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**VEER NARMAD SOUTH GUJARAT UNIVERSITY**

University Campus, Udhna-Magdalla Road, SURAT - 395 007, Gujarat, India

**વીર નર્મદ દક્ષિણ ગુજરાત યુનિવર્સિટી**

યુનિવર્સિટી કેમ્પસ, ઉધના-મગદલ્લા રોડ, સુરત - ૩૯૫ ૦૦૭, ગુજરાત, ભારત.

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## **-: પરિપત્ર :-**

બી.સી.એ.નો અભ્યાસક્રમ ચલાવતી સંલગ્ન કોલેજોના આચાર્યશ્રીઓને જણાવવાનું કે, શૈક્ષણિક વર્ષ ૨૦૧૯-૨૦ થી અમલમાં આવનાર B.C.A. (III<sup>rd</sup> year)નો પેટાસમિતિએ તૈયાર કરેલ અભ્યાસક્રમ અંગે કોમ્પ્યુટર સાયન્સ વિષયની અભ્યાસસમિતિની તા.૧૨/૦૩/૨૦૧૯ની સભાનાં ઠરાવ ક્રમાંક: ૨ અન્વયે કરેલ નીચે મુજબની ભલામણ કોમ્પ્યુટર સાયન્સ એન્ડ ઈન્ફોર્મેશન ટેકનોલોજી વિદ્યાશાખાની તા.૨૯/૦૪/૧૯ ની સભાનાં ઠરાવ ક્રમાંક: ૪ અન્વયે સ્વીકારી તે મંજૂર કરવા એકેડેમિક કાઉન્સિલને કરેલ ભલામણ એકેડેમિક કાઉન્સિલે તેની તા. ૦૭/૦૬/૨૦૧૯ ની સભાના ઠરાવ ક્રમાંક : ૩૬ અન્વયે મંજૂર કરેલ છે. તેની જાણ સંબંધકર્તા શિક્ષકો અને વિદ્યાર્થીઓને કરવી, તદ્દઉપરાંત તેનો અમલ કરવો.

**કોમ્પ્યુટર સાયન્સ વિષયની અભ્યાસસમિતિની તા.૧૨/૦૩/૨૦૧૯ની સભાનાં ભલામણ**

**ક્રમાંક: ૨**

:: આથી ઠરાવવામાં આવે છે કે, શૈક્ષણિક વર્ષ ૨૦૧૯-૨૦ થી અમલમાં આવનાર B.C.A. (III<sup>rd</sup> year) નો અભ્યાસક્રમ નાના મોટા સુધારા સાથે સર્વાનુમતે મંજૂર કરી તે મંજૂર કરવા કોમ્પ્યુટર સાયન્સ એન્ડ ઈન્ફોર્મેશન ટેકનોલોજી વિદ્યાશાખાને ભલામણ કરવામાં આવે છે.

**કોમ્પ્યુટર સાયન્સ એન્ડ ઈન્ફોર્મેશન ટેકનોલોજી વિદ્યાશાખાની તા.૨૯/૦૪/૨૦૧૯ ની સભાનાં ઠરાવ ક્રમાંક: ૪**

:: આથી ઠરાવવામાં આવે છે કે, શૈક્ષણિક વર્ષ ૨૦૧૯-૨૦ થી અમલમાં આવનાર B.C.A. (III<sup>rd</sup> year) નો અભ્યાસક્રમ નાના મોટા સુધારા સાથે સર્વાનુમતે સ્વીકારી મંજૂર કરવામાં આવે છે અને તે મંજૂર કરવા એકેડેમિક કાઉન્સિલને ભલામણ કરવામાં આવે છે.

**એકેડેમિક કાઉન્સિલની તા.૦૭/૦૬/૨૦૧૯ ની સભાનાં ઠરાવ ક્રમાંક: ૩૬**

:: આથી ઠરાવવામાં આવે છે કે, શૈક્ષણિક વર્ષ ૨૦૧૯-૨૦ થી અમલમાં આવનાર B.C.A. (III<sup>rd</sup> year) નો અભ્યાસક્રમ સ્વીકારી મંજૂર કરવામાં આવે છે.

બિડાણ: ઉપર મુજબ

ક્રમાંક : એકે./પરિપત્ર/૧૦૦૩૪/૧૯

તા.૧૭/૦૬/૨૦૧૯

ઈ.ચા.કુલસચિવ

પ્રતિ,

- ૧) બી.સી.એ. નો અભ્યાસક્રમ ચલાવતી સંલગ્ન કોલેજોના આચાર્યશ્રીઓ.
- ૨) ડીનશ્રી, કોમ્પ્યુટર સાયન્સ એન્ડ ઈન્ફોર્મેશન ટેકનોલોજી વિદ્યાશાખા
- ૩) પરીક્ષા નિયામકશ્રી, પરીક્ષા વિભાગ, વીર નર્મદ દ. ગુ. યુનિવર્સિટી, સુરત.

