MAHATMA GANDHI UNIVERSITY, KERALA

Abstract

Bachelor in Computer Applications (Honours) - Recommendations of the Expert Committee in Computer Application (UG) - Approved - Orders Issued.

ACA 16

No. 8379/ACA 16/2024/MGU   Priyadarsini Hills,Dated: 13.09.2024

Read:-1. Minutes of the meeting of the Expert Committee in Computer Application (UG) held on 06.09.2024

2. Orders of the Hon'ble Vice Chancellor under Section 10(17), Chapter III of the Mahatma Gandhi University Act 1985, dated. 12.09.2024.

ORDER

Bachelor of Computer Applications programme has been moved under the AICTE accreditation from the academic year 2024- 2025. Since the syllabus of the same couldn't be prepared due to the non-availabilty of the AICTE Curriculum Structure, the colleges were directed to conduct a three - week induction program following the AICTE guidelines. After this, the colleges began engaging the first semester students with Bridge Courses designed by the Expert Committee and approved by the University.

As the Model Curriculum has not yet been released, the Expert Committee in Computer Application (UG) discussed the matter in detail and submitted the following recommendations vide paper read as (1) above.

1. The scheme and syllabus for the first semester of Bachelor in Computer Applications (Honours) programme (BCA (Hons)). (Attached as annexure.)

2. Selection of Ability Enhancement Courses (AEC) for BCA (Hons) programme - to select the AEC for Science, given in the respective syllabus, while selecting AEC -English and AEC -Other Language (OL).

Considering the emergency, sanction has been accorded by the Hon'ble Vice Chancellor, in exercise of the Powers of the Academic Council vested upon him under Section 10(17), Chapter III of the Mahatma Gandhi University Act 1985, vide paper read as (2), to approve the above recommendations.

Orders are issued accordingly.

PRAMODKUMAR K K

DEPUTY REGISTRAR II (ACADEMIC)
For REGISTRAR

Copy To

1. All Affiliated Arts & Science Colleges

2. PS to VC

3. PA to Registrar/CE/FO

4. JR 2 (Admin)/ DR 2, AR 3 (Academic)

5. Tabulation/Academic Sections concerned

6. JR/DR/AR (Exam/Academic)

7. IT Cell 1/IT Cell 2/ IT Cell 3 Sections

8. AC C 1/ AC C 2 Sections

9. P.R.O. (For Publishing in the Website) /IQAC /Records Sections.

10. Stock File/File Copy

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Forwarded / By Order

Section Officer

THE MAHATMA GANDHI UNIVERSITY

Bachelor in Computer Applications (Honours)

SYLLABUS

MGU-BCA (Honours)

(2024 Admission Onwards)

Faculty: Technology and Applied Sciences

Expert Committee: Computer Application (UG)

Programme: Bachelor in Computer Applications (Honours)

Mahatma Gandhi University
Priyadarshini Hills
Kottayam – 686560, Kerala, India

Contents

	External Experts
1	**Prof. (Dr.) Bindu V R**, Professor and Head, School of Computer Sciences, Mahatma Gandhi University, Kottayam
2	**Prof. (Dr.) Sabu M K**, Professor, Department of Computer Applications, Cochin University of Science and Technology, Kochi
	Members of the Expert Committee in Computer Application (UG)
1	**Dr. Rajimol A,** Associate Professor, Department of Computer Applications, Marian College Kuttikkanam (Autonomous), Kuttikkanam (Chairperson UG Board)
2	**Dr. Ajitha R S,** Assistant Professor, Department of Computer Applications, NSS College, Rajakumari
3	**Mr. Bineesh Jose,** Assistant Professor, Department of Computer Applications, Pavanatma College, Murickassery
4	**Dr. Reji K Kollinal,** Assistant Professor, Department of Computer Applications, BPC College, Piravom
5	**Ms. Simi M,** Associate Professor, Department of Computer Applications, SAS SNDP Yogam College, Konni
6	**Ms. Ambili M S,** Assistant Professor, Department of Computer Science, Sree Sankara Vidyapeetom College, Valayanchirangara
7	**Ms. Bindhu Prabha,** Associate Professor, Department of Computer Applications, SAS SNDP Yogam College, Konni
8	**Dr. Leena C Sekhar,** Associate Professor, Department of Computer Applications, MES College, Marampally
9	**Dr. Juby George,** Assistant Professor, Department of Computer Applications, Marian College, Kuttikkanam
10	**Dr. Sowmya M R,** Assistant Professor, Department of Computer Science, Sree Sankara College, Kalady
11	**Mr. Biju Kumar S P,** Assistant Professor, Department of Computer Applications, NSS College Rajakumari, Idukki (Dist)

