

Dr. N.G.P. ARTS AND SCIENCE COLLEGE

(An Autonomous Institution, Affiliated to Bharathiar University, Coimbatore)

Approved by Government of Tamil Nadu and Accredited by NAAC with 'A++' Grade (3rd Cycle-3.64 CGPA)

Dr. N.G.P. - Kalapatti Road, Coimbatore-641048, Tamil Nadu, India

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REGULATIONS 2026 - 27 for Under Graduate Programme (Outcome Based Education model with Choice Based Credit System)

Bachelor of Science in Artificial Intelligence and Machine Learning

(For the students admitted during the academic year 2026-27 and onwards)

Programme: B.Sc. Artificial Intelligence and Machine Learning

Eligibility

Candidates for admission to the first year of the **Bachelor of Science (Artificial Intelligence and Machine Learning)** Degree Programme shall be required to have passed in the Higher Secondary Examinations conducted by the Government of Tamil Nadu in the relevant subjects or an Examination accepted as equivalent there to by the Academic Council. Subject to such other conditions as may be prescribed there to be permitted to appear and qualify with anyone of the following subjects: Mathematics / Computer Science and wherever the students have not studied Mathematics, the necessary Mathematics knowledge be imparted through Tutorial/Bridge Course.

Programme Educational Objectives

The Curriculum is designed to attain the following learning goals which students shall accomplish by the time of their graduation:

1. To achieve professional skills in IT/ITEs sector
2. Support the growth of economy of a country by starting enterprise with a lifelong learning attitude.
3. To take part in socio-based research activity focused on the advanced areas of AI&ML.

PROGRAMME OUTCOMES

On the successful completion of the programme, the following are the expected outcomes.

PO Number	PO Statement
PO1	Apply the Computer Science principles and paradigms in designing system components and processes to meet the specific industry needs.
PO2	To develop intelligent automated systems by applying analytical and programming skills to resolve real time issues and challenges.
PO3	Exhibit proficiency in AI&ML for providing finite solutions to the industry.
PO4	Build the young minds with research attitude with respect to the needs of the society.
PO5	Employ to adapt for the modern platforms in-terms of employability, entrepreneur-ship and also to pursue for their higher studies.

**B.Sc. Artificial Intelligence and Machine Learning 2026-2027 Scheme
Credit Distribution**

Part	Subjects	No. of Papers	Credit	Semester No.
I (12 Credits)	Tamil / Hindi / French/Malayalam	4	4 x 3 = 12	I to IV
II (12 Credits)	English	4	4 x 3 = 12	I to IV
III (108 Credits)	Core (Credits 4)	12	12 x 4 = 48	I to VI
	Core (Credits 3)	2	2 x 3 = 6	III & IV
	Core Practical (Credits 5)	2	2 x 5 = 10	III & IV
	Core Practical (Credits 2)	3	3 x 2 = 6	I to V
	Inter Departmental Course (IDC)	4	4 x 4 = 16	I to IV
	Discipline Specific Elective (DSE)	3	3 x 4 = 12	V & VI
	Skill Enhancement Course (SEC)	4	4 x 2 = 8	III to VI
	Industrial Training	1	1 x 2 = 2	V
IV (8 Credits)	Environmental Studies (AECC)	1	1 x 2 = 2	I
	Basic Tamil/ Advance Tamil/Human Rights and Women's Rights (AECC)	1	1 x 2 = 2	II
	Innovation, IPR and Entrepreneurship (AECC)	1	1 x 2 = 2	VI
	Generic Elective (GE)	1	1 x 2 = 2	V
V (2 Credits)	NSS/NCC/YRC/RRC/Yoga/Sports/ Clubs/Health and Wellness	-	2 x 1 = 2	I & II
TOTAL CREDITS			142	

UG CURRICULUM

Programme Name: B.Sc. Artificial Intelligence and Machine Learning - AY 2026-2027

Course Code	Course Category	Course Name	L	T	P	Instruction Hours		Exam (h)	Max Marks			Credits
						Week	Total		CIA	ESE	Total	
First Semester												
Part- I												
26TLU1TA	Language-I	Tamil-I	4	1	-	5	60	3	25	75	100	3
26TLU1HA		Hindi-I										
26TLU1MA		Malayalam-I										
26TLU1FA		French-I										
Part- II												
26ELU1EA	Language-II	English-I	4	-	1	5	60	3	25	75	100	3
Part- III												
26AIU1CA	Core-I	Programming in C	4	1	-	5	60	3	25	75	100	4
26AIU1CB	Core-II	Digital Logic Design	4	-	-	4	48	3	25	75	100	4
26AIU1CP	Core Practical-I	C Programming	-	-	4	4	48	3	40	60	100	2
26MTU1ID	IDC-I	Mathematics for Computing - I	4	1	-	5	60	3	25	75	100	4
Part-IV												
26CEU1AA	AECC-I	Environmental Studies	2	-	-	2	24	-	50	-	50	2
Part-V												
26AIU1XA	Extension Activity	NSS/NCC/ YRC/RRC/ Yoga/Sports/ Clubs	-	-	-	-	-	-	50	-	50	1
Total			22	3	5	30	360	-	-	-	700	23