.....તરફ જાણ તેમજ અમલ સારૂ.

# VEER NARMAD SOUTH GUJARAT UNIVERSITY – SURAT

## Bachelor of Computer Application

Program Structure	Semester-wise break up for the courses is given below:							
SEMESTER – 5 (w.e.f. 2019-2020)								
Course Code	Title	Teaching per week		Course Credits	University Examination		Internal Marks	Total Marks
		Theory	Practical		Duration	Marks		
501	PHP & MySQL	4	0	4	3 Hrs	70	30	100
502	UNIX & Shell Programming	4	0	4	3 Hrs	70	30	100
503	Network Technologies	3	0	3	3 Hrs	70	30	100
504	Operating System-II	2	0	2	3 Hrs	70	30	100
505	ASP .NET	4	0	4	3 Hrs	70	30	100
506	Practical	0	12	6	5 Hrs	140	60	200
	Foundation Elective (to be selected from NCC / NSS / Saptadhara)	0	0	2				
<b>Total</b>		17	12	25		490	210	700
For Practical:								
<ol style="list-style-type: none"> <li>1. Batch Size – 30 Maximum</li> <li>2. In case of more than 10 students in a batch, separate batch should be considered.</li> <li>3. The practical journal should be certified by the concerned faculty and by the Head of the Department, failing which the student should not be allowed to appear for External Practical Examination.</li> </ol>								
SEMESTER – 6 (w.e.f. 2019-2020)								
Course Code	Title	Teaching per week		Course Credits	University Examination		Internal Marks	Total Marks
		Theory	Practical		Duration	Marks		
601	Computer Graphics	4	0	4	3 Hrs	70	30	100
602	e-Commerce & Cyber Security	3	0	3	3 Hrs	70	30	100
603	Project	0	2 Hrs / Week / 5 Students	14	--	280	120	400
604	Seminar on Information Technology Innovations & Trends	2	0	2	3 Hrs	70	30	100
	Foundation Elective (to be selected from NCC / NSS / Saptadhara)	0	0	2				
<b>Total</b>				25		490	210	700
For Practical:								
<ol style="list-style-type: none"> <li>1. Batch Size – 30 Maximum</li> <li>2. In case of more than 10 students in a batch, separate batch should be considered.</li> <li>3. The practical journal should be certified by the concerned faculty and by the Head of the Department, failing which the student should not be allowed to appear for External Practical Examination.</li> </ol>								
Program Passing Rules	As per University rules.							

## Course: 501: PHP & MySQL

Course Code	501
Course Title	PHP & MySQL
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2019
Purpose of Course	To make students aware of Open Source Web Based Tools and Database
Course Objective	<ol style="list-style-type: none"> <li>1. To make students understand the concepts of Open Source Web Based Dynamic Scripting Language.</li> <li>2. To make students understand the concepts of Open Source Database.</li> </ol>
Pre-requisite	Basic knowledge of Scripting Language & HTML.
Course Out come	Ability to develop Web Based Applications.
Course Content	<p><b>Unit 1. Introduction to PHP and writing PHP code</b></p> <ol style="list-style-type: none"> <li>1.1. Web Communication fundamentals             <ol style="list-style-type: none"> <li>1.1.1. Request-Response</li> <li>1.1.2. Client-side Scripting</li> <li>1.1.3. Session management</li> </ol> </li> <li>1.2. Installation &amp; Configuration of PHP and MySQL</li> <li>1.3. How PHP code is parsed</li> <li>1.4. Embedding PHP and HTML</li> <li>1.5. Executing PHP and viewing in Browser</li> <li>1.6. Data types</li> <li>1.7. Operators</li> <li>1.8. PHP variables: Static and Global variables</li> <li>1.9. Comments in PHP</li> <li>1.10. Control Statements             <ol style="list-style-type: none"> <li>1.10.1. Condition Statements                 <ol style="list-style-type: none"> <li>1.10.1.1. If...Else</li> <li>1.10.1.2. Switch</li> <li>1.10.1.3. '?' Operator</li> </ol> </li> <li>1.10.2. Loops                 <ol style="list-style-type: none"> <li>1.10.2.1. While</li> <li>1.10.2.2. Break Statement</li> <li>1.10.2.3. Continue</li> <li>1.10.2.4. Do...While</li> <li>1.10.2.5. For</li> <li>1.10.2.6. For each</li> </ol> </li> </ol> </li> <li>1.11. Exit, Die, Return</li> <li>1.12. Arrays in PHP</li> </ol> <p><b>Unit 2. Working with Data and Functions</b></p> <ol style="list-style-type: none"> <li>2.1. FORM element, INPUT elements</li> <li>2.2. Validating the user Input</li> <li>2.3. Passing variables between pages through GET, POST and REQUEST</li> <li>2.4. Built-in Functions             <ol style="list-style-type: none"> <li>2.4.1. String Functions: chr, ord, strtolower, strtoupper, strlen, ltrim, rtrim, substr, strcmp, strencmp, strpos, strrpos, strstr, stristr, str_replace, stripslashes, echo, print</li> <li>2.4.2. Math Functions: abs, ceil, floor, round, fmod, min, max, pow, sqrt, rand</li> </ol> </li> </ol>