Course Code	Title of the Course	Type of the Course .	Credit	Hours / week	Hour Distribution /week			
		First Semester						
					L	T	P	O
MG1DSCBCA100	Fundamentals of Programming using C	DSC	4	4	4	0	0	0
MG1DSCBCA101	Digital Fundamentals	DSC	4	4	4	0	0	0
MG1DSCBCA102	Software lab in C	DSC	2	4	0	0	4	0
MG1DSCBCA103	Discrete Mathematics	DSC	4	4	4	0	0	0
MG1MDCBCA100	Cyber Laws and Online Safety	MDC	3	3	3	0	0	0
	AEC- ENGLISH	AEC 1	3	3	3	0	0	0
	AEC-OL	AEC 2	3	3	3	0	0	0

MGU-BCA (HONOURS)

Syllabus

Mahatma Gandhi University Kottayam

Programme	BCA (Honours)
Course Name	Fundamentals of Programming Using C
Type of Course	DSC
Course Code	MG1DSCBCA100
Course Level	100
Course Summary	This course covers fundamental concepts in computer programming, including algorithms, flowcharts, programming languages, control flow structures, arrays, and functions, emphasizing practical implementation through a series of hands-on exercises. Students will gain proficiency in solving problems using the C programming language.

Semester	1	Credits			4	Total Hours
Course Details	Learning Approach	Lecture	Tutorial	Practical	Others	
		4	0	0	0	60
Pre-requisites, if any						

COURSE OUTCOMES (CO)

CO No.	Expected Course Outcome	Learning Domains *	PO No
1	Demonstrate basic programming concepts.	U	1
2	Understand C Programming Basics such as Datatypes and Variables, Different types of operators.	U	2
3	Devise C programs using the concept of Decision statements and loop control statements.	An	2
4	Apply logic to use arrays and functions in C Programming Language.	A	1

*Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S), Interest (I) and Appreciation (Ap)

Content for Classroom transactions (Units)

Module	Units	Course description	Hrs	CO No.
1	1.1	Problem Solving Life Cycle – Understanding the Problem Statement, Analysing the problem, Planning Program design using Hierarchy charts, Top-down approach, Bottom-up approach. Understanding basic Problem-Solving Tools: Algorithms: Definition & its attributes, Flowchart: Definition & its attributes, symbols, Statements: Input-Output, Decision-Making &Looping, Module representation	6	1
	1.2	**Introduction to Programming:** Computer program. Classification of computer languages: machine, assembly and high-level languages, Language translators (Assembler, Compiler, Interpreter), Linker, Testing and debugging,	4	1
	1.3	Types of errors- Syntax errors, Logical errors and Runtime errors.	2	1
2	2.1	C Character Set, Delimiters, Types of Tokens, C Keywords, Identifiers, Constants, Variables, Rules for defining variables,	2	2
	2.2	Data types, C data types, Declaring and initialization of variables, Type modifiers, Type conversion, Operators and Expressions-	5	2
	2.3	Properties of operators, Priority of operators, Comma and conditional operator, Arithmetic operators, Relational operators,	3	2
	2.4	Assignment operators and expressions, Logical Operators, Bitwise operators.	4	2
3	3.1	Input and Output in C – Formatted functions, unformatted functions, commonly used library functions,	5	3
	3.2	Decision Statements If, if-else, nested if-else, if-else-if ladder, break, continue, goto, switch, nested switch, switch case and nested if.	6	3
	3.3	Loop control- for loops, nested for loops, while loops, do while loop.	6	3
4	4.1	Array, initialization, array terminology, characteristics of an array, one dimensional array and operations,	5	4

	4.2	Two dimensional arrays and operations. Strings and standard functions, Introduction to pointers. Basics of a function, function definition, return statement,	6	4
	4.3	Types of functions, call by value and reference. Recursion - Rules for recursive function, Advantages and disadvantages of recursion. Storage class, Structure and union, Features of structures, Declaration and initialization of structures, typedef, enumerated data types, Union.	6	4

