

Branch Name:	Bachelor of Computer Application (BCA)
Program Code:	CS101
Course Title :	Developing Thinking
Course Code :	11-AEC103-1C
Pre-requisite Course:	Thinking ability on various level after boards

Course Objective (CO) :

This course is intended to make the students

- Understand the concepts of developing thinking approaches
- Create developing thinking teams and conduct developing thinking sessions
- Apply both critical thinking and design thinking in parallel to solve problems
- Apply some developing thinking concepts to their daily work

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
2	-	-	2	25	25	-	-	50

Course Contents:

Sr. No.	Topics	Total Hours	Weightage (%)
1.	Developing Thinking Overview “Thinking ” meaning and overview in brief , Thinking and learning in brief, Developing Thinking Skills , Developing Thinking Mind-set , Principles of Developing Thinking , kinds of thinking to encourage children to do. Important for 21 st century youth must possess in order to succeed in their professional and personal lives. 7C Thinking skills.	11	20
2.	Creative and Critical Thinking skills Introduction – Example – Pros and Cons of Creative thinking , how to improve Creative thinking , Introduction – Example – Pros and Cons of Critical thinking , how to improve Critical thinking	11	20
3.	Competitive and Comprehensive Thinking Introduction – Example – Pros and Cons of Competitive thinking, how to improve Competitive thinking, Introduction – Example – Pros and Cons of Comprehensive thinking, how to improve Comprehensive thinking.	10	20
4.	Communicative and Collaborative Thinking Define communicative thinking – important – Pros and Cons – Example of communicative thinking – verbal and nonverbal communicative thinking – Activities about communicative thinking , Define – important – Example – synchronous and asynchronous activity of Collaborative thinking . How to improve collaborative thinking in professional and personal life.	8	20
5.	Computational thinking Define – important – example of computational thinking, key skill for computational thinking are: Algorithm – Flowchart – Decomposition – Pattern recognition – Pattern abstraction – algorithm design – real life example and problem solving methods by computational thinking.	8	20

Course Learning Outcomes (CLO):

At the end of this course, the student would be able

- 1 To understand why that Developing Thinking and those skills will be useful to them.
- 2 focus on the context and potential applications of Developing Thinking
- 3 connect learning in various contexts of Developing Thinking
- 4 Helps guide assessment and evaluation of Developing Thinking.

List of Reference:

1. Developing Thinking Skills by Prof. E. Balagurusamy – Khanna Publication
2. Abrami, P., Bernard, R., Borokhovski, E., Wade, A., Surkes, M., Tamim, R., and Zhang, D. (2008).
3. Intervention affecting critical thinking skills and dispositions: A Stage 1 Meta-Analysis. Review of Educational Research 78 (4), 1102-1134.
4. Akinlaye, F.A., Mansaray, A. and Ajiboye, J.O. (1996). Fundamental of Social Studies Teaching. Lagos: Pumark Nigeria Limited.
5. Encarta (2009). Microsoft ® Encarta ® 2009 (DVD), Redmond, WA. Microsoft Corporation, 2008 Fisher, A. & Scriven, M. (1997).
6. Critical thinking: Its Definition and Assessment. UK: Center for research in critical thinking. Edge press. Foundation for Critical Thinking. (2009).

E-Resource / Web Links:

1. https://www.youtube.com/watch?v=R2xk_LsETm0
2. <https://www.amazon.in/Developing-Thinking-Learning-Debra-Mcgregor/dp/0335230016>
3. <https://www.amazon.in/Developing-Thinking-Approaches-Development-Psychology-ebook/dp/B075M4TPXZ>

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4
CLO1	L		M	L		L	H	L		L	M				H	
CLO2	H	L			M		M		H			L	H			
CLO3		M	M	L		H		L	M		L			M		
CLO4	L			L	H		M	L		M		L			M	
CLO5																
CLO6																

H: High, M: Medium, L: Low

Branch Name:	Bachelor of Computer Application (BCA)
Program Code:	CS101
Course Title :	Problem Solving using C
Course Code :	11-CAM201-1C
Pre-requisite Course:	--

Course Objective: (CO)

- This course is intended to develop problem solving skills in students with basics of programming using logic.
- Student is expected to learn problem solving using algorithm & flowchart techniques and implementation of problem using 'C' programming.
- The course aims to make the students formulate a problem in a programming language and solve it.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
2	-	4	4	25	25	25	25	100

Course Contents:

Sr. No	Topic	Total Hours	Weightage (%)
1	Introduction to Programming, Overview of C	9	20
	Introduction to Programming: Concepts of Algorithm and Flowcharts, problem solving examples using algorithm and flowchart, Types of Programming languages, Characteristics of higher level language, Compiler, Interpreter, Assembler. Overview of C: Introduction and History of C, Importance of C, Sample C programs, Basic Structure of C programs, Programming style, Executing of C program.		
2	Constants, Variables and Data Types, Operators and Expression	9	20
	Constants, Variables and Data Types: Introduction, Character Set, C tokens, Keywords and Identifiers, Constants, Variables, Data types, Declaration of Variables, Defining symbolic constants. Operators and Expression: Introduction, Arithmetic of Operators, Relational Operators, Logical Operators, Assignment Operators, Increment and Decrement Operators, Conditional Operators, Bit-wise Operators, Special Operators, Arithmetic Expressions, Evaluation of expressions, Precedence of arithmetic operators, Type conversions in expressions, Operator precedence and associatively, Mathematical functions. Turnery/Conditional Operator		
3	Managing Input and Output Operators, Decision Making Branching	9	20
	Managing Input and Output Operators: Introduction, reading a character/number, writing a character/number, Formatting Input and Output. Decision Making Branching: Introduction, Decision making with <i>if</i> statement, Simple <i>if</i> statement, the <i>if-else</i> statement, Nesting of <i>if-else statements</i> , the <i>else-if ladder</i> , the <i>switch-case</i> statement, <i>goto</i> statement.		