	<p>2.4.3. Array Functions: count, list, in_array, current, next, previous, end, each, sort, rsort, assort, array_merge, array_reverse</p> <p>2.4.4. Date Functions: date, getdate, DateTime::setDate, checkdate, time, mktime</p> <p>2.5. User-defined Functions</p> <p><b>Unit 3. Sessions, Cookies and Upload Files</b></p> <p>3.1. Concept of Session</p> <p>3.2. Starting session</p> <p>3.3. Modifying session variables</p> <p>3.4. Unregistering and deleting session variable</p> <p>3.5. Concept of Cookies and Querystring</p> <p>3.6. Upload file form</p> <p>3.7. Uploading scripts and restrictions on upload</p> <p>3.8. Saving uploaded file</p> <p><b>Unit 4. Introduction to MySQL</b></p> <p>4.1. Types of tables in MySQL</p> <p>4.2. Query in MySQL: Select, Insert, Update, Delete</p> <p>4.3. Order By</p> <p>4.4. Database connectivity of PHP with MySQL</p> <p>4.5. Functions of MySQL</p> <p><b>Unit 5. Introduction to jQuery</b></p> <p>5.1. Syntax Overview</p> <p>5.2. Selectors</p> <p>5.3. Events</p> <p>5.4. Effects</p> <p>5.4.1. Hide</p> <p>5.4.2. Show</p> <p>5.4.3. Fade</p> <p>5.4.4. Slide</p> <p>5.4.5. Animate</p> <p>5.4.6. Stop</p> <p>5.4.7. Callback &amp; Functions</p> <p>5.4.8. Chaining</p> <p>5.5. jQuery HTML</p> <p>5.5.1. Get</p> <p>5.5.2. Set</p> <p>5.5.3. Add</p> <p>5.5.4. Remove</p> <p>5.6. CSS, Styling &amp; Dimensions</p> <p>5.7. Traversing</p> <p>5.7.1. Ancestors</p> <p>5.7.2. Descendants</p> <p>5.7.3. Siblings</p> <p>5.7.4. Filtering</p>
Reference Book	<ol style="list-style-type: none"> <li>1. Core PHP Programming - Leon Atkinson – Pearson Publishers</li> <li>2. The Complete Reference PHP - Stever Holzner – McGraw Hill</li> <li>3. Beginning PHP 5.0 Database - Christopher Scollo, Harish Rawat, Deepak Thomas – Wrox Press</li> <li>4. Learning jQuery – Jonathan Chaffer, Karl Swedberg – Packt</li> </ol>

	Publication 5. jQuery for Dummies – Lynn Beighley – Wiley Publication
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.

## Course: 502: UNIX & Shell Programming

Course Code	502
Course Title	UNIX & Shell Programming
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2019
Purpose of Course	To provide basic knowledge of Multi-User Operating System.
Course Objective	<ol style="list-style-type: none"> <li>1. To make students aware of basic concepts of Multi-User Operating System.</li> <li>2. To make students learn Shell Programming.</li> </ol>
Pre-requisite	Fundamental knowledge of Operating System.
Course Out come	The students will understand the concepts of Multi-User Operating System and will be able to work with such Operating System. The students will also be able to do shell programming in UNIX environment.
Course Content	<p><b>Unit 1. Introduction</b></p> <ol style="list-style-type: none"> <li>1.1. Features of Unix OS</li> <li>1.2. System Structure</li> <li>1.3. Shell &amp; its features</li> <li>1.4. Kernel</li> <li>1.5. Architecture of the UNIX OS</li> </ol> <p><b>Unit 2. Overview</b></p> <ol style="list-style-type: none"> <li>2.1 Logging in &amp; out</li> <li>2.2 I node and File Structure</li> <li>2.3 File System Structure and Features</li> <li>2.4 Booting Sequence &amp; init process</li> <li>2.5 File Access Permissions</li> </ol> <p><b>Unit 3. Shell Programming</b></p> <ol style="list-style-type: none"> <li>3.1 Screen Editor “vi”</li> <li>3.2 Environmental &amp; user defined variables</li> <li>3.3 Argument Processing</li> <li>3.4 Shell’s interpretation at prompt</li> <li>3.5 Arithmetic expression evaluation</li> <li>3.6 Control Structure</li> <li>3.7 Redirection</li> <li>3.8 Background process &amp; priorities of process</li> <li>3.9 Conditional Execution</li> </ol> <p><b>Unit 4. Advanced Shell Programming</b></p> <ol style="list-style-type: none"> <li>4.1. Filtering utilities: grep, sed etc.</li> <li>4.2. awk utility</li> <li>4.3. Batch process</li> <li>4.4. Splitting (cat, cut, head and tail), comparing (cmp, comm., diff), Sorting(sort), Merging &amp; Ordering files (paste, uniq)</li> </ol> <p><b>Unit 5. Communication with other users</b></p> <ol style="list-style-type: none"> <li>5.1 write, wall and mesg</li> <li>5.2 mail, motd and news</li> </ol>