Course Code	Course Category	Course Name	L	T	P	Instruction Hours		Exam (h)	Max Marks			Credits
						Week	Total		CIA	ESE	Total	
Second Semester												
Part- I												
26TLU2TA	Language-I	Tamil-II	4	1	-	5	60	3	25	75	100	3
26TLU2HA		Hindi-II										
26TLU2MA		Malayalam-II										
26TLU2FA		French-II										
Part- II												
26ELU2EA	Language-II	English-II	4	-	1	5	60	3	25	75	100	3
Part- III												
26CAU2CA	Core-III	Data Structures	4	1	-	5	60	3	25	75	100	4
26DAU2CA	Core-IV	Python for Data Science	4	-	-	4	48	3	25	75	100	4
26AIU2CP	Core Practical-II	Python Programming	-	-	4	4	48	3	40	60	100	2
26MTU2ID	IDC-II	Mathematics for Computing - II	4	1	-	5	60	3	25	75	100	4
Part-IV												
26TLU2AA	AECC-II	Basic Tamil	2	-	-	2	24	-	50	-	50	2
26TLU2AB		Advanced Tamil										
26CMU2AA		Human Rights and Women's Rights										
Part-V												
26AIU2XA	Extension Activity	NSS/NCC/ YRC/RRC/ Yoga/Sports/ Clubs /Health and Wellness	-	-	-	-	-	-	50	-	50	1
Total			22	3	5	30	360	-	-	-	700	23

Course Code	Course Category	Course Name	L	T	P	Instruction Hours		Exam (h)	Max Marks			Credits	
						Week	Total		CIA	ESE	Total		
Third Semester													
Part– I													
26TLU3TA	Language-I	Tamil-III	3	1	-	4	48	3	25	75	100	3	
26TLU3HA		Hindi-III											
26TLU3MA		Malayalam-III											
26TLU3FA		French-III											
Part– II													
26ELU3EA	Language-II	English-III	3	1	-	4	48	3	25	75	100	3	
Part– III													
26CAU3CA	Core-V	Java Programming	4	-	-	4	48	3	25	75	100	4	
26CSU3CA	Core-VI	Operating Systems	3	-	-	3	36	3	25	75	100	3	
26AIU3CM	Core Practical-III	Foundations of Artificial Intelligence	3	-	4	7	84	3	40	60	100	5	
26AIU3SP	SEC Practical-I	Programming in Java	-	-	4	4	48	3	40	60	100	2	
26MTU3ID	IDC-III	Discrete Mathematics	4	-	-	4	48	3	25	75	100	4	
Total			20	2	08	30	360	-	-	-	700	24	

EXTRA CREDIT COURSES

The following are the courses offered under self-study to earn extra credits

Semester III

S. No.	Course Code	Name of the Course
1	26AIUSSA	Design Thinking
2	26AIUSSB	Responsible AI

Course Code	Course Category	Course Name	L	T	P	Instruction Hours		Exam (h)	Max Marks			Credits
						Week	Total		CIA	ESE	Total	
Fourth Semester												
Part- I												
26TLU4TA	Language-I	Tamil-IV	3	1	-	4	48	3	25	75	100	3
26TLU4HA		Hindi-IV										
26TLU4MA		Malayalam-IV										
26TLU4FA		French-IV										
Part- II												
26ELU4EA	Language-II	English -IV	3	1	-	4	48	3	25	75	100	3
Part- III												
26AIU4CA	Core-VII	Machine Learning Techniques	4	-	-	4	48	3	25	75	100	4
26AIU4CB	Core-VIII	Design and Analysis of Algorithms	3	-	-	3	36	3	25	75	100	3
26CGU4CM	Core Practical-IV	Database Management Systems	3	-	4	7	84	3	40	60	100	5
26AIU4SP	SEC Practical-II	Machine Learning	-	-	4	4	48	3	40	60	100	2
26BIU4IA	IDC-IV	Digital Banking	4	-	-	4	48	3	25	75	100	4
Total			20	2	08	30	360	-	-	-	700	24

