / web experiences, other advance technologies & mobile technologies for education

Unit-II : Hardware & Software Tools :
Basic Computers & it’s components software systems, operating systems, networking databases, Graphics, ALP, Web Technology, Other Hardware & Software tools.

Other Technologies :
VLE, MLE, ITS, Graphics Tools, HCI, VR, Educational Robot, etc.

Unit-III : Web Technologies & Ites :
Introduction to technologies like, Core Java, Adv. Java, J2EE/J2SE, XML, JSP, Servelt, Beans, Swing, SQL.

Unit-IV : CMS :
Content developments, Joomla/Drupal Introduction, Installation, configuration, customisation and implementation.

Unit-V : LMS :
e-learning, e-Learning course development process, instructional strategies, Design of e-learning projects.
LMS, Open Source modules for LMS, MOODLE Introduction, Installation, configuration, customisation and implementation.

Unit-VI : Mobile Technologies :
Introduction to mobile technologies, m-Learning, J2ME, Symbian, Embedded programming, Cell phone architecture, WAP with WML/HTM/XML

1EM2 DIGITAL COMMUNICATION & NETWORKING

Unit-I : Introduction to data communication N/W application,
telephone communication hardware.

Unit-II : Data communication Hardware, N/W architecture, Hosts, clients circuits, Data communication devices, data transmission.

Unit-III : Data link layer : Access control, Error control, protocols, trib N/W layer : Topology, Routing, standards, protocols, SNA.


Unit-V : Back bone networks, Network design & implementation N/W management security.

Unit-VI : Novelle Netware : Introduction, Server, setting up server, netware commands.

Books Recommended :
1) Business Data Communications & Networking 5th edition - Jerry Fitzgerald, Alan Dennis.(WE)
2) Data Communications, Communications and Open System - 2nd Edition, Fred Halsoll - Pearson
3) Computer Networking - Kurose & Ross - Pearson
5) Communications, Systems and Networks - 2nd Ed. - Ray Horok (IDG)
6) Sklar - Digital Comm. - Pearson

1EM3 (I) Digital Systems & Microprocessors

Unit-I : Introduction to logic families :
TTL, ECL, MOS, CMOS etc. and their characteristics, tristate, flip-flops, RS, JK, JKMS, D, T, IC series for gates and flip-flops.

Combinational Logic Design :
Standard forms of logical functions, SOP, POS, minterms, maxforms, K-map, IC series for combinational logic.

Unit-II : Multiplexers, demultiplexers, decoders, encoders, combinational logic design, adder & their use as subtractor, BCD arithmetic, ALU, Digital Comparators, parity generator / checkers, parity encoders / decoders, IC series for all these devices.

Unit-III : Sequential Logic Design : Resisters, application of shift register, counters, asynchronous & synchronous counters, Design of counters, speed, up-down counters, applications
of counters, introduction to various counters and shift
register ICs, digital memory unit, types.

Unit-IV : Register Transfer Logic: Introduction, inter register transfer,
arithmetic, logic and shift operations, conditional control
statements, overflow, arithmetic shifts, fixed binary data,
decimal data, floating point data, nonnumeric data, instruction
codes, design of computer.

Unit-V : Processor Organisation: (8086): Register organisation,
Architectures, signals, memory organisation, general bus
operation, I/O addressing, special processor activities,
minimum and maximum mode, instruction formats, addressing
modes, important instructions, assembler directives and
operators.

Unit-VI : Special Architectural features and programming:
Stack, structure, interrupts, ISR, NMI & INTR, interrupt
programming.
Interfacing memories, I/O ports, ADC, DAC.

Books:
2) Digital Integrated Electronics - Taub & Sehillion
3) Modern Digital Electronics - R.P.Jain
4) Digital Fundamentals 3/e (Indian Adaptation) - Floyd & Jain - Pearson.
5) Digital Design - Mano - 3/e - Pearson
6) Digital Design - Wakerly - Pearson
7) Advance Microprocessors and Peripherals - Ray & Bhurchandi - TMH
8) Microprocessors and Interfacing: D.V.Hall (TMH)
9) Microprocessors - M.Rafiquezaman (PHI)
10) Microprocessor based system Design - Ghoshal (M)
11) Microprocessor Architecture and Programming - R.S.Goonkar (PRI)

EMBEDDED SYSTEMS

Unit I: Embedded Systems: Introduction, Design goals, real time,
Multitasking, Embedded processors, Languages, Kernel,
building, Embedded applications and proforms.