Reference Books	<ol style="list-style-type: none"> <li>1. Unix Shell Programming, 3rd Edition, Stephen G Kochan, Patrick Wood – Sams Publishing</li> <li>2. Unix Shell Programming-3<sup>rd</sup> edition, Stephen G Kochan &amp; Patrick Wood –Sams Publishing.</li> <li>3. Sed &amp; awk -2<sup>nd</sup> edition, Dale Dougherty &amp; Arnold Robbins, - O'Reilly Media.</li> <li>4. The Unix Programming Environment, Kernigham &amp; Pike –PHI.</li> <li>5. The Design of the UNIX OS, M. J. Bach – Prentice Hall.</li> <li>6. Operating Systems, A. S. Godbole –Tata McGraw Hill.</li> <li>7. Working with UNIX, Vijay Mukhi –BPB Publications.</li> <li>8. UNIX Shells, Vijay Mukhi –BPB Publications.</li> <li>9. UNIX System Concepts &amp; Applications, Das –Tata McGraw Hill.</li> <li>10. UNIX &amp; Shell Programming, Yashwant Kanetkar –BPB Publications.</li> </ol>
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.

## Course: 503: Network Technologies

Course Code	503
Course Title	Network Technologies
Credit	3
Teaching per Week	3 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2019
Purpose of Course	With extensive use of Internet and Network at offices, it has now become quite essential for students of IT and Computer Science to acquire basic knowledge of Computer Networks. The purpose of this course is to provide basic knowledge of Computer Networks.
Course Objective	Making students aware of 1. Layering Models. 2. Various Network Topologies. 3. Computer Network parlance. 4. Network Security.
Pre-requisite	Prior knowledge of Operating Systems, LAN
Course Out come	After studying this subject, students will be aware of Layering Models, Different types of Computer Networks, Networking terms, Networking Topologies, Networking protocols and Networking Security.
Course Content	<p><b>Unit 1. An Introduction to Networks, Network Topologies, and Types</b></p> <p>1.1 Data Communication [Analog, Digital]  1.2 Introduction: Networking  1.3 Information Exchange, Sharing, Preserving &amp; Protecting  1.4 Hardware and Software Resource Sharing  1.5 Need Uses and Advantages of Network  1.6 Clients, Servers, Peers based and Hybrid Networks  1.7 Server types  1.8 Network Topologies (Bus, Star, Ring, Star Bus, Star Ring &amp; Physical Mesh)  1.9 Defining Network Protocols (H/W Protocols, S/W Protocols H/W-S/W Interface)  1.10 Introduction to Wireless Network, Ad-hoc Wireless and Sensor Wireless Network</p> <p><b>Unit 2. The Layering Models and Data Communication</b></p> <p>2.1 Introduction to OSI model with all layers  2.2 Differences between OSI Model &amp; TCP/IP model  2.3 Data Communication Model, Digital and Analog data and signals, bit rate, baud, bandwidth, Nyquist bit rate</p> <p><b>Unit 3. Networking Hardware</b></p> <p>3.1 Introduction to Guided Transmission Media-Twisted Pair, Coaxial cable, Optical Fibre  3.2 Wireless transmission-Radio waves, microwaves, infrared waves, Satellite Communication.  3.3 Networking devices (repeater, hub, switch, router, bridge, modem)</p> <p><b>Unit 4. Basic of TCP/IP Model</b></p> <p>4.1 Introduction to TCP/IP Model</p>



	<p>4.2 Network Access Layer – MAC Address  4.3 Internet Layer – IP Address, IP Subnetting  4.4 Transport Layer - TCP, UDP, Port number  4.5 Application Layer</p> <p><b>Unit 5. Network Security: Introductory Concepts and Terminologies</b></p> <p>5.1 Various Types of Securities  5.2 Security with Certificates  5.3 Firewalls</p>
Reference Book	<ol style="list-style-type: none"> <li>1. Networking Complete – 3<sup>rd</sup> Edition – BPB Publications</li> <li>2. Networking Essentials Study Guide – MCSE – Tata McGraw Hill Publication</li> <li>3. Computer Networks – A S Tanenbaum - PHI</li> <li>4. Data Communication &amp; Networking – B A Forouzan – Tata McGraw Hill Publication</li> <li>5. Computer Networks – Bhushan Trivedi – Oxford University Press</li> </ol>
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.