Teaching and Learning Approach	**Classroom Procedure (Mode of transaction)** - Use of ICT tools in conjunction with traditional classroom teaching methods - Interactive sessions - Class discussions

Assessment Types	**MODE OF ASSESSMENT**
	
	A. Continuous Comprehensive Assessment (CCA)
	
	CCA for Theory: 30 Marks
	
	   1. Written tests
	
	   2. Assignments
	
	   3. Quiz

	B. Semester End Examination **ESE for Theory: Written Test (70 Marks, 2 Hrs)** Part A: Very Short Answer Questions (Answer all) - (10*2=20 Marks) Part B: Short Answer Questions (5 out of 7 Questions) - (5*6=30 Marks) Part C: Essay Questions (2 out of 3 Questions) - (2*10=20 Marks)

REFERENCES

1. Balagurusamy, E. (2019), "Programming in ANSI C" (8th ed.), Tata McGraw Hill.

2. Hanly J. R. and Koffman E. B. (2007), "Problem Solving and Program Design in C" (7th ed.), Pearson Education.

SUGGESTED READINGS

1. Gottfried, B. S. (2018). "Programming with C" (4th ed.). Schaum's Outline Series, TMH.

2. Pradeep K. Sinha and Priti Sinha (2004), "Computer Fundamentals -Concepts, Systems & Applications", 8th Edition, BPB Publications.

MGU-BCA (HONOURS)

Syllabus

Mahatma Gandhi University

Kottayam

Programme	BCA (Honours)					
Course Name	**Digital Fundamentals**					
Type of Course	DSC					
Course Code	MG1DSCBCA101					
Course Level	100					
Course Summary	This course covers the fundamentals of digital electronics, including number systems, Boolean algebra, logic gates, combinational logic circuits, and sequential logic circuits. Students gain a comprehensive understanding of digital logic design principles and their applications Through theoretical concepts and practical examples.					
Semester	1	Credits			4	Total Hours
Course Details	Learning Approach	Lecture	Tutorial	Practical	Others	
		4	0	0	0	60
Pre-requisites, if any						

COURSE OUTCOMES (CO)

MGU-BCA (HONOURS)

CO No.	Expected Course Outcome	Learning Domains *	PO No
1	Demonstrate comprehension of number systems.	U,A	2
2	Analyse working of logic gates, solve expressions using laws of Boolean algebra.	An,A	1,2
3	Illustrate the combinational logic circuits using multiplexers, demultiplexers and other circuits	U,An	1,3
4	Design sequential circuits using flip flops and registers	An,A	1,2
Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S), Interest (I) and Appreciation (Ap)			

COURSE CONTENT

Content for Classroom transactions (Units)

Module	Units	Course description	Hrs	CO No.
1	1.1	Number Systems, Introduction – Base or radix, Non-positional and Positional number system, Popular number systems (Decimal, Binary, Octal and Hexadecimal), Conversion-From one number system to another, Concept of binary addition and subtraction, 1's Complement, 2's complement.	8	1
	1.2	BCD numbers- concept and 8421 additions	2	1
2	2.1	Logic gates- AND, OR, NOT, NAND, NOR, XOR and XNOR. Truth tables and graphical representation.	5	2
	2.2	Basic laws of Boolean Algebra, Simplification of Expressions, DeMorgan's theorems,	5	2
	2.3	Dual expressions, Canonical expressions. Minterms and Maxterms, SOP and POS expressions	4	
	2.4	Simplification of expressions using K-MAP (up to 4 variables)	5	2
	2.5	Representation of simplified expressions using NAND/NOR Gates, Don't care conditions	4	2
3	3.1	Combinational Logic Circuits: Adders-Half adder, Full adder	7	3
	3.2	Encoders, Decoders (Diagram and working principle)	5	3
	3.3	Multiplexers, Demultiplexers (Diagram and working principle)	5	3
4	4.1	Sequential Logic Circuits: Flip flops- RS, JK, T, D, Triggering of flip flops, Concept of Registers	10	4

Teaching and Learning Approach	**Classroom Procedure (Mode of transaction)** • ICT enabled Lectures • Interactive sessions • Class discussions
Assessment Types	**MODE OF ASSESSMENT** **A. Continuous Comprehensive Assessment (CCA)**

	CCA for Theory: 30 Marks 1. Written tests 2. Quiz 3. Assignments
	B. Semester End Examination **ESE for Theory: 70 Marks; Written Test (2 Hrs)** Part A: Very Short Answer Questions (Answer all) - (10*2=20 Marks) Part B: Short Answer Questions (5 out of 7 Questions) - (5*6=30 Marks) Part C: Essay Questions (2 out of 3 Questions) - (2*10=20 Marks)

REFERENCES

1. M Morris Mano. Digital Logic and Computer Design (4th Edition). Prentice Hall.
2. A. Anand Kumar (2018). Fundamentals of Digital Circuits (4th Edition). PHI Learning Pvt. Ltd.

