ಸಂತಅಲೋಶಿಯಸ್ ಕಾಲೇಜು (ಸ್ವಾಯತ್ತ) ದುಂಗಳೂರು- 575 003 www.staloysius.edu.in



ST ALOYSIUS COLLEGE(AUTONOMOUS) **MANGALURU - 575 003** Phone: 0824-2449700, 2449701 Fax: 0824-2449705 Email: principal@staloysius.edu.in

Re-accredited by NAAC with 'A' Grade with CGPA 3.62/4 Recognised by UGC as "College with Potential for Excellence" Conferred "College with "STAR STATUS" by DBT, Government of India. Centre for Research Capacity Building under UGC-STRIDE

Date: 17-08-2022

NOTIFICATION

Sub: Syllabus of B.C.A. under NEP Regulations, 2021. (As per Mangalore University guidelines)

Ref: 1. Decision of the Academic Council meeting held on 18-12-2021 vide Agenda No: 6.4 (2021-22)

- 2. Decision of the Academic Council meeting held on 09-07-2022 vide Agenda No: 14
- 3. Office Notification dated 21-02-2022
- 4. Office Notification dated 17-08-2022

Pursuant to the above, the Syllabus of B.C.A.. under NEP Regulations, 2021 which was approved by the Academic Council at its meeting held on 18-12-2021 & 09-07-2022 is hereby notified for implementation with effect from the academic year 2021-22.

rachis PRINCIPAL

To:

- 1. The Chairman/Dean/HOD.
- 2. The Registrar Office
- 3. Library





	Semester III								
Sl. No	Course Code	Title of the Course	Category of Courses	Teaching Hours per Week		SEE	CIE	Total Marks	Credits
				Theor y	Lab	-			
1	G 735 LA1.3	Language-I	AECC	4	-	60	40	100	3
2	G 736 LA2.3	Language-II	AECC	4	-	60	40	100	3
3	G 601 DC 1.3	Data Base Management Systems	DSC-7	3	-	60	40	100	3
4	<mark>G 601 DC 2.3</mark>	C# and DOT NET Framework	DSC -8	3	-	60	40	100	3
5	G 601 DC 3.3	Operating System Concepts	DSC -9	3	-	60	40	100	3
6	G 601 DC 1.3P	LAB: DBMS	DSC-7P	-	4	25	25	50	2
7	G 601 DC 2.3P	LAB: C# and DOT NET Framework	DSC -8P	-	4	25	25	50	2
8	<mark>G 601 OE 1.3</mark>	Computer Oriented Numeric Analysis	OEC	3	-	60	40	100	3
9	<mark>G 650 SB 1.3</mark>	Artificial Intelligence/ Alternative paper(Open source tools)	SEC SB	1	2	30	20	50	2
10	G 702 AE 1.3	Gender Equity and Value Education	AECC	3		30	20	50	2
11	G 705 VB 1.3	Physical Education-Sports	SEC VB		2	15	10	25	1
12	G 706 VB 2.3	Health & Wellness/ Social & Emotional Learning	SEC VB		2	15	10	25	1
Sub-	·Total(C)			3	5	500	350	850	28

	Semester IV								
SI. No	Course Code	Title of the Course	Category of Courses	Teaching Hours per Week (L+T+P)		SEE CIE	Total Marks	Credit s	
				Theo ry	Lab				
1	G 735 LA1.4	Language-I	AECC	4	-	60	40	100	3
2	G 736 LA2.4	Language-II	AECC	4	-	60	40	100	3
3	G 601 DC 1.4	Python Programming	DSC-10	3	-	60	40	100	3
4	<mark>G 601 DC 2.4</mark>	Computer Multimedia and Animation	DSC -11	3	-	60	40	100	3
5	G 601 DC 3.4	Computer Communication and Networks	DSC -12	3	-	60	40	100	3
6	G 601 DC1.4P	LAB: Python programming	DSC-10P	-	4	25	25	50	2
7	<mark>G 601 DC</mark> 2.4P	LAB: Multimedia and Animation	DSC -11P	-	4	25	25	50	2
8	<mark>G 601 OE 1.4</mark>	Financial Literacy	OEC	3	-	60	40	100	3
9	G 702 AE1.4	Constitution of India & VE	AECC	2		30	20	50	2
10	G 705 VB1.4	Physical Education-Sports	SEC VB		2	15	10	25	1
11	G 706 VB2.4	NCC/NSS/R&R(S&G)/Cultur al	SEC VB		2	15	10	25	1
Sub-	-Total(D)			3	4	470	330	800	26