Unit II: Data Representations: Fixed Precision - Binary Numbers,
Binary Representation of Integers & real No. ACSII, BCD.
Programmers View of Computer Organisation, overview of
intel architecture, introduction to Microcontrollers and its
use in ES.

Unit-III : Using C : Integer data types, mixing data types, type
definition and define, manipulating bytes in memory,
manipulating bytes in I/O ports, accessing I/O devices,
structures, variant access.

Unit-IV : Mixing C & Assembly : Programming in ALP, register usage,
-rise of addressing options, instruction sequencing, procedure
call and return, parameter passing, retrieving parameters, pass
by value, temporary variables. I/O Programming, interrupt I/
O driver, DMA.

Unit-V : Concurrent Software and Scheduling : Programmed / back
ground systems, multitreading, programming, shared
resources and critical section, scheduling : methods,
deadlocks, watchdog times.

Unit-VI : Memory Management and System : Initialization: Objects in
C, Scope, lifetime, Automatic Allocation, Static Allocation,
Difference Dynamic Allocation, Recursions using share
memory concept and its access, Introduction to system
initialisation.

Books:
1) Fundamentals of Embedded Softwares : Lewis Pearson
2) An Embedded Software Primer - Simon Pearson
3) 8051 Microcontroller and Embedded System - Mazidi and Mazidi.
Pearson

CLIENT SERVER COMPUTING

Unit-I : JDBC : Overview, JDBC-ODBC bridge, Java SQL package
and JDBC related classes, Architecture of JDBC application,
creating C-S Application using JDBC oracle / Access
databases.

Unit-II : Servelets : Methods of Interface servelets, Important methods
of class http servlet, Hipp servelet request, Http servlet
response, Httpget servlet, HTTP post & get, cookies, methods
of class cookies, session tracking, C-S application using
servelet.

Unit-III : RMI : Temperature Server interface, class temperature server
Impl., weather into. class definition, temperature client class
definition, weather Item class definition, uniregistry running,
uinte object execution & running. C-S application using RMI.
Unit-IV : Networking : Loading from URL, reading through URL, server portion of C-S stream socket, demonstrating client and server side, C-S application.

Unit-V : Java beans : Windows of Bean Box, property, move cursor, resize cursor, selecting event, target selecter line, interaction between Explicit Button and Juggler.

Unit-VI : Java beans Contd. : File dilog, other dilog, applet, applet running, standalone application, contents of logoanimator jar, loading bean, animation, setting up event, class slider field panel, selecting property.

Books :
1) Java How to Program : Diellel & Dietel Pearson
2) Inside Servelets : D.R.Collaway Pearson
3) Java 2 Complete Reference : Schidlt & Maughta (TMH)
4) Using Java 2 Platform - D.L.Webeu - (PHI)

1EM3 (IV) SYSTEM ANALYSIS, DESIGN & SOFTWARE ENGINEERING

Unit-I : SDLC : Goals, Computer based business system life cycle. DFD, DFDS with case, structured methodology.

Unit-II : System Analysis : Goals and overviews, fact finding, interviewing, review, assignment, prototyping and 4GL, OOA. System Design : Output design, formatting and designing reports, input design, file design, database design, network design, s/w design, implementation, maintainance and management issues.

Unit-III : Software Project Management : Concepts, Software metrics, Software Project Planning, Software Project estimation, models, risk management, project scheduling and tracking, configuration management.


Unit-V : System Design : Effective design, methods, interface design, documentation design. Software testing : Methods, Strategies, Art of designing, metrics, test reports.

Unit-VI : Software Engineering : Overview, reverse engineering, forward engineering, metrics for maintainance, Software reuse, CASE tools.