4	Loop Structures and Arrays Loop Structures: Introduction, <i>while</i> , <i>do-while</i> and <i>for</i> statement. <i>break</i> and <i>continue</i> statements in loop. Nesting of loops. Arrays: Introduction, One-dimensional arrays, Two-dimensional arrays, Initialization, Sorting and Searching using arrays, Concept of Multidimensional arrays.	9	20
5	String Handling strings: Introduction, Declaring and initializing string (group of characters), reading/printing string, Handling multiple strings. String Operations: String Copy, String Compare, String Concatenation, String Length and others.	9	20

Course Learning Outcomes (CLO.):

At the end of this course, the student would be able

- CLO1: To have fundamental knowledge on flowcharts and algorithms
- CLO2: To formulate the problem and express the same using flowcharts and algorithms
- CLO3: To understand the basic terminology used in computer programming using C
- CLO4: To study, analyze and understand logical structure of a computer program, and different construct to develop a program in 'C' language
- CLO5: To write, compile and debug programs in C language
- CLO6: To design programs involving decision structures, loops and functions

List of Text book :

1. Programming in ANSI C, By E Balagurusamy, Tata McGraw-Hill Publishing Company Limited.
2. Programming with C, By Bayron Gottfried, Tata McGraw-Hill Edition.

List of Text Reference book :

1. Let Us C, By Yashavant Kanetkar, BPB Publications.
2. Working with C, By Yashavant Kanetkar, BPB Publications.
3. C in Depth, By Suresh K. Srivastava, BPB Publications.
4. Programming in C, by Reema Thareja, Publisher – Oxford.

E-Resources/ Web Links:

- <http://www.cprogramming.com/>
- <http://www.learn-c.org/>
- <http://www.programiz.com/>

List of Experiments:

Note: The experiment list provided beneath is for reference only. The course teacher may change/formulate it as per his/her methodology and requirement.

Practical List

1. Write a C program to display "hello computer" on the screen.
2. Write a C program to print your Personal Details (name, address, city, state, gender, Etc...)
3. Write a C program to find the area of circle using the formula $\text{Area} = \pi * r * r$.

4. Write a C program to find the area of rectangle, cube and triangle. (Formula are: Rectangle= $L*W$, Triangle = $(h * b)/2$, Cube = $L*L*L$)
5. Write a C program to find the area and volume of sphere. Formulas are Area = $4*PI*R*R$ Volume = $4/3*PI*R*R*R$.
6. Write a C program to evaluate simple interest $I = P*R*T / 100$.
7. Write a C program to enter a distance into K.M and Convert it in to Meter, Feet, Inches and Centimeter
8. Write a C program to interchange two numbers.
9. Write a C program to convert Fahrenheit into centigrade Formula: $C = (F-32)/1.8$
10. Write a C program for summation, subtraction, multiplication, division of two numbers using Arithmetic operator
11. Write a C program to enter days and convert into years, month and reminder days.
12. Write a C program to find out the largest value from given three numbers using conditional Operator
13. Write a C program to find the maximum number from given three numbers.
14. Write a C program to find that the enter number is Negative, or Positive or Zero.
15. Write a C program to Checked whether entered char is capital, small, digit or any special Character
16. Write a C program to read number 1 to 7 and print relatively day Sunday to Saturday.
17. Write a C program to find out the maximum and minimum number from given 10 numbers.
18. Write a C program to find the sum of digit of accepted number.
19. Write a C program to find the sum of first 100 odd numbers. And even numbers.
20. Write a C program to display first 25 Fibonacci nos.
21. Write a C program to check the accepted number is prime number or not.
22. Write a C program to display first' 100 prime numbers.
23. Write a C program to find factorial of accepted numbers.
24. Write a C program to print accepted no and its reverse number.
25. Write a C program to find whether the accepted number is palindrome or not.
26. Write a C program to convert decimal numbers into equivalent binary number.
27. Write a C program to convert decimal numbers into equivalent to octal number.
28. Write a C program to convert decimal numbers into equivalent hexadecimal number.
29. Write a C program to display first 5 Armstrong number.
30. Write a C program to arrange the accepted numbers in ascending order and descending order.
31. Write a C program to find whether the accepted string is palindrome or not.
32. Write a C program to convert given line into upper case or lower case.
33. Write a C program to count no of word, character, line and space from given text.
34. Write a C program to sort given string in ascending order.
35. Write a C program to prepare pay slip using following data. DA = 10% of basic, HRA = 7.50% of basic, MA = 300, PF = 12.50% of basic, Gross = basic + DA + HRA + MA, Nt = Gross – PF.
36. Write a C program to read marks and your program will display grade.

Marks	Grade
100 – 80	Dist
60 – 79	First
50 – 59	Second
35 – 49	Pass
0 – 34	Fail

37. Write a C program to find $1+1/2+1/3+1/4+. \dots +1/n$.
38. Write a C program to display following output on the screen.