SUGGESTED READINGS

1. Thomas C Bartee- Digital computer Fundamentals, Sixth Edition, TATA McGraw Hill Edition
2. Thomas L Floyd- Digital Fundamentals, Ninth edition, PEARSON Prentice Hall.
3. Malvino & Leach- Digital Principles and Applications, Sixth Edition, Tata McGraw Hill, 2006

MGU-BCA (HONOURS)

Syllabus

Mahatma Gandhi University
Kottayam

Programme	BCA (Honours)					
Course Name	Software Lab in C					
Type of Course	DSC					
Course Code	MG1DSCBCA102					
Course Level	100					
Course Summary	This course covers problem solving using C Programming, Practical Implementation of Problems using different types of C statements such as control flow structures, loop control structures, arrays, and functions. Students will gain proficiency in solving problems using the C programming language.					
Semester	First		Credits		2	Total Hours
Course Details	Learning Approach	Lecture	Tutorial	Practical	Others	
		0	0	4	0	60
Pre-requisites, if any						

COURSE OUTCOMES (CO)

CO No.	Expected Course Outcome	Learning Domains *	PO No
1	Develop programs to solve various problems using different types of C statements such as control flow structures, loop control structures, arrays, and functions.	A	1
Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S), Interest (I) and Appreciation (Ap)			

COURSE CONTENT

Content for Lab Sessions (Units)

Module	Units	Course description	Hrs	CO No.
1	1.1	Programs to understand the use of Datatypes and variables.	3	1
	1.2	Programs to use different Operators and Type Conversions	5	1
2	2.1	Programs to Apply Input and Output in C, understand Library functions	7	1
	2.2	Program to implement Control structures in C	10	1
	2.3	Programs to Implement Loop Control Structures in C	10	1
3	3.1	Programs to Implement Arrays: One-dimensional and Two-dimensional Arrays	10	1
4	4.1	Program to implement problems using Functions, Recursion and different parameter Passing Methods.	15	1

Teaching and Learning Approach	**Classroom Procedure (Mode of transaction)** • Practical Lab Sessions • Discussions

Assessment Types	**MODE OF ASSESSMENT**
	
	A. Continuous Comprehensive Assessment (CCA)
	
	  CCA for Practical: 30 Marks
	
	  1. Written tests
	  2. Lab Assessment
	  3. Viva
	  4. Record

	B. Semester End Examination **ESE for Practical: 70 Marks (2.5 Hrs)**

	Lab Examination Test: 70 Marks
	1. First Program: 20 Marks
	2. Second Program: 30 Marks
	3. Viva Voce: 10 Marks
	4. Record: 10 Marks

REFERENCES

1. Balagurusamy, E. (2019), "Programming in ANSI C" (8th ed.), Tata McGraw Hill.

2. Hanly J. R. and Koffman E. B. (2007), "Problem Solving and Program Design in C" (7th ed.), Pearson Education.

SUGGESTED READINGS

1. Gottfried, B. S. (2018). "Programming with C" (4th ed.). Schaum's Outline Series, TMH.

2. Pradeep K. Sinha and Priti Sinha (2004), "Computer Fundamentals -Concepts, Systems & Applications", 8th Edition, BPB Publications.

