संत गाडगे बाबा अमरावती विद्यापीठ
SANT GADGE BABA
AMRAVATI UNIVERSITY

विज्ञान विद्याशाखा
(FACULTY OF SCIENCE)

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 (relevent extracts)
Ordinance No. 18/2001	:	An Ordinance to provide grace marks for passing in a Head of passing and Inprovement of Division (Higher Class) and getting Distinction in the subject and condonation of defficiency of marks in a subject in all the faculties prescribed by the Statute NO.18, Ordinance 2001.
Ordinance No. 9	:	Conduct of Examinations (relevent 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.

Ordinance No.19/2001 : An Ordinance for Central Assessment Programme, Scheme of Evaluation and Moderation of answerbooks and preparation of results of the examinations, conducted by the University, Ordinance 2001.

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.

INDEX

P.G.Diploma in E-Learning & M-Learning
(Prospectus No. 20131244)

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 :**
IT, Internet, www, I TeS, , Introduction to Web computing, HTML, php, MYSQL, web 2.0, Web Services, Web Servers & Administration.
Introduction to technologies like, Core Java, Adv. Java, J2EE/J2SE, XML, JSP, Servlett, 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-IV : LAN & WAN : Introduction, components, IEEE, Performance, WAN : DDD, AT&T,WAIS, Dedicated ckt services, ISDN, PSN, ATM, interfacing networks.

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
4) Computer Network and Internet - 4th Edition - DE Comer - 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, demultiplixers, decoders, encoders, combinational logic design, adder & their use as subtractor, BCD arithmatic, ALU, Digital Comparators, parity generator / checkers, parity encoders / decoders, IC series for all these devices.

Unit-III : **Seqential 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, arithmatic, logic and shift micro operations, conditional control statements, overflow, arithmatic 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, generle 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 Artchitectural features and programming :
Stack, structure, interrupts, ISR, NMI & INTR, interrupt programming.
Interfacing memories, I/O ports, ADC , DAC.

Books :
1) Digital Logic and Computer Design - M.Morris Mano Pearson.
2) Digital Integrated Electronics - Taub & Sehilling
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)

1EM3 (II)   EMBEDDED SYSTEMS

Unit-I : **Embeded 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 defination 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, multithreading, 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 Embeded Softwares : Lewis Pearson
2) An Embeded Software Primer - Simon Pearson
3) 8051 Microcontroller and Embeded System - Mazidi and Mazidi. Pearson

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1EM3 (III)   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 servlets, Important methods of class http servlet, Hipp servelet request, Http servlet response, Httpget servlet, HTTP post & get, cookies, methods of class cookies, sersion tracking, C-S application using servlet.

Unit-III : **RMI :** Temperature Server interface, class temperature server Impl., weather Into. class definition, temperature client class definition, wether Item class definition, uniregistery running, uinte object exerution & 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 curser, resize cursor, selecting event, target selecter line, interaction between Explicit Butten 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)

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**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-IV : Software Maintenance : Reverse Engineering, SQA, software reliability, ISO standards.
Software Requirements and Analysis : System Engineering, product Engineering, modelling.

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

Unit-VI : Software Engienering : 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, antenas, signal propogation, introduction to multiplexing, modullation, spread spectrum concept, cellular system.

Unit-II : Medium Access Control : Introduction, SDMA, FDMA, TDMA, CDMA, comparison of S/T/F/CDMA. Telecommunication system : Introduction to GSM & DECT, TETRA, UMTS & IMT-2000.

Unit-III : Satellite Systems : History applications, basics, routing, localisation, hardware, examples.
Broadcast Systems : Overview, cyclical repetation of data, digital audio & video broadcasting, convergence.

Unit-IV : **Wireless LAN :** Infrared versus Ratio Transmission, infrastructure and adhoc network, IEEE 802.11, HIPERLAN, Bluefooth.

Unit-V : **Layers :** Mobile Network Layer : Mibole IP, protocol, mobile adhoc networks.

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 **MULTIMEDIA TECHNIQUES**

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 :

1) Multimedia : Computing, Communication, Applications : Steinmetz - Pearson.
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++ templete 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 Pallette, 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 combobox controls.

Exception Handling : C exception.

Unit-IV : **Menus and Accelerators :** Command Processing C Menu, Cemd 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.

Document Templates : C doc. templates, C single Doc template and C multi Doc Template.

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 :

1) Programming Microsoft Visual C++, 5th edition, Kruglinsli, shephard, wingo (Microsoft Press 98)

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2EM3 (II)   ADVANCE COMPUTER NETWORKS

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

Unit-II : **Appllication 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-IV : **Network Layer & Routing :** Introduction and network service model, Routing Principles, Hierarchical Routing, IP, Introduction to Routing & Routers, IPV6.

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.

Unit-VI : **Multimedia Networking :** Multimedia Networking Applications, Accessing Audio & Video Pro web serves, RTSP, RTP basics, Security in Computer Networks & Network Management.

Books :

1) Computer Networking : Kurose & Ross Pearson

2) Computer Networks & Internet : D.E.Comer, 4th Ed. Pearson

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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 : **Arithmatic 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)

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2EM3(IV)   SOFTWARE PROJECT MANAGEMENT

UNIT I   :   Evolving role of Software. Software crises & myths. Software Engineering. Software process & process models : Linear sequential, prototyping, RAD, Evolutionary Product & Process. Project management concepts : People, Product, Process, Project. WSHH principle, critical practice.

UNIT II   :   Measures, Metrics & Indicators. Metrics in process & project domains-software measurment, Metrics for software quality, small organization. Software projects Planning : Scope, resources, estimation, decomposition technique, Tools. Software risks : identification, risk projection, refinement & RMMM plan.

UNIT III :   **Project Scheduling :** Concepts. Peoples Efforts. Task set, Task network. Scheduling. EV analysis, Project Plan. Software quality concepts. SQ Assurance, Software reviews, technical reviews, software reliability, ISO 900 L, SQA Plan. SCM process. Version control. SCM standard.

UNIT IV   :   **System engineering :** Hierarchy, Business Process & Product engineering : Overviews. Requirement engineering, System modeling. Requirement analysis. Analysis principles. Software prototyping. Specification. Design Process. Design Principles & Concepts. Effective modular design. Design model & documentation.

UNIT V   :   Software architecture, Data Design, Architectural styles, Requirement mapping. Transform & Transaction mappings. User-interface design : Golden Rule. UTD, Task analysis & modeling, ID activities, Tools, design evaluation. Component level design : Structure programming, Comparison of design notation.

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

Textbook :

Pressman Roger. S. : Software Engineering, A Practitioner's Approach, TMH.

References :

1.   Somerville : Software Engineering (Addison-Wesley) (5/e)
2.   Fairly R. : Software Engineering (McGraw Hill)
3.   Davis A. : Principles of Software Development (McGraw Hill)
4.   Shooman, M.L. : Software Engineering (McGraw-Hill)

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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