## Course: 504: Operating System - II

Course Code	504
Course Title	Operating System – II
Credit	2
Teaching per Week	2 Hrs
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)
Review / Revision	June 2019
Purpose of Course	To teach advanced functions and concepts of operating system.
Course Objective	To understand various advanced functions and concepts to manage operating system along with scheduling concept.
Pre-requisite	Fundamental Knowledge of Operating System.
Course outcome	Students will get good understanding of various functions and management of operating system.
Course Content	<p><b>Unit 1. Processes Management</b></p> <ul style="list-style-type: none"> <li>1.1 Process Concept</li> <li>1.2 Process Scheduling</li> <li>1.3 Scheduling Criteria</li> <li>1.4 Scheduling Algorithms</li> </ul> <p><b>Unit 2. Process Synchronization</b></p> <ul style="list-style-type: none"> <li>2.1 Critical Section Problem</li> <li>2.2 Producer / Consumer Problem</li> <li>2.3 Semaphores</li> <li>2.4 Monitors</li> <li>2.5 Inter Process Communication</li> <li>2.6 Classical IPC Problems <ul style="list-style-type: none"> <li>2.6.1 The Dining Philosopher</li> <li>2.6.2 The Sleeping Barber Problem</li> </ul> </li> </ul> <p><b>Unit 3. Deadlocks</b></p> <ul style="list-style-type: none"> <li>3.1 System Model</li> <li>3.2 Deadlock Characteristics</li> <li>3.3 Methods of Handling Deadlock</li> <li>3.4 Deadlock Prevention</li> <li>3.5 Deadlock Avoidance</li> <li>3.6 Deadlock Detection</li> <li>3.7 Recovery from Deadlock</li> </ul> <p><b>Unit 4. Memory Management</b></p> <ul style="list-style-type: none"> <li>4.1 Memory Management Functions</li> <li>4.2 Contiguous Memory Allocation <ul style="list-style-type: none"> <li>4.2.1 Partitioned Memory</li> <li>4.2.2 Static and Dynamic Allocation</li> </ul> </li> <li>4.3 Non-Contiguous Memory Allocation <ul style="list-style-type: none"> <li>4.3.1 Paging</li> <li>4.3.2 Segmentation</li> </ul> </li> </ul> <p><b>Unit 5. Virtual Memory Management</b></p> <ul style="list-style-type: none"> <li>5.1 Demand Paging</li> <li>5.2 Allocation of Frames</li> <li>5.3 Page Replacement</li> <li>5.4 Thrashing</li> </ul>

Reference Books	<ol style="list-style-type: none"> <li>1. Operating System Concepts, Silberschatz, Addison Wesley</li> <li>2. Operating Systems: Internals &amp; Design Principles, William Stallings, PHI</li> <li>3. Operating System: Design &amp; Implementation, Tenenbaum &amp; Albert Woodhull, Pearson</li> <li>4. Modern Operating Systems, Andrew S. Tenenbaum, PHI</li> <li>5. Operating Systems, Donovan M, McGraw Hill Publication</li> <li>6. Operating Systems: A Design Oriented approach, Crowley, Tata McGraw Hill Publication</li> <li>7. Operating Systems, S. Godbole, Tata McGraw Hill Publication</li> </ol>
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.

## Course: 505: ASP .NET

Course Code	505
Course Title	ASP .NET
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2019
Purpose of Course	To make students aware of Web Based Tools and Database
Course Objective	To make students understand concepts of Web Technology
Pre-requisite	Basic knowledge of Scripting Language & HTML.
Course Out come	Student will get good hands on experience to develop, manage and maintain Web based application.
Course Content	<p><b>Unit 1. Introduction to ASP.NET</b></p> <ul style="list-style-type: none"><li>1.1 What is ASP.NET</li><li>1.2 .Net framework 2.0</li><li>1.3 Compile Code<ul style="list-style-type: none"><li>1.3.1 Code Behind and Inline Coding</li></ul></li><li>1.4 The Common Language Runtime</li><li>1.5 Object Oriented Concepts</li><li>1.6 Event Driven Programming</li></ul> <p><b>Unit 2. Server Control</b></p> <ul style="list-style-type: none"><li>2.1 Post back</li><li>2.2 Data Binding<ul style="list-style-type: none"><li>2.2.1 Grid View</li><li>2.2.2 List Box</li><li>2.2.3 Data list</li><li>2.2.4 Data binding Events</li><li>2.2.5 Repeater</li><li>2.2.6 Form view</li></ul></li><li>2.3 Web Server Controls, HTML Server Controls (basic HTML Server Control), Validation Controls, Navigation Controls, Login Control</li><li>2.4 Master Page, Themes &amp; CSS</li></ul> <p><b>Unit 3. Database Access</b></p> <ul style="list-style-type: none"><li>3.1 Introduction about ADO.NET</li><li>3.2 Introduction about Provider, Adapter, Reader, Command Builder</li><li>3.3 Database Access using ADO.NET</li></ul> <p><b>Unit 4. Client Server Communication</b></p> <ul style="list-style-type: none"><li>4.1 Communications with Web Browser</li><li>4.2 Response Object</li><li>4.3 Cookies</li><li>4.4 Query String</li><li>4.5 Session Management and Variable Scope</li></ul> <p><b>Unit 5. Advance ASP.NET</b></p> <ul style="list-style-type: none"><li>5.1 Web.config</li><li>5.2 Sitemappath Server Control</li><li>5.3 User Control</li></ul>