MGU-BCA (HONOURS)

Syllabus

	Mahatma Gandhi University **Kottayam**				
Programme	BCA (Honours)				
Course Name	**Discrete Mathematics**				
Type of Course	DSC				
Course Code	MG1DSCBCA103				
Course Level	**100**				
Course Summary	This course introduces basic concepts of Set Theory, Logic, Relations, functions and Matrices. The Basic ideas of Sets and Propositional Logic are further expanded. Mathematical Significance of Relations and functions are explained. Various mathematical manipulations involved in Matrices are properly illustrated. Students acquire skills in applying concepts in Propositional Logic and Relations in different branches of computer science.				
Semester	1	Credits		4	Total Hours
Course Details	Learning Approach	Lecture	Tutorial	Practical	Others
		4	0	0	0	60
Pre-requisites, if any	Nil				

COURSE OUTCOMES (CO)

CO No.	Expected Course Outcome	Learning Domains *	PO No
1	Understand Concepts of Set Theory	U	1
2	Evaluate problems on Set theory.	E	2
3	Understand Propositional Logic.	U	2
4	Identify and Apply Propositional Logic.	A	3
5	Evaluate problems using Truth tables and Logical operators.	E	3
6	Understand And Analyse different types and properties of Relations, functions and Equivalence Relations.	An	2
7	Understand concepts of Matrix and Matrix Operators.	U	2

8	Evaluate the Inverse of a Matrix and solution of a system of Non homogeneous Equations	E	2

Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S), Interest (I) and Appreciation (Ap)

COURSE CONTENT

Content for Classroom transactions (Units)

Module	Units	Course description	Hrs	CO No.
1	Logic and Proofs			
	1.1	Propositional Logic (1.1 of Text 1)	5	3
	1.2	Propositional Equivalences (1.2 of Text 1)	5	4
	1.3	Rules of Inferences for Propositional Logic (Relevant portions of 1.5 of Text 1)	5	5
2	Set Theory			
	2.1	Sets (2. 1 of Text 1)	4	1
	2.2	Set operations. (2. 2 of Text 1)	4	2
	2.3	Functions (2. 3 of Text 1)	4	6
3	Relations			
	3. 1	Relations and their Properties (7. 1 of Text 1)	6	6
	3. 2	Representing relations (7.3 of Text 1)	6	6
	3. 3	Equivalence relations (7.5 of Text 1)	5	6
4	Matrices			
	4. 1	Definition and different types of Matrices, Symmetric and Skew Symmetric Matrices (2.5 of Text 2)	3	7
	4. 2	Matrix operations, Determinant, Matrix inverse (2.6 , Relevant portions of 2.7 of Text 2)	8	7 & 8
	4.3	Solution of a system of Non homogeneous equations by Matrix method and Cramer's rule (Relevant portions of 2.7, 2.10 of Text 2)	5	8

Teaching and Learning Approach	Classroom Procedure (Mode of transaction)
	Brainstorming lectures, Explicit teaching, Active Cooperative learning

Assessment Types	MODE OF ASSESSMENT					
	A	Continuous Comprehensive Assessment (CCA) (30 marks)				
		1. Quiz / MCQ 2. Assignment 3. Tests 4. Tutorial				
	B	**End Semester Evaluation (ESE) 70 marks**				
		Question Pattern				
		[Maximum Time 2 Hours, Maximum Marks 70]				
		Module	Part A 2 Marks	Part B 6 Marks	Part C 10 Marks	Total
		I	2	2	2	6
		II	2	2	1	5
		III	2	2	1	5
		IV	2	2	2	6
		Total no of questions	8	8	6	22
		Number of questions to be answered	5	5	3	13
		Total Marks	10	30	30	70

REFERENCES

1. Kenneth. H. Rosen - Discrete Mathematics and its applications, 6th edition
2. B.S Grewal - Higher Engineering Mathematics, 40th Edition, Khanna Publications

SUGGESTED READINGS

1. Erwin Kreyszig - Advanced Engineering Mathematics, Wiley, India.
2. S.S Sastry - Engineering Mathematics Volume 1, 4th edition PHI.

Mahatma Gandhi University

Kottayam

Programme	BCA (Honours)				
Course Name	Cyber Laws and Security				
Type of Course	MDC				
Course Code	MG1MDCBCA100				
Course Level	100				
Course Summary	This comprehensive course on Cyber Laws and Security is designed to provide participants with a thorough understanding of cyber laws, including the IT Act, data protection, and regulations related to cybercrimes, cyberbullying, and harassment, along with internet security practices. It also provides a foundational understanding of cryptography, cyber forensics, and ethical hacking principles to enhance knowledge in securing digital information and systems.				
Semester	1	Credits		3	Total Hours
Course Details	Learning Approach	Lecture	Tutorial	Practical	Others	
		3	0	0	0	45
Pre-requisites, if any					