Books :
1) System Analysis and Design - Edwards
2) System Analysis & Design - Don Yates (M)
3) Fundamentals of System Analysis & Design - J.F.Gerald
4) Software Engineering with Java - S.R.Schach (TMH)
5) Software Engineering - Press Man (TMH)
6) Sommerville - Software Engg. - 7th ed. - Pearson
7) Booch - Object Oriented Analysis & Design - Pearson
8) Kendoll - Systems Analysis & Design - Pearson

1EM4 Lab.-I : Programming

1EM5 Lab.-II : Operative system

1EM6 Lab.-III : Web Technology

1EM7 Lab.-IV : Mobile Technology –i

1EM8 Lab.-V : Visual Technology

1EM9 Lab.-VI : Open Source

SEMESTER II

2EM1 MOBILE COMMUNICATIONS

Unit-I : Mobile Communication : Applications, history, market, simplified reference model. Frequencies, signals, antennas, signal propogation, introduction to multiplexing, modulation, spread spectrum concept, cellular system.


Mobile Transport Layer: Traditional TCP, improvements 2 G / 3 G network.

Unit-VI : Support for mobility: Introduction to files systems, www, WAP, i-mode.

Books:
1) Mobile Communication: Jochen Schiller (PE)

2EM2 MULTIMEDIATECHNIQUES

Unit-I : Introduction: Multimedia overview, applications, goal and objectives, multimedia building blocks, multimedia and internet multimedia configuration.
Multimedia PC workstation components, multimedia platforms, multimedia development tools, authoring tool, interactivity, high end multimedia architectures.

Unit-II : Multimedia O.S., File system (file format: TIFF, BMP, PCX, GIF etc.) process management, multimedia communication system, multimedia database management system.

Unit-III : Multimedia Audio: Basic sound concepts, audio capture, music speech sound processor, sound recovery techniques, VOC4WAV file format for sound.

Unit-IV : Multimedia Graphics: 2D/3D Animation, fundamental, digital imaging: Capture, animation, processing recovery, AVI file format, NTSC, PAL, GECAM, HPTV system, conferencing, streaming, motion synchronisation.

Unit-V : Image Compression: LZW, DCT run length coding, JPEG, MPEG, hypertext, MHEG, hypermedia, document architecture, SGML, OOA.

Augmented and Virtual reality & Multimedia: Concept, VR devices, VR chair, CCD, VCR, 3D sound system, head mounted display.

Unit-VI : Multimedia Devices: Mass storage system; Magnetic devices, CDROM, DVD, Scanner.
Windows Support: Multimedia database in oracle, mm function calls, windows support to sound, animation, movies, music, midi controls.mm and Unix.

Books:
2) Multimedia in Practice: Technology and Applications - Judith (PH)
3) Fund of Multimedia by DREW - Pearson (Practical Approach)
4) Multimedia Comm. by Halsall - Pearson
5) Multimedia - Buford - Pearson.

2EM3 (I) WINDOWS PROGRAMMING

Unit-I: Introduction to MFC: MFC class hierarchy, Cwin ALP, CWnd, C Main Frame classes, handling windows, messages in MFC.
Document/view architecture: C Document and C view, C++ template classes review, basic MFC Classes: C string, C point, C size, C Rect, C Array, and C List.

Unit-II: Graphic Device Interface (GDI): C Client DC, C Window DC and C Paint DC classes, stock GDI project, color and fonts, drawing shapes and curves, C Bitmap, C Brush, C Font, C Palette, C Pen, C Rgn Classes.
Dialog Box: C Dialog, C Edit, C Button, C List Box, C ComboBox classes, Data exchange to/from variables, and controls OK and cancel buttons, tab stops and groups, modeless dialogue.

Unit-III: Windows Control and Dialogue: C Progress Ctrl, C Slider Ctrl, C Spin Button Ctrl, C List Ctrl, C Tree Ctrl classes, C file Dialg, C Color Dialog, C Font Dialog, C Print Dialog, classes.
Tool bar, tool tips, and status bar: C tool Bar, C Control Bar, C Status Bar.

Property Sheets Property Page class, MFC text Editing, C edit view, C rich Edit view, C rich Edit Ctrl.
Date time picker, month calender, IP Address Control, extended combo box controls.
Exception Handling: C exception.

Unit-IV: Menus and Accelerators: Command Processing C Menu, Cemul UI classes.