1	A	1	*	SUCH LEVEL OF TRIANGLE PARRENT USING LOOP
12	BC	0 1	* *	
123	DEF	1 0 1	* * *	
1	A	1	*	SUCH LEVEL OF TRIANGLE PARRENT USING LOOP
1 2	A B	1 0	* *	
1 2 3	A B C	1 0 1	* * *	

1 2 3 1 2 1	A B C A B A	1 0 1 1 0 1	* * * * * *	SUCH LEVEL OF TRIANGLE PARRENT USING LOOP
1 2 3 1 2 1	A B C A B A	1 0 1 1 0 1	* * * * * *	SUCH LEVEL OF TRIANGLE PARRENT USING LOOP
1 1 2 1 2 3	A A B A B C	1 1 0 1 0 1	* * * * * *	SUCH LEVEL OF PIYRAMID PARRENT USING LOOP

39. Write a C program to find maximum & minimum value from the given array.
40. Write a c program to input N and find out the sum, average, max, min, total even no and Total odd no. [Without use of array]
41. Write a c program to input N no and find out the sum, average, max, min, total even no and total odd no. [Using Array]
42. Write a c program to display the two matrixes on screen and perform the addition of two matrix and print on screen.
43. Write a c program to display the two matrixes on screen and perform the multiplication of two matrix and print on Screen.
44. Write a C program to sort a list of numbers given in an array.
45. Write a C program to search for a particular number from a list of numbers in an array.

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4
CLO1	L	M		H	H	M		L	L				L			
CLO2			L	M	M	L		H						L		
CLO3		M	L	H	M	M	L	L							M	
CLO4	L	L		M	M	L	L		M					M		
CLO5		L	M		M		M		L				L	H		
CLO6	M	M	M	H	H	M	M	H	H				H	M	M	

H: High, M: Medium, L: Low

Branch Name:	BCA (Bachelor of Computer Application)
Program Code:	CS101
Course Title :	Computer Organization and Architecture
Course Code :	11-CAM202-1C
Pre-requisite Course:	

Course Objective:

The course aims to make the student aware of working principles of components involved in a typical computer system. It intends to make the student learn about various number systems and conversion among them. The student is expected to recognize various basic building blocks (logic gates) and combinational circuits.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)								
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory				Practical				Total
				University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
				Min. Marks	Max. Marks	Min Marks	Max. Marks	Min. Marks	Max. Marks	Min. Marks	Max. Marks	
3	-	2	4	18	50	09	25	-	-	09	25	100

Subject Contents

Sr. No	Topics	Total Hours	Weightage (%)
1	Computer basics, Computer generations, Classifications of Computers Digital & Analog systems, Logic levels and pulse wave forms, digital computer, Major parts of computer, Hardware, Software - Application and System Software. Computer generations. Classifications of Computers.	9	20
2	Working Principles of Input / Output devices Input devices: Keyboard, Mouse, Light pen, Joystick, Scanner, Voice input system, Touch screen Output devices: Monitor - CRT terminals (Monitor / VDU), Non – CRT terminals(LCD, Plasma display, LED) Printer - Dot matrix printer, Ink jet printer, Laser printer, Line printer, Plotter	9	20
3	Working Principles of Memory and Storage Devices Understanding the principles of Main/Cache memory, Primary/Secondary memory, Physical/Virtual memory Magnetic memory - Magnetic Tape, Hard disk, Floppy disk, Semiconductor memory - RAM, ROM, Flash memory Optical memory - CD, CD-ROM, CD-RAM, DVD, DVD-ROM, DVD-RAM Binary classification of codes - 8421 BCD code, Excess-3(XS-3) code	9	20
4	Number system, Conversion, Binary arithmetic Number system - Binary, decimal, octal, hexadecimal Conversion - Binary to decimal, decimal to binary, octal to decimal, decimal to octal, octal to binary, binary to octal, hexadecimal to binary, binary to hexadecimal, hexadecimal to Decimal, decimal to hexadecimal, hexadecimal to octal, octal to hexadecimal Binary arithmetic – Addition, subtraction	9	20

5	Logic gates, Combinational circuits, Data Processing circuit Logic gates - AND, OR, NOT, NAND, NOR, Exclusive-OR, Exclusive-NOR Combinational circuits - Half adder, Full adder, Half subtractor, Full subtractor Data Processing circuit - Decoder, Encoder	9	20
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Course Learning Outcomes (CLO.):

At the end of this course, the student would be able :

- CLO. 1 : Understand working principles of fundamental components of a typical computer system.
- CLO. 2 : Learn various number systems and conversion among them.
- CLO. 3 : Recognize various basic building blocks (logic gates) and combinational circuits.

List of References:

1. Fundamentals of computers – By. V. Rajaraman ,PHI Publication
2. Fundamentals of computers – By. Anand Kumar, PHI Publication
3. Computer Architecture – By K M Hebbar ,MacMillan Publication

E-Resource / Web Links:

- <http://williamstallings.com/ComputerOrganization/>
- <https://www.pearsonhighered.com/cs-resources/products/product.html#product,isbn=0132916525>

Mapping of CLO , PO And PSO

	PO.1	PO.2	PO.3	PO.4	PO.5	PO.6	PO.7	PO.8	PO.9	PO.10	PO.11	PO.12	PSO.1	PSO.2	PSO.13
CLO.1				H	H		M						L		
CLO.2	H		M	H	H		M			M	M		M	L	M
CLO.3		M		M	M	M		M						M	

H:High, M:Medium, L:Low

Branch Name:	Bachelor of Computer Application (BCA)
Program Code:	CS101
Course Title:	Web Development using HTML and CSS
Course Code:	11-CAE203-1C
Pre-requisite Course:	Basic Knowledge of Computer

Course Objectives:

1. The course aims to make the students familiar with the world of Internet and its applications.
2. Also the course intends to make the students acquainted with various Static and Animated Web development using HTML and CSS.
3. The course also aims to make the students design and develop a Small Websites.
4. The course aims to prepare the students to pursue future courses in website development and design.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
2	-	4	4	25	25	25	25	100

Course Contents:

Sr. No.	Topic	Total Hours	Weightage (%)
1	Introduction to the Internet: Concept of Internet, Intranets and extranets, Internet Applications: Email, Telnet, FTP, World Wide Web (WWW), Internet Service Provider (ISP), static web pages, dynamic web pages, Scripting languages: Server side, Client Side, HTTP, URL, browsers, Web server.	9	20
2	Working with HTML : Introduction to HTML, structure of HTML, Basic tags and attributes, Formatting Text by using Tags, Using Lists and Backgrounds, Creating Hyperlinks and Anchors, Creating a Table, Inserting Row, Inserting Column, Deleting Row and Columns.	9	20
3	Working with Frame: Advantages and Disadvantages of Frame, Vertical Frameset, Horizontal Frameset, No frame, Inline Frame. Working with Form: Different Input Type: Textbox, Password, Checkbox, Radio, Button, Selection, List, Creating HTML Forms, Custom Backgrounds and Colors.	9	20
4	Using CSS : Introduction to Style Sheets, Inline, External and internal style sheets, Formatting Text by Using Style Sheets Properties, Defining Style with HTML Tags, Colors, Backgrounds.	9	20
5	CSS Fonts Style : font - style , font family, size and weight, line height, color, background-color, text-decoration, text-align, text-transform, white-space, spacing, line-height, font-style, font-variant, font-weight, padding.	9	20

Course Learning Outcomes (CLO):

At the end of this course, the student would be able

- CLO.1 : To have fundamental knowledge of the Internet and its Application.
- CLO.2 : To use various internet applications like Search engines, Email, E-commerce, E-learning, etc.
- CLO.3 : To understand the basic tags used in HTML.
- CLO.4 : To design Web pages using frame, form and CSS.

Text Books:

1. HTML & CSS: The Complete Reference" by Thomas Powell, McGraw-hill Publication.
2. HTML: A Beginner's Guide by Wendy Willard, McGraw-hill Publication.

Reference Books:

1. Learning Web Design: A Beginner's Guide to HTML, CSS, and Web Graphics" by Jennifer Robbins
2. Introduction to Internet and HTML Scripting-By Bhaumik Shroff -Books India Publication
3. Internet Technology And Web Design –By ISRD Group- Tata McGraw-hill Publication
4. Ivan Bayross, “Web Enabled Commercial Application Development Using HTML.

List of Open-Source Software/learning website:

- <https://www.w3schools.com>
- <https://www.tutorialspoint.com>
- <https://www.javatpoint.com>
- <https://www.geeksforgeeks.org>
- <https://www.tutorialspoint.com>

List of Experiments:

Note: The experiment list provided beneath is for reference only. The course teacher may change/formulate it as per his/her methodology and requirement.

1. Develop the web page with an attractive background color, text color and background image with Suitable Heading.
2. Develop the web page using various heading tags.
3. Develop the web page using ordered list and unordered list.
4. Develop the web page using a Nested list.
5. Write HTML code to create a web page that provides links to five different web pages or to entirely different Websites.
6. Develop your academic time table using <table> tag.
7. Develop the web page using Table tags to format your Bio-Data.
8. Develop the web page using <table> tags with rowspan and colspan.
9. Develop the web page using Frame tags for the following frameset.

BCA	BBA	NURSING
PGDCA		PHARMACY
MCA	MBA	PHYSIOTHERAPY
MScIT		

10. Develop the web page using Frames and Frameset which gives the Information about hospitals.
11. Develop the web page that implements the I-Frame concept.
12. Create Email Registration form using Form and Input tags.
13. Create a student admission form using Form and Input tags.
14. Develop the web page that implements an internal Style Sheet.
15. Develop the web page that implements an external Style Sheet.
16. Design a single page web for the university containing a description of the spu.ac.in.
17. Develop the web page that formats text, background and other style sheet properties.

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes(PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO2	PSO3
CLO1	L		M	M	L		M	M			M		L		
CLO2	L	M		H	M	M	M		M				L		
CLO3			L	M	M	M	L	M			L	L		M	
CLO4		M	M	L		H	M	L	M				M	M	
CLO5	L		M	L	M	H	M		M		L	L	M	M	

H: High, M: Medium, L: Low

Branch Name:	Bachelor of Computer Application (BCA)
Program Code:	CS101
Course Title :	Computer Network
Course Code :	11-CAE204-1C
Pre-requisite Course:	Basic Knowledge of Computer

Course Objective (CO) :

This course is intended to make the students

- To provide the basic knowledge of various types of computer networks,
- To aware of network topologies and reference models.
- To learn different kinds of transmission media.
- To focus on data communication components.
- To make the students familiar with IP addressing and mobile computing.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
2	-	4	4	25	25	25	25	100

Course Contents:

Sr. No.	Topics	Total Hours	Weightage (%)
1	Basic of Computer Networks: Definition of Networking-Advantages and Disadvantages of computer networking. Types of Networks- LAN, MAN, WAN. Network Topology- Star, Ring, Bus, Tree, Mesh, Complete, Irregular.	10	20
2	Reference Models –The OSI reference model, The TCP /IP reference model The Telephone System: Structure of Telephone System, The Local Loop, Trunk Multiplexing: FDM and TDM	10	20
3	Transmission Media: Types of Transmission media-Magnetic media, twisted pair, co-axial cable (Baseband and broadband), fiber cables, comparison of fiber optic and copper wire. Wireless Transmission Media: Radio Transmission, Microwave Transmission, Infrared.	10	20
4	Data Communication Components: Modem, Hubs, Repeater, Routers, Bridges, Switches. Switching: Circuit switching, Message switching, Packet Switching.	9	20
5	IP Addressing: IP Address class, Network and Host Addressing, Subnet, Subnet Mask, Subnetting, supernetting. Mobile Computing: Overview, Applications of Mobile Computing, Characteristics of Mobile Computing	9	20

Course Learning Outcomes (CLO):

At the end of this course, the student would be able

- CLO.1 : To understand fundamental knowledge of computer network and its topologies.
- CLO.2 : To learn various references models like OSI and TCP/IP.
- CLO.3 : To identify and work with various transmission media, cables and connectors.
- CLO.4 : To familiar with terminology used with Data Communication and Networking.
- CLO.5 : To understand the fundamentals of Mobile computing.