	5.4 User Profile 5.5 Web Services 5.5.1 Basics of Web Services 5.5.2 Interacting with web services 5.6 Error Handling 5.6.1 Unstructured Error 5.6.2 Structured Error 5.6.3 Error handling in Database
Reference Book	1 ASP.NET – A Beginner’s Guide by Dave Mercer – TMH 2 ASP.NET Bible – Mridula Parihar et. Al. – Wiley India 3 Programming ASP.NET 4 – Dino Esposito 4 Professional ADO.NET – Bipin Joshi, Donny Mack, Doug Seven, Fabio Claudio Ferracchiati, Jan D Narkiewicz - Wrox 5 ASP.NET for Developers – Amundsen 6 The Complete Reference ASP.NET -Matthew MacDonald –TMH 7 ASP.NET – Black Book – dreamTech 8 Beginning ASP.NET 3.5 in C# and VB –Wrox-Imar Spaanjaars
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.

### Course: 506: Practical

Course Code	506
Course Title	Practical
Credit	6
Teaching per Week	12 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2019
Purpose of Course	Through practical implementation the students can understand learn computer programming in a better way.
Course Objective	The Objective of this course is to enable students Solve Practical Problem in P-501, P-502, P-505.
Pre-requisite	Basic knowledge of scripting language, HTML, Object Oriented Concepts and Java programming.
Course Out come	After completion of this course, the students will be able to implement practical problems in PHP MySQL, UNIX Shell Programming and ASP.NET application.
Course Content	Practical based on Papers 501, 502 and 505
Reference Book	As per papers 501, 502 and 505.
Teaching Methodology	Lab. Work
Evaluation Method	30% Internal assessment. 70% External assessment.

## Course: 601: Computer Graphics

Course Code	601
Course Title	Computer Graphics
Credit	4
Teaching per Week (Min.)	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.) Total 40 hours
Review / Revision	June 2019
Purpose of Course	Make students aware and understand Computer Graphics.
Course Objective	To make students understand and learn the geometrical processes on various shapes, objects and text.
Pre-requisite	Basic concepts of computer-based animation, various objects and basic school geometry.
Course Out come	Students will be able to understand and write algorithms for construction of various shapes like line, circle & ellipse, and various processes on them.
Course Content	<p><b>Unit 1. Introduction</b></p> <ul style="list-style-type: none"> <li>1.1 Application areas of Graphics Systems <ul style="list-style-type: none"> <li>1.1.1. Presentation Graphics</li> <li>1.1.2. Entertainment</li> <li>1.1.3. Education and Training</li> <li>1.1.4. Image Processing</li> </ul> </li> <li>1.2 Computer Graphics Files</li> <li>1.3 Introduction to graphic standards</li> </ul> <p><b>Unit 2. Graphics Systems</b></p> <ul style="list-style-type: none"> <li>2.1. Video Display Devices <ul style="list-style-type: none"> <li>2.1.1. Refresh CRT</li> <li>2.1.2. Color CRT</li> <li>2.1.3. LCD</li> <li>2.1.4. Direct View Storage Tube</li> </ul> </li> <li>2.2. Raster scan and Random Scan Display</li> <li>2.3. Raster Graphics and Vector Graphics</li> <li>2.4. Concepts of various objects: Point, Line, Circle, Ellipse and Polygons</li> </ul> <p><b>Unit 3. Line generation</b></p> <ul style="list-style-type: none"> <li>3.1. Geometry of line</li> <li>3.2. Frame Buffer</li> <li>3.3. Line Drawing Algorithms <ul style="list-style-type: none"> <li>3.3.1. DDA Algorithm</li> <li>3.3.2. VECGEN</li> <li>3.3.3. Bresenham</li> </ul> </li> <li>3.4. Line Styles <ul style="list-style-type: none"> <li>3.4.1. Thick line</li> <li>3.4.2. Line caps and joint</li> </ul> </li> <li>3.5. Anti-aliasing of line</li> </ul> <p><b>Unit 4. Polygons</b></p> <ul style="list-style-type: none"> <li>4.1 Polygon Representation</li> <li>4.2 Polygon Inside Tests <ul style="list-style-type: none"> <li>4.2.1 Even-odd method</li> <li>4.2.2 Winding number method</li> </ul> </li> <li>4.3 Polygon Area Filling Algorithm</li> </ul>