Course Code: G 601 DC 2.3	Course Title: C# and DOT NET Framework		
Course Credits: 03	Hours/Week: 03		
Total Contact Hours: 42	Formative Assessment Marks: 40		
Exam Marks: 60	Exam Duration: 03 Hours		

Contents	Hours
Unit - 1	T
Introduction to C# language, The .Net Architecture and .Net Framework, The Common	
Language Runtime (CLR), Microsoft Intermediate Language (MSIL) Code, Just In Time	
Compilers (JITers), The Framework Class Library (FCL), The Common Languages	12
Specification (CLS), The Common Type System (CTS), Garbage Collection (GC), The .Net	
Framework.	
C# Console programming: Structure of C# program: name space, types, value type,	
simple type, reference type, boxing and unboxing, and their conversions.	
C# operators: arithmetic operators, shift operators, logical operators, conditional	
operators, conversion operators, checked& unchecked operators.	
Unit - 2	
Decision Making and Branching: if-else, switch, For Loop, While Loop, Do-While Loop,	
Break, Continue, Goto.	10
	10
Arrays & Collections: Introduction to arrays, Declarations and its types. Introduction to	
collection, Array list, jagged array, stack implementation.	
Object oriented programming: Object and Classes: Concept of a class, Objects, Fields,	
Methods, Access modifiers, Properties, Static members of the class, Constructors,	
Destructors, Method overloading, events and delegates, operator overloading.	

Unit - 3	
Inheritance: introduction, types, base class inheritance, derived class inheritance. method overriding. Interface: Interface, declaration modifiers, methods, properties, events.	10
Windows Applications	
Windows Forms-Common Controls, Control Properties and Layout, Labels, Textboxes and Buttons, Group Boxes and Panels, Checkboxes and Radio Buttons, ToolTips, Mouse-Event Handling, Keyboard-Event Handling.Menus, Month Calendar Control, LinkLabel Control, ListBox Control, ComboBox Control, TreeView Control, ListView Control, TabControl and Multiple Document Interface (MDI).	
Unit - 4	
Exception Handling: Definition, Exception handling techniques (statements), types, creating our own exception class.	10
ADO.net:	
Components of ADO.net, Understanding ADO.NET: Describing the Architecture of ADO.NET, Connection Strings: Syntax for Connection Strings. Working with Connection Object: Creating a Connection to a Database: SQL Server Database, OLEDB Database, Creating a Command Object. Inserting, Updating and Deleting Records.	

<u>Text Book</u>

- 1. Black Book, ASP.NET 4.0
- 2. E.Balaguruswamy: Programming in C#, 2nd Edition, Tata McGraw Hill, 2008.

Reference Books:

- 1. Andrew Troelsen: Pro C# with .Net 3.0, 4th Edition, Wiley India, 2009.
- 2. Tom Archer: Inside C#, WP Publishers, 2001.
- 3. Herbert Schildt: C# The Complete Reference, Tata McGraw Hill, 2004.
- 4. ShibiPanikkar and Kumar Sanjeev, C# with .NET Frame Work, Firewall Media

Course Code: G 601 OE 1.3	Course Title: COMPUTER ORIENTED
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 03 Hours