List of Text book :

1. Data Communications and Networking, Behrouz A. Forouzan, TMH publication.
2. Computer Networks, A.S. Tanenbaum, PHI publication.

List of Text Reference book:

1. Fundamentals of Mobile Computing, Prasant Kumar Rajib Mall Pattnaik PHI publication.

E-Resources / Web Links:

- <http://williamstallings.com/DataComm/>
- <http://williamstallings.com/Network/>
- <https://www.pearsonhighered.com/csresources/products/product.html#product,isbn=0132126958>
- https://en.wikipedia.org/wiki/Mobile_computing

List of Experiments:

1. Study of network devices in detail.
2. Implement network command and network configuration command.
3. Installation of LAN card and LAN cabling.
4. Test TCP/IP Setup and create user accounts and user group.
5. Change and test network IP.
6. Installation of network and file sharing.
7. Installation and configuration of printers.
8. Connect the computers in Local Area Network.

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4
CLO1	M	L		M	H	L	L				L			L		
CLO2	L		M		M		M		H				L			
CLO3		M	H		M	L	M	L		L				M		
CLO4	M		L		M	L	L		L					L		
CLO5		L		M		M		M					L	M		
CLO6																

H: High, M: Medium, L: Low

Branch Name:	Bachelor of Computer Application (BCA)
Program Code:	CS101
Course Title :	Cyber Security
Course Code :	11-CAE205-1C
Pre-requisite Course:	Introduction to cyber security and threats landscape and To analyze the risk factor of financial transaction using digital devices as part of Cyber Security.

Course Objective:

The course aims to provide a comprehensive understanding of Cyber Security by covering essential topics in key modules. The module focuses on introducing students to the foundational aspects of cyberspace, including its architecture, communication technologies, and the regulatory framework.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
2	-	4	4	25	25	25	25	100

Course Contents:

Sr. No	Topics	Total Hours	Weightage (%)
1	Introduction to Cyber Security Defining Cyberspace and Overview of Computer and Web-technology, Architecture of cyberspace, Communication and web technology, Internet, World wide web, Advent of internet, Internet infrastructure for data transfer and governance, Internet society, Regulation of cyberspace, Concept of cyber security, Issues and challenges of cyber security.	3	20
2	Basics of Cyber Crime Classification of cyber crimes, Common cyber crimes- cyber crime targeting computers and mobiles, cyber crime against women and children, financial frauds, social engineering attacks, malware and ransom ware attacks, zero day and zero click attacks, Cybercriminals modus-operandi , Reporting of cyber crimes.	4	20
3	Social Media Overview and Security : Introduction to Social networks. Types of Social media, Social media platforms, Social media monitoring, Hashtag, Viral content, Social media marketing, Social media privacy, Challenges, opportunities and pitfalls in online social network, Security issues related to social media, Flagging and reporting of inappropriate content - Case Studies	3	20
4	E - Commerce and Digital Payments Definition of E- Commerce, Main components of E-Commerce, Elements of E-Commerce security, E-Commerce threats, E-Commerce security best practices, Introduction to digital payments, Components of digital payment and stake holders, Modes of digital payments- Banking Cards, Unified Payment Interface (UPI), e-Wallets, Unstructured Supplementary Service Data (USSD), Aadhar enabled payments, Digital payments related common frauds and preventive measures - Case Studies	3	20
5	Digital Devices Security , Tools and Technologies for Cyber Security End Point device and Mobile phone security, Password policy, Security patch management, Data backup, Downloading and management of third party software, Device security policy, Cyber Security best practices, Significance of host firewall and Ant-virus – Case Studies	3	20

Course Outcomes :

After completion of this course students would be able:

1. To learn the foundations of Cyber security and threat landscape.
2. To equip students with the case study base knowledge and skills needed to protect and defend against cyber threats.
3. To develop skills in students that can help them plan, implement, and monitor cyber security mechanisms to ensure the protection of information technology assets.
4. To expose students to governance, regulatory, legal, economic, environmental, social and ethical contexts of cyber security.
5. To expose students to responsible use of online social media networks.
6. To analyze the risk factor of financial transaction using digital devices as part of Cyber Security.
7. To improve the utilization of E-Commerce and case study base knowledge.

Text book :

1. Cyber Crime Impact in the New Millennium, by R. C Mishra , Auther Press. Edition 2010.
2. Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives by Sumit Belapure and Nina Godbole, Wiley India Pvt. Ltd. (First Edition, 2011)

Reference Book :

1. Security in the Digital Age: Social Media Security Threats and Vulnerabilities by Henry A. Oliver, Create Space Independent Publishing Platform. (Pearson, 13th November, 2001)
2. Electronic Commerce by Elias M. Awad, Prentice Hall of India Pvt Ltd.
3. Cyber Laws: Intellectual Property & E-Commerce Security by Kumar K, Dominant Publishers.
4. Network Security Bible, Eric Cole, Ronald Krutz, James W. Conley, 2nd Edition, Wiley India Pvt. Ltd.
5. Fundamentals of Network Security by E. Maiwald, McGraw Hill.