Floating popup menus: Keyboard, accelerator, file menus, enabling, disabling menu items.
Multithreading: Multithreading Concepts: C Unit thread.
Thread Synchronisation, critical section: Critical section, C mute X, C semaphore Event signaling, event object Cevent.
Unit-V : Advance Document Handling : C List view, C tree View, C form View, C record view.
C frame Wnd, CMDI frame Wnd, C child Frame, CMDI child Wnd, C splitter Wnd, User defined message handling, Central sensitive help.

Unit-VI : DLL : MFC Extension DLL : Experting Classes MFC regular DLL.
Basic Component Object Model (COM) : Introduction, Interface definition Language, Z Unknown, Z Class factory interfaces, Zn-Process and out-process servers, marshaling, containment and aggregation, daifference between Active-X and ordinary control. Properties, mapping Active-X Control events.

Case Study : Calender and Web browser controls ODBC, DAO, OLE.

Books :

2EM3 (II) ADVANCE COMPUTER NETWORKS

Unit-I : Introduction, overview, Network Core, medias, dalays, models, Internet backbones, NAP & ISP, History.

Unit-II : Application Layer : Principles of Application Layer protocol, HTTP, FTP, e-mail in internet, DNS.

Unit-III : Transport Layer : Services and Principles, multiplexing and demultiplexing applications, connection less transport : UDP, principles of reliable data transfer, TCP, Introduction to congestion control.


Unit-V : Link Layer and LAN : Introduction, Services, Errors, MAP, LAN addresses and ARP, basics of ethernet, hubs, bridges, switches.
Concepts of IEEE 802.11, PPP, ATM, X.25, game relay.


Books :
1) Computer Networking : Kurose & Ross Pearson

2EM3 (III) MICROPROCESSOR PROGRAMMING & INTERFACING

Unit-I : Introduction to Pentium Microprocessor : Microprocessor introduction, evolution of MP, block diagram, mp operation, hardware/software requirements, PC, developing s/w for PC, Introduction to pentium, real mode, protected mode, software model of the pentium, registers, data, instructions, addressing modes, interrupts previous intel mps.

Unit-II : Instructions : Introduction, ALP, pentium instructions, addressing modes, instruction examples: processor flags, data transfer, strings, arithmatic, logic, bit manipulation, program transfer, processor control.

Unit-III : Memory & I/O Interface : Memory devices, address decoding, 8086 memory I/f, Pentium memory I/f, I/O interfacing, address decoding, PPI, Kbd I/f, display I/f, 8254, PCI, ADC, DAC.

Unit-IV : Interrupts : Introduction, basic interrupt processing, hardware interrupts, PIC, RTC, Introduction to DMA

Unit-V : Arithmetic Coprocessor : 80 x 87 architecture, preliminary instructions, Bus I/f : ISA, GISA, VESA, PCI.

Unit-VI : Advance Programming with I/f : Programming with DOS and BIOS function, calls, kbd, video, speaker, printer control & programming, command line interface, advance programming applications : Mouse, TSR, Interfacing c with ALP.

Books :
1) The Pentium Microprocessor : Antonakos Pearson
2) The Intel Microprocessors - Bary Brey - Pearson
3) Assembly Language Programming for PC - Socha & Norton (PHI)
4) IBM PC Assembler Language Programming - Peter Abel - Pearson-5/e
5) Essentials of Assembly Language Programming for the IBM PC - Rajaraman, T., Radhakrishnan (PHI)
6) Fundamentals of Assembly Language Programming - Xefiner (GP)


UNIT VI: Software testing fundamentals; test case design, White-box testing. Basis path, control structure, Black-box-Testing, & for specialized environments. Strategic approach to S/W testing. Unit testing, integration testing, validation testing, system testing. Debugging. Technical metrics for software.


References:
1. Somerville: Software Engineering (Addison-Wesley) (5/e)

5MCA2 SPM Laboratory: Based on above syllabus, at least one software development project involving all phases of SDLC. The case studies from the textbook and from reference book 3 may be considered as examples.

2EM4 Lab.-VII: DATABASE TECHNOLOGY
2EM5 Lab.-VIII: ADVANCE WEB PROGRAMMING
2EM6 Lab.-IX: MOBILE TECHNOLOGY-II
2EM7 Lab.-X: MULTIMEDIA TECHNOLOGY
2EM8 Lab.-XI: WEB SERVER & ADMINISTRATION
2EM9 PROJECT
2EM10 SEMINAR

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