Contents	Hours	
Unit - 1		
System of Linear Algebraic Equation- Definitions, Direct method of solving System of		
equation, Crammer rule, Gauss Elimination method, Gauss-Jordan Elimination		
method 10 Decomposition method Matrix Norm	12	
Unit - 2		
Iteration Methods - Jacobi method, Gauss seidel method		
	10	
Interpolation & Approximation- Finite difference operators, Lagrange's interpolation,		
Lagrange's inverse interpolation, Newton interpolation – Forward Differences &		
Backward differences – Derivations and problems		
Unit - 3		
Newton's divided differences: Newton's divided differences, interpolating polynomials		
using finite difference operators.	10	
Numerical Differentiation Derivation of Numerical differentiation formula using		
Numerical Differentiation – Derivation of Numerical differentiation formula using		
Newton's forward and backward difference interpolation formula and problems.		
Unit - 4		

Numerical Integration - Numerical Integration - Newton's Generalized Integration formula, Derivation of Trapezoidal rule, Simpson's 1/3rd rule, Simpson's 3/8 rule formulas and problems.

Course Code: G 601 DC 2.4	Course Title: Computer Multimedia and Animation			
Course Credits: 03	Hours/Week: 03			
Total Contact Hours: 42	Formative Assessment Marks: 40			
Exam Marks: 60	Exam Duration: 03 Hours			

Learning Objective: To learn about various technologies in animation and virtual reality system.

Learning Outcome: Students are able to draw primitive graphical shapes and perform transformation techniques programmatically. They are also learning about various new technologies developed and their applications.

Contents	Hours			
Unit - 1				
Web Design : Origins and evolution of HTML, Basic syntax, Basic text markup, Images, Lists, Tables, Forms, Frame, Overview and features of HTML5. CSS: Introduction, Levels of style sheets, Style specification formats, Selector forms, Property value forms, Font properties, List properties, Color, Alignment of text, The and tags; Overview and features of CSS3.	12			
JavaScript: Object orientation and JavaScript; General syntactic characteristics; Primitives, operations, and expressions; Screen output and keyboard input.				
Unit - 2				
Introduction, Media and Data Streams, Audio Technology	10			
Multimedia Elements; Multimedia Applications; Multimedia Systems Architecture; Evolving Technologies for Multimedia Systems; Defining Objects for Multimedia Systems; Multimedia Data Interface Standards; The need for Data Compression; Multimedia Databases. Media: Perception Media, Representation Media, Presentation Media, Storage Media, Transmission Media, Information Exchange Media, Presentation Spaces &Values, and Presentation Dimensions; Key Properties of a Multimedia System: Discrete &				

Continuous Media, Independence Media, Computer Controlled Systems, Integration; Music and MIDI Standards; Speech Signals; Speech Output; Speech Input; Speech Transmission.	
Animation: What is an Animation? The Start and End States, Interpolation, Animations in HTML. All About CSS Animations, Creating a Simple Animation, Detailed Look at the CSS Animation Property, Keyframes, Declaring Multiple Animations, Wrap-up. All About CSS Transitions, Adding a Transition, Looking at Transitions in Detail, The Longhand Properties, Longhand Properties vs. Shorthand Properties, Working with Multiple Transitions.	
Unit - 3	
HTML5 – SVG: Viewing SVG Files, Embedding SVG in HTML5, HTML5 – SVG Circle, HTML5 – SVG Rectangle, HTML5 – SVG Line, HTML5 – SVG Ellipse, HTML5 – SVG Polygon, HTML5 – SVG Polyline, HTML5 – SVG Gradients, HTML5 – SVG Star.	10
Unit - 4	
HTML5 – CANVAS: The Rendering Context, Browser Support, HTML5 Canvas Examples, Canvas - Drawing Rectangles, Canvas - Drawing Paths, Canvas - Drawing Lines, Canvas - Drawing Bezier Curves, Canvas - Drawing Quadratic Curves, Canvas - Using Images, Canvas - Create Gradients,	10
HTML5 - Styles and Colors, Canvas - Text and Fonts, Canvas - Pattern and Shadow, Canvas - Save and Restore States, Canvas - Translation, Canvas - Rotation, Canvas - Scaling, Canvas - Transforms, HTML5 Canvas - Composition, Canvas – Animations.	