E-Resource / Web Links:

- <https://www.cybrary.it/>
- <https://www.technologyreview.com/c/cybersecurity/>
- <https://www.cisa.gov/cybersecurity-resources>
- <https://github.com/alphaSeclab/awesome-cybersecurity>

List of Experiments:

Note: The experiment list provided beneath is for reference only. The course teacher may change/formulate it as per his/her methodology and requirement.

1. Perform practical on hardware configuration, mouse movement, display setting.
2. Configure firewalls to control and monitor incoming and outgoing network traffic.
3. Perform practical work on Tools and various Technologies for Cyber Security.
4. Deploy endpoint protection solutions such as antivirus and anti-malware software.
5. Establish regular backup procedures for critical data. Test backup restoration processes to ensure data Recovery in case of a cyber-incident.
6. Perform practical for review and adjust privacy settings on social media platforms.
7. Install and configure reputable antivirus software.
8. Configure remote desktop access settings.
9. Perform backup and restore of the system.
10. Implement practical work on E – Commerce sites and Digital Payments.

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4
CLO1	L		H	M	M		L	L		M	L	L	H	M	M	
CLO2		L			L			M						M		
CLO3	M	L	M		L	M	M		M			M	M		H	
CLO4				H		M		L		L				M		
CLO5		L		L	L		L		M		M		H	H		
CLO6																

H: High, M: Medium, L: Low

Branch Name:	BCA (Bachelor of Computer Application)
Program Code:	CS101
Course Title :	FUNDAMENTAL OF MATHEMATICS
Course Code :	11-MDC206-1C
Pre-requisite Course:	Concept of different Mathematics tasks

Course Objective (CO):

This course is intended to make the students

- In order to be able to formulate what a computer system is supposed to do, or to prove that it does meet its specification, or to reason about its efficiency, one needs the precision of mathematical notation and techniques.
- For instance, to specify computational problems precisely one needs to abstract the detail and then use mathematical objects such as sets, functions, relations, orders, and sequences.
- To prove that a proposed solution does work as specified, one needs to apply the principles of mathematical logic, and to use proof techniques such as induction.
- And to reason about the efficiency of an algorithm, one often needs to count the size of complex mathematical objects. The Discrete Mathematics course aims to provide this mathematical background.

Teaching Scheme(Hours per week)				Evaluation Scheme (Marks)								
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory				Practical				Total
				University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
				Min.	Max.	Min	Max	Min.	Max.	Min.	Max.	
4	-	-	4	18	50	18	50	-	-	-	-	100

Subject Contents				
Sr. No.	Topics	Total Hours	Weightage (%)	
1.	Set Theory: Introduction, Definition and Concepts, Representation of Sets, Finite Sets, Infinite Sets (Definition), Set Operations : Union, Intersection, Addition theorem, difference, Symmetric difference, D' Morgons Law, Subsets, Power Sets, Partitions Sets.	11	20	
2.	Functions: Introduction: Definitions and Concepts, Categories of function (Definition and Examples): One to One, onto functions, Into Functions, Identity Function, Equal Function, Composite Function. Mathematical Functions (Definition and Examples) : Floor and ceiling functions, Integer and Absolute value functions, Remainder functions, Exponential functions, logarithmic functions, Recursive functions.	11	20	
3.	Matrices: Metrics -Definition and Concept, Categories of Matrix (Definition and Examples): square Matrix, unit Matrix, null Matrix, Matrix Addition, Multiplication, Scalar multiplication, Transpose of a Matrix	10	20	

4.	Sequences: Sequences: Introduction, Types of sequence: Finite Sequence, Infinite Sequence, Arithmetic progression (A.P), Geometric Progression (G.P).	8	20
5.	Series: Series : Introduction, Types of series: Finite Series, Infinite Series, Arithmetic series (A.P),Permutation, Combinations	8	20

Course Learning Outcomes (CLO.):

At the end of this course, the student would be able

- CLO.1 To understand the basics Set theory.
- CLO.2 To understand various kinds of functions methods.
- CLO.3 To implement various Matrices and types.
- CLO.4 To apply various sequence and series.

List of Text Reference book:

- Discrete Mathematics (Second Edition) S.LIPSCHUTZ, M. LIPSON (TMH)
- Elements of Discrete Mathematics C.L. LIU (TMH)
- Discrete Mathematics J K SHARMA (Macmillan Publishers)
- Advance Mathematics, Ravi Gor, Nirav Prakashan

Mapping of CLO, PO And PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	L		M	L		L	H	L		L	M				L	L
CLO2	M	L			M		M		L			L	L			M
CLO3		M	M	L		H		L	M		L			M		
CLO4	L			L	H		M	L		M		L			M	L

H: High, M: Medium, L: Low

Branch Name:	BCA (Bachelor of Computer Application)
Program Code:	CS101
Course Title :	Computer Fundamental and PC software
Course Code :	11-SEC101-1C
Pre-requisite Course:	-

Course Objective:

- The course aims to make the students familiar with various office automation tools for day-to-day officework which include documentation, data analysis and presentation.
- Also, the course intends to make the students acquainted with various operating systems.
- The course also helps students understand the significance of using open-source software/applications.

1.

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)								
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory				Practical				Total
				University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
				Min.	Max.	Min	Max.	Min.	Max.	Min.	Max.	
-	-	4	2	-	-	-	-	09	25	09	25	50

2.