COURSE OUTCOMES (CO)

CO No.	Expected Course Outcome	Learning Domains *	PO No
1	Describe cyber laws, IT Act, data protection and various cybercrimes.	U	1
2	Analyze and apply security measures during online transactions and financial activities.	An	1
3	Illustrate basic cryptographic techniques and importance of cyber forensic.	U	2
Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S), Interest (I) and Appreciation (Ap)			

COURSE CONTENT

Content for Classroom transaction (Units)

Module	Units	Course description	Hrs	CO No.
1		Cyber Laws, IT Act and Cyber Crimes		
	1.1	Introduction to Cyber laws: Definition and Scope, Key legal concepts in cyberspace.	2	1
	1.2	IT Act: Overview of the IT Act 2000, Offenses and penalties under the IT Act, Amendments and evolving landscape.	4	1
	1.3	Data Protection and Privacy Laws : Principles of Data Protection, Privacy laws and regulations.	3	1
	1.4	Cyber Crimes: Types of Cybercrimes, Hacking and unauthorized access, Identity theft and cyber fraud.	4	1
	1.5	Cyber Bullying and Harassment: Definition and Forms of Cyber Bullying, Legal Perspective on Cyberbullying.	4	1
	1.6	Harassment Laws and social media, Reporting and preventing cyberbullying.	3	1
2		Online Security		
	2.1	Introduction to Internet Security: Overview of Internet Security, Importance of Online Safety.	2	2
	2.2	Passwords and Authentication: Importance of Strong Password, Multi Factor Authentication (MFA).	2	2
	2.3	Secure Browsing Practices: Recognizing and Avoiding phishing Attacks, Identifying Secure Websites (HTTPS).	3	2
	2.4	Social Media Security: Privacy settings on Social media platforms, Secure sharing information.	2	2
	2.5	Online Transaction and Financial Security: Secure online shopping, Banking and Financial Security, Payment Card safety.	2	2
3		Introduction to Cryptography and Cyber Forensics		
	3.1	Security Concepts: Introduction, The need for security, Principles of security, Types of Security attacks	3	3

3.2	Cryptography Concepts and Techniques: Introduction, plain text and cipher text, substitution techniques, transposition techniques,	4	3
3.3	Encryption and decryption, symmetric and asymmetric key cryptography	3	3
3.4	Introduction to Cyber forensics - Definition and importance of cyber forensics, Types of cybercrime -hacking, phishing, identity theft, etc., The role of forensics in investigating cybercrime. Introduction to Ethical Hacking.	4	3

Teaching and Learning Approach	**Classroom Procedure (Mode of transaction)** Lectures, Discussions, Case Analysis

Assessment Types	**MODE OF ASSESSMENT**
	   A. Continuous Comprehensive Assessment (CCA)
	
	    CCA for Theory: 25 Marks
	
	     1. Written test
	     2. Assignments
	     3. MCQ

	B. Semester End Examination
	
	   ESE for Theory: 50 Marks (1.5 Hrs)
	
	  Written Test (50 Marks)
	     Part A: Very Short Answer Questions (Answer all) - (10*2=20 Marks)
	     Part B: Short Answer Questions (6 out of 8 Questions) - (6*5=30 Marks)

REFERENCES:

1. Vakul Sharma, "Information Technology Law and Practice", 3rd ed. 2011, Universal Law Pub., New Delhi.

2. Adv. Prashant Mali, "Cyber Law & Cyber Crimes", Snow White Publications Pvt. Ltd, 2nd ed. 2015.

3. Michael Cross , "Social Media Security: Leveraging Social Networking While Mitigating Risk", Elsevier, 2014.

4. William Stallings & Lawrie Brown " Computer Security – Principles and Practice" 3rd ed., Pearson Pub., 2017.

5. William Stallings, Cryptography and Network Security Principles and Practice, 4/e,Pearson Ed.

6. Cyber Forensics - Concepts and Approaches, Ravi Kumar & B Jain,2006, icfai university press

SUGGESTED READINGS:

1. "Cyber Law in India" by Pavan Duggal
2. "Cyber Security: A Practitioner's Guide" by Eric Cole
3. "Principles of Intellectual Property" by Stephen M McJohn
4. "The Indian Cyber Law" by Sandeep Agrawal

MGU-BCA (HONOURS)

Syllabus