	4.3.1 Flood Fill 4.3.2 Scan Line 4.3.3 Boundary Fill 4.4 Filling polygon with a pattern  <b>Unit 5. Geometric Transformations</b> 5.1 Basic Transformations 5.1.1 Scaling 5.1.2 Translation 5.1.3 Rotation 5.1.3.1 Rotation about origin 5.1.3.2 Rotation about Homogeneous Coordinates 5.2 Other transformations 5.2.1 Reflection 5.2.2 Shearing
Reference Book	1. Computer Graphics - second edition, Donald Hearn & M. Pauline Baker – Tata McGraw Hill Pub. 2. Computer Graphics, Harrington S. -Tata McGraw Hill. 3. Computer Graphics, Desai A. A. –PHI. 4. Computer Graphics: Algorithms & Implementations, Mukherjee & Jana – PHI. 5. Interactive Computer Graphics, Giloi W. K. –Prentice Hall India. 6. Principles of Interactive Computer Graphics, New Man W. & Sproul P. F. –McGraw Hill 7. Procedural Elements for Computer Graphics, Rogers D. F. – McGraw Hill.
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.



## Course: 602: e-Commerce and Cyber Security

Course Code	602
Course Title	e-Commerce and Cyber Security
Credit	3
Teaching per Week (Min.)	3 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.) Total 30 hours
Review / Revision	June 2019
Purpose of Course	To make students aware of e-Commerce, Cyber Security, Cyber Crime and Cyber Laws
Course Objective	To impart basic knowledge of e-Commerce, Cyber Security, Cyber Crime & Cyber Law
Pre-requisite	Fundamental Knowledge of Networking, Web Applications & RDBMS
Course Out come	The students will get the basic knowledge of e-Commerce, Cyber Security, Cyber Crime & Cyber Law and hence will help them in developing secured applications and will make them aware of various Cyber Laws
Course Content	<p><b>Unit 1. Introduction to Electronic Commerce</b></p> <ol style="list-style-type: none"> <li>1.1 What is e-Commerce?</li> <li>1.2 Aims of e-Commerce</li> <li>1.3 e-Commerce Framework</li> <li>1.4 e-Commerce Consumer Applications</li> <li>1.5 e-Commerce Organizational Applications</li> <li>1.6 Introduction to m-Commerce</li> </ol> <p><b>Unit 2. The Network Infrastructure of e-Commerce</b></p> <ol style="list-style-type: none"> <li>2.1. What is Information Way?</li> <li>2.2. Components of I-Way <ol style="list-style-type: none"> <li>2.2.1. Network Access Equipment</li> <li>2.2.2. Local on-ramps</li> <li>2.2.3. Global Information Distribution Network</li> </ol> </li> <li>2.3. Transaction Models</li> </ol> <p><b>Unit 3. e-Commerce Payments and Security Issues</b></p> <ol style="list-style-type: none"> <li>3.1. e-Commerce Payment Systems <ol style="list-style-type: none"> <li>3.1.1. Debit Card Based</li> <li>3.1.2. Credit Card Based</li> <li>3.1.3. Risks &amp; EPS</li> <li>3.1.4. e-Cash and e-Cheque</li> </ol> </li> <li>3.2. Security on Web</li> <li>3.3. SSL</li> </ol> <p><b>Unit 4. Introduction to Cyber Crimes</b></p> <ol style="list-style-type: none"> <li>4.1 Category of Cyber Crimes</li> <li>4.2 Technical Aspects of Cyber Crimes <ol style="list-style-type: none"> <li>4.2.1 Unauthorized access &amp; Hacking</li> <li>4.2.2 Trojan, Virus and Worm Attacks</li> <li>4.2.3 E-Mail related Crimes <ol style="list-style-type: none"> <li>4.2.3.1 E-mail Spoofing and Spamming</li> <li>4.2.3.2 E-Mail Bombing</li> <li>4.2.3.3 Denial of Service Attacks</li> <li>4.2.3.4 Distributed Denial of Service Attack</li> </ol> </li> </ol> </li> </ol>

	<b>Unit 5. Prohibited Actions on Cyber Crimes</b> 5.1 Pornography 5.2 IPR Violations: Software piracy, Copyright Infringement, Trademarks Violations, Theft of Computer source code, Patent Violations 5.3 Cyber Squatting 5.4 Banking/ Credit card related crimes 5.5 e-Commerce / Investment Frauds 5.6 Defamation (Cyber Smearing) 5.7 Cyber Stacking
Reference Book	1. Frontiers of Electronic Commerce, Ravi Kalakota and Andrew Whinston, Addition Wesley 2. Electronic Commerce: A Managerial Perspective, Efraim turban, Jae Lee, David King, H. Michel Chung, Addition Wesley 3. E-Commerce: An Indian Perspective, Joseph, PHI 4. E-Mail Hacking, Ankit Fadia, Vikas Publishing House Pvt. Ltd. 5. e-Commerce Concept, Models Strategies, G.V.S. Murthy, Himalaya Publisher 6. Cyber Crime in India, Dr M Dasgupta, Centax Publications Pvt Ltd 7. Cyber Laws and Crimes, Barkha U, Rama Mohan, Universal Law Publishing Co. Pvt Ltd. 8. Cyber Crime, Bansal S.K., A.P.H. Publishing Corporation 9. Cyber Security Understanding Cyber Crime, Computer Forensic and Legal Perspectives, Nina Godbole, Sunit Belapur, Willey India Publication
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.