Sr. No.	Topics	Total Hours	Weightage (%)
1	Introduction of Operating Systems and Working with Files Introduction of Operating System: DOS and Windows, Applications of OS, Difference between DOS & Windows. DOS: Internal & External commands, file name Rules, Creating/Editing file, batch file Windows and its different Terminologies: Desktop, Icon, Wallpaper, Taskbar, My computer, my document, Recycle bin, Find, Shutdown, Logoff	8	20
2	Introduction to Accessories and Control Panel Identifying various accessories available in computer and playing with control panels. Add /remove programs. Open-Source Options for Office Package Tools Introduction to Apache Open Office and/or LibreOffice	8	20
3	Word Processing: (E.g. Writer) Practical may be given for • Creating the documents with Special effects like underline, bold, different size, different font, and different color etc. • Find and Replace operations like cut, paste, copy clipboard, spell-check creating auto text • Inserting Date & Time, Pictures, and Bullets & Numbering etc. • Paragraphs, bullets, indentation etc. Formatting features. • Printing the documents, it includes paper-size, margins, header and footer, page no. • Creating a table, drawing table. • Macro creation and mail merge application feature	8	20



4	Spreadsheet Application: (E.g. Calc) Practical may be given for • Creating spreadsheet. • Printing, Inserting, Deleting, Copying, Moving spreadsheet. • Formulas, Built-in functions. • Graph-Plotting facilities. • Formatting cells, spreadsheet etc. • Sorting, filtering, conditional formatting spreadsheet. • Protection facility • Pivot tables • Macro facility • Create Employee Salary Slip in spreadsheet • Create Student Mark sheet in spreadsheet	8	20
5	Multimedia Presentation: (E.g. Impress) Practical may be given for • Creating a presentation • Inserting/Deleting slides • Different slide views • Editing slides. • Slide transition & Add animation • Inserting sound, picture, chart, organization chart.	8	20

Course Outcomes:

At the end of this course, the student would be able :

- CLO.1 : Understand the importance of using open source software/applications.
- CLO.2 : Work on various operating platforms.
- CLO.3 : Identify and select various tools and techniques for different office related jobs.
- CLO.4 : Operate various office automation tools and map the manual job into one of these tools.
- CLO.5 : Prepare documentation, reports, charts, graphs, presentation etc. using office automation tools.

List of References:

1. Open Office Basic: An Introduction, by James Steinberg (Author), published by Gold Turtle Publishing
2. Getting Started with OpenOffice (LibreOffice): The Free Replacement for Microsoft Office, by Rob Spahitz(Author), Jack Dunning (Foreword), Publisher: ComputorEdge E-Books
3. How to Use Open Office Writer 3.3 by Kerie Hinchliffe (Author), Published by Quantum Scientific Publishing
4. OpenOffice 3.4 Volume II: Calc: by Christopher N. Cain (Author), Riley W. Walker (Author), Published by Quantum Scientific Publishing
5. OpenOffice 3.4 Volume III: Base by Christopher N. Cain and Riley W. Walker, published by Quantum Scientific Publishing
6. OpenOffice 3.4 Volume IV: Impress by Christopher N. Cain and Riley W. Walker, published by Quantum Scientific Publishing
7. OpenOffice.org 3.3 Math Guide By ODFAuthors Team published by Friends of OpenDocument Inc

E-Resource / Web Links:

1. <https://www.openoffice.org/>
2. <https://www.libreoffice.org>
3. <http://www.ee.surrey.ac.uk/Teaching/Unix/>
4. <http://www.freeos.com/guides/lsst/ch02sec01.html>



List of Experiments:

Note: The experiment list provided beneath is for reference only. The course teacher may change/formulate it as per his/her methodology and requirement.

Practical List

3. Word Processor.

Practical may be given for

- Creating the documents with Special effects like underline, bold, different size, different font, and different color etc.
- Find and Replace operations like cut, paste, copy clipboard. Inserting Date & Time, Pictures, and Bullets & Numbering etc. Paragraphs, bullets, indentation etc.

Formatting features.

- Printing the documents, it includes paper-size, margins, header and footer, page no.
- Creating a table.
- Mail merge, spell-check Drawing table.

4. Spreadsheet Application.

Practical may be given for

- Creating spreadsheet.
- Printing, Inserting, Deleting, Copying, Moving spreadsheet. Formulas, Built-in functions.
- Graph-Plotting facilities.
- Formatting cells, spreadsheet etc.
- Protection facility
- Pivot tables Macro facility
- Create Employee Salary Slip in spreadsheet
- Create Student Mark sheet in spreadsheet

5. Multimedia Presentation.

Practical may be given for

- Creating a presentation Inserting/Deleting slides Different slide views Editing slides.
- Slide transition & editing special effects and looping slide.
- Inserting sound, picture, chart, organization chart.

Mapping of CLO, PO And PSO

1	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CLO1	L		M	L		L	H	L		L	M				H
CLO2	H	L			M		M		H			L	H		
CLO3		M	M	L		H		L	M		L			M	
CLO4	L			L	H		M	L		M		L			M

Branch Name:	BCA (Bachelor of Computer Applications)
Program Code:	CS101
Course Title :	Yoga and Meditation
Course Code :	11-IKS103-1C
Pre-requisite Course:	---

Course Objectives:

- At the heart of the Brahma Kumaris teachings is the Foundation Course in Raja Yoga meditation.
- This course provides a practical understanding of the relationship between spirit and matter, as well as an understanding of the interplay between souls, God and the material world.
- The series of classes in this course will facilitate your inward journey in an efficient and effective way.