Text Book:

1. Rajesh K. Maurya, Computer Graphics with Virtual Reality Systems., 2nd Edition, Wiley publication, 2014.

2. Donald Hearn, M. Pauline Baker, **Computer Graphics - C version**, 2nd Edition, LPE Pearson, 1996.

Reference Books:

1. Tay Vaughan, Multimedia: Making It Work, 8th Edition, Tata McGraw Hill, 2011.

2. Steven Harrington, Computer Graphics: A Programming Approach, McGraw Hill Education, 1987.

3. James D. Foley, Fundamentals of interactive computer graphics, Addison Wesley Longman Publishing Co, 1982.

Semester: IV

Course Code: G 601 DC 3.4	Course Title: Computer Communication and Networks				
Course Credits: 03	Hours/Week: 03				
Total Contact Hours: 42	Formative Assessment Marks: 40				
Exam Marks: 60	Exam Duration: 03 Hours				

Learning Objective:

- Provides the theoretical knowledge of data communication and computer networks.
- Helps in understanding the concepts of resource sharing.

Learning Outcome:

• At the end of the course the students will be able to understand the architectural principles of computer networking and compare different approaches to organizing networks.

Contents	Hours
Unit - 1	
Uses of Computer Networks	
Business Applications, Home Applications, Mobile Users;	
Network hardware	12
LAN, MAN, WAN, wireless networks, Home Networks, Internet works, introduction to Ad- hoc networks.	
Network Software	
protocol hierarchies, design issues for the layers, connection oriented and connectionless services, service primitives, the relationship of services to protocols.	
Transmission Media	
magnetic media, twisted pair, coaxial cable, fiber optics.	
Transmission Modes	
Parallel Transmission, Serial Transmission- asynchronous and synchronous transmission.	
Unit - 2	

Configuration - Point- to- point, Multipoint, Topology - Mesh, Star, Tree, Rus, Ring	Hybrid
plogy, Transmission Mode - Simplex, Half- duplex, Full- Duplex.	nyonu
nents of data communication:	
and Signals - analog and digital signal. Periodic and A Periodic signals, composite	signals.
smission Impairment	
nuation, delay distortion, noise,	
oding and Modulating	
tal to digital conversion, data encoding, unipolar, Polar-NRZ, NRZ-L, NRZ-I, RZ, B chester codes signals, bipolar- AMI, B8ZS, HDB3,	iphase,
Unit - 3	
vork Architecture and Distributed Processing	
vork Architecture and Distributed Processing OSI Reference Model, the TCP/IP Reference Model, comparison between OSI and rence Model Network standardization. network interface, principles of inter-netw net protocols- TCP/IP, IP address class, network services, electronic mail, Digital Sig Firewalls.	TCP/IP vorking, gnature
vork Architecture and Distributed Processing OSI Reference Model, the TCP/IP Reference Model, comparison between OSI and rence Model Network standardization. network interface, principles of inter-netw net protocols- TCP/IP, IP address class, network services, electronic mail, Digital Sig Firewalls. Unit - 4	TCP/IP vorking, gnature
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Vork Architecture and Distributed Processing OSI Reference Model, the TCP/IP Reference Model, comparison between OSI and rence Model Network standardization. network interface, principles of inter-netw net protocols- TCP/IP, IP address class, network services, electronic mail, Digital Sig Firewalls. Unit - 4 ching uit Switching, Packet Switching, Message Switching. tiplexing ny to one/one to many, Frequency division multiplexing (FDM). security: r detection and correction - Types of errors, detection, Checksum, single bit error corre ming Distance , Hamming code, Burst error correction. gn and Setting a practical Network	TCP/IP vorking, gnature

Text Books:

- 1. Computer Networks fourth edition Andrew s. Tanenbaum, E E Edition. (Unit I, IV)
- 2. Data Communications and Networking- Behrouz A. Forouzan, 4th Edition, TATA McGraw Hill (Unit II, III)

Reference Books

- 1. Internetworking with TCP/IP, Vol 1, 2, 3 by Douglas E Comer
- 2. J.Martin, "Computer Network and Distributed Data Processing", Prentice Hall.
- 3. Fred Halsall, L.G. Kulkarni, "Computer Networking and the Internet", Pearson