### Course: 603: Project

Course Code	603										
Course Title	Project										
Credit	14										
Teaching per Week	2 Hrs. / Week / 5 students (Reporting & Contact hours)										
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.) 28 hours/week										
Review / Revision	June 2019										
Purpose of Course	To make students get hands on experience of software development life cycle.										
Course Objective	The main objective is to make students acquire knowledge of analyzing and solving real world problems and hands on experience of software development life cycle.										
Pre-requisite	Knowledge of Operating System, Computer Networking, Software Engineering, Database, Application Development Tools, Web Designing Related Tools, Computer Languages.										
Course Out come	Students will understand the complete process of software development life cycle and will be able to produce good applications of real world problems.										
Guidelines for Project	<p>The project will be in-house. Duration of the Project Work should be Two months. All the students will have to submit following reports to their respective examination centres.</p> <ol style="list-style-type: none"> <li>1. The Joining Report (Once).</li> <li>2. Project Title Report (Once).</li> <li>3. Progress Reports (Fortnightly) signed by the guide (internal faculty) &amp; submitted to the Head/Project Coordinator in person.</li> <li>4. Project Completion Certificate issued from the College.</li> </ol> <p>The student shall not be allowed to appear for the Final Examination if the student fails to submit the above-mentioned documents.</p> <p>Project Viva-voce will be conducted at the end of the semester.</p>										
Evaluation Method	<p>30% Internal assessment. 70% External assessment.</p> <p>Internal Evaluation: Minimum two faculties (preferably senior most) should be nominated by the Head of the Department or the senior most faculty in absence of the Head to evaluate the performance of the students' presentation.</p> <p>External Evaluation: The evaluation should be as per the following break up:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 70%;">1. Analysis:</td> <td style="width: 30%;">25% weightage</td> </tr> <tr> <td>2. Design:</td> <td>25% weightage</td> </tr> <tr> <td>3. Implementation</td> <td>25% weightage</td> </tr> <tr> <td>4. Presentation:</td> <td>15% weightage</td> </tr> <tr> <td>5. Project Report:</td> <td>10% weightage</td> </tr> </table>	1. Analysis:	25% weightage	2. Design:	25% weightage	3. Implementation	25% weightage	4. Presentation:	15% weightage	5. Project Report:	10% weightage
1. Analysis:	25% weightage										
2. Design:	25% weightage										
3. Implementation	25% weightage										
4. Presentation:	15% weightage										
5. Project Report:	10% weightage										

## Course: 604: Seminar on Information Technology Innovations & Trends

Course Code	604
Course Title	Seminar on Information Technology Innovations & Trends
Credit	2
Teaching per Week	2
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)
Review / Revision	June 2019
Purpose of Course	<ol style="list-style-type: none"> <li>1. To improve the communication and presentation skills.</li> <li>2. To let students, update knowledge on latest &amp; forthcoming technologies.</li> <li>3. Let students keep pace with new trends of Information Technology.</li> </ol>
Course Objective	<p>Information Technology is a constantly changing field. The idea of introducing this subject is to let students keep pace with the changing scenario of I. T.</p> <p>During the lectures, faculty will help students to select the topic. The students will collect relevant information from various sources and prepare a presentation. During the class hours, students will present their presentation on the given topic. The faculty will access and help them to improve their presentation skills.</p>
Pre-requisite	-
Course Out come	Students will be able to develop their presentation skills and will keep themselves updated with latest trends in Information Technology.
Guidelines for Seminar	Students will prepare a presentation using ICT Tools and submit hard copy of the presentation for Internal and External evaluation.
Evaluation Method	<p>30% Internal assessment. 70% External assessment.</p> <p>Evaluation: External examiners who are appointed for Project evaluation will evaluate the Seminar Presentation, along with the project presentations and will be treated as External Evaluation.</p> <p>Minimum two faculties (Preferably senior most) nominated by the Department Head or the Senior most faculty, in absence of the Department Head, will evaluate the performance of the student's presentation and will be treated as Internal Evaluation.</p> <p>The evaluation should be as per the following break up:</p> <ol style="list-style-type: none"> <li>1. Selection of the Topic &amp; Relevance: 20% weightage</li> <li>2. Understanding of the topic: 35% weightage</li> <li>3. Source of the topic: 10% weightage</li> <li>4. Presentation: 35% weightage</li> </ol>