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)								
Lecture	Tutorial	Practical	Credit	Theory				Practical				Total
				University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
				Min. Marks	Max. Marks	Min. Marks	Max. Marks	Min. Marks	Max. Marks	Min. Marks	Max. Marks	
-	-	4	2	-	-	-	-	09	25	09	25	50

Subject Contents

Unit No	Topics	Total Hours
1.	Soul: At some point during the journey of life, any of the following questions might have crossed your mind: • Who am I? What am I? What is my true identity? • How do thoughts come and go? How can I control them? • How do my thoughts and feelings interact with the body? • How do I make my mind powerful? • Why do we experience emotions, feelings, tension and stress? • How does one develop behavioural patterns, traits etc., and how to change them? • How do I lead a life of peace and bliss? • The first lesson is about understanding the self.	9
2.	Existence of God There are many beliefs about God. As a result, everyone understands God in his or her own way. Some people think there is no such entity as God, their main argument being that there is no proof of His existence. Because God cannot be seen with the physical eyes doesn't mean He doesn't exist. Like wind, which cannot be seen but can be felt, God's presence can be experienced through spiritual knowledge and meditation. Representations of incorporeal God , Name of God, Soul World (Home of eternal Peace and Light) , Our Relationship with God.	9

3.	The World Drama. ● Golden Age ● Silver Age ● Copper Age ● Iron Age ● Diamond Age	9
4.	The eternal Law of Karma : The Right Karma, The Wrong Karma. Thoughts and Karma: Every action is preceded by thoughts, The quality of thoughts determines the quality of our karma.	9
5.	Rajyoga Meditation: What is Raj Yoga meditation? Self-realisation, God-realisation, Practice, Process.	9

Course Learning Outcomes (CLO):

At the end of this course, the student would be able

- CLO.1 : To know and discover your positive self
- CLO.2 : To accept yourself, identifying personal strengths, abilities and uniqueness
- CLO.3 : To develop effective strategies for building healthy relationships, letting go of fears and aggression
- CLO.4 : To Empower yourself, making the right choices to maintain inner balance
- CLO.5 : To identify different forms of stress and the effects it has on our well-being
- CLO.6 : To identify the triggers of stress and how and why we react
- CLO.7 : To use practical tools to enable inner change
- CLO.8 : To move from fearing change to embracing it
- CLO.9 : To develop your spiritual intelligence to manage stress.

Text Books:

- Learn Rajyoga Maditation.

Reference Books:

- 1.Everyone Can Meditate: A Practical Guide to BK Meditation. Brahma Kumaris. Kindle Edition.
- I Know How to Live; I know How to Die. Neville Hodgkinson. Kindle Edition.

List of Open-Source Software/learning website:

- <https://www.bkdrluhar.com>
- <https://www.bhramakumaris.org>

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	L	M		L				M		L		L		L	L	
CLO2	L		L	L			L	M						L		
CLO3	L	M		L		L		L		L		L		L	L	
CLO4		L	L			M	L		L			L		M		
CLO5		L	M	L	L	M	M	M			L		L	M		

H:High, M:Medium, L:Low

Branch Name:	Bachelor of Computer Application (BCA)
Program Code:	CS101
Course Title :	Universal Human Value – I
Course Code :	11-UHV001-1C
Pre-requisite Course:	-

Course Objective:

- At the heart of the Brahma Kumaris teachings is the Foundation Course in Raja Yoga meditation.
- This course provides a practical understanding of the relationship between spirit and matter, as well as an understanding of the interplay between souls, God and the material world.
- The series of classes in this Course will facilitate your inward journey in an efficient and effective way.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture	Tutorial	Practical	Credit	Theory		Practical		Total
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
--	--	--	--	--	--	--	--	--

Course Contents:

Sr. No.	Topics	Total Hours
1.	Soul: At some point during the journey of life, any of the following questions might have crossed your mind: • Who am I? What am I? What is my true identity? • How do thoughts come and go? How can I control them? • How do my thoughts and feelings interact with the body? • How do I make my mind powerful? • Why do we experience emotions, feelings, tension and stress? • How does one develop behavioural patterns, traits etc., and how to change them? • How do I lead a life of peace and bliss? • The first lesson is about understanding the self.	9
2.	Existence of God There are many beliefs about God. As a result, everyone understands God in his or her own way. Some people think there is no such entity as God, their main argument being that there is no proof of its existence. Because God cannot be seen with the physical eyes doesn't mean He doesn't exist. Like wind, which cannot be seen but can be felt, God's presence can be experienced through spiritual knowledge and meditation. Representations of incorporeal God, Name of God, Soul World (Home of eternal Peace and Light), Our Relationship with God.	9
3.	The World Drama. • Golden Age • Silver Age • Copper Age • Iron Age • Diamond Age	9
4.	The eternal Law of Karma : The Right Karma, The Wrong Karma. Thoughts and Karma: Every action is preceded by thoughts, The quality of thoughts determines the quality of our karma.	9

5.	Rajyoga Meditation: What is RajYoga meditation? Self-realisation, God-realisation, Practice, Process.	9
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Course Learning Outcomes (CLO.):

At the end of this course, the student would be able

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- CLO.3 : To develop effective strategies for building healthy relationships, letting go of fears and aggression
- CLO.4 : To empower yourself, making the right choices to maintain inner balance
- CLO.5 : To Identify different forms of stress and the effects it has on our well-being
- CLO.6 : To identify the triggers of stress and how and why we react
- CLO.7 : To use practical tools to enable inner change
- CLO.8 : To move from fearing change to embracing it
- CLO.9 : To develop your spiritual intelligence to manage stress.

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- Learn Rajyoga Maditation.
- Everyone Can Meditate: A Practical Guide to BK Meditation. Brahma Kumaris. Kindle Edition.
- I Know How to Live; I know How to Die. Neville Hodgkinson. Kindle Edition.

E-Resources / Web Links:

- <https://www.bkdrluhar.com>
- <https://www.bhramakumaries.org>

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4
CLO1	L	M		L				M		L		L		L	L	
CLO2	L		L	L			L	M						L		
CLO3	L	M		L		L		L		L		L		L	L	
CLO4		L	L			M	L		L			L		M		
CLO5		L	M	L	L	M	M	M			L		L	M		
CLO6																

H: High, M: Medium, L: Low