Course Code	Course Category	Course Name	L	T	P	Instruction Hours		Exam (h)	Max Marks			Credits	
						Week	Total		CIA	ESE	Total		
Fifth Semester													
Part– III													
26AIU5CA	Core-IX	Computer Networks	4	1	-	5	60	3	25	75	100	4	
26AIU5CB	Core-X	Deep Learning Techniques	4	1	-	5	60	3	25	75	100	4	
26AIU5CC	Core-XI	Internet of Things and Smart System	4	1	-	5	60	3	25	75	100	4	
26AIU5CP	Core Practical-V	Deep Learning	-	-	4	4	48	3	40	60	100	2	
26AIU5SP	SEC Practical-III	Internet of Things	-	-	4	4	48	3	40	60	100	2	
26AIU5DA	DSE –I	Software Engineering	4	1	-	5	60	3	25	75	100	4	
26AIU5DB		Human Computer Interaction											
26AIU5DC		Cybersecurity											
26AIU5TA	IT	Industrial Training	-	-	-	-	-	3	40	60	100	2	
Part– IV													
	GE		2	-	-	2	24	3	50	-	50	2	
Total			18	4	8	30	360	-	-	-	750	24	

Course Code	Course Category	Course Name	L	T	P	Instruction Hours		Exam (h)	Max Marks			Credits	
						Week	Total		CIA	ESE	Total		
Sixth Semester													
Part– III													
26AIU6CA	Core-XII	Natural Language Processing and Speech Systems	4	-	-	4	48	3	25	75	100	4	
26AIU6CB	Core-XIII	Generative AI	4	-	-	4	48	3	25	75	100	4	
26AIU6CV	Core-XIV	Project and Viva voce	-	-	8	8	96	3	40	60	100	4	
26AIU6SP	SEC Practical-IV	Natural Language Processing using Python	-	-	4	4	48	3	40	60	100	2	
26AIU6DA	DSE–II	Cloud Computing	4	-	-	4	48	3	25	75	100	4	
26AIU6DB		Computer Vision											
26AIU6DC		Principles of Robotics											
26AIU6DD	DSE–III	Intelligent Autonomous System	4	-	-	4	48	3	25	75	100	4	
26AIU6DE		Fuzzy Logic and Neural Networks											
26AIU6DF		Reinforcement Learning											
Part-IV													
26BTU6AA	AECC-III	Innovation, IPR and Entrepreneurship	2	-	-	2	24	3	50	-	50	2	
Total			18	-	12	30	360	-	-	-	650	24	
*Grand total											4200	142	

*Total Credit should not exceed 142 credits

DISCIPLINE SPECIFIC ELECTIVE

Students shall select the desired course of their choice in the listed elective course during Semesters V & VI

Semester V (Elective I)

List of Elective Courses

S. No.	Course Code	Name of the Course
1	26AIU5DA	Software Engineering
2	26AIU5DB	Human Computer Interaction
3	26AIU5DC	Cybersecurity

Semester VI (Elective II)

List of Elective Courses

S. No.	Course Code	Name of the Course
1	26AIU6DA	Cloud Computing
2	26AIU6DB	Computer Vision
3	26AIU6DC	Principles of Robotics

Semester VI (Elective III)

List of Elective Courses

S. No.	Course Code	Name of the Course
1	26AIU6DD	Intelligent Autonomous System
2	26AIU6DE	Fuzzy Logic and Neural Networks
3	26AIU6DF	Reinforcement Learning

GENERIC ELECTIVE COURSE (GE)

The following are the courses offered under Generic Elective Course

Semester: V (GE)

S. No.	Course Code	Name of the Course
1	26AIU5GA	AI Essentials

EXTRA CREDIT COURSES

The following are the courses offered under self-study to earn extra credits:

Semester III

S. No.	Course Code	Name of the Course
1	26AIUSSA	Design Thinking
2	26AIUSSB	Responsible AI


 B.S. Chairman / HOD
 Department of Artificial Intelligence and Machine Learning
 Dr. N.G.P. Arts and Science College
 Coimbatore - 641 048.

 Dr.N.G.P. Arts and Science College		
APPROVED		
BoS- 9th 02/04/2026	AC -	GB -

Semester – I CORE I: PROGRAMMING IN C							
Semester	Course Code	Course Name	Category	L	T	P	Credits
I	26AIU1CA	PROGRAMMING IN C	CORE	48	12	-	4

Preamble	This course has been designed for students to learn and understand - the C language fundamentals. - the programs using functions, arrays and strings. - the representation and working of pointers, structures and files.
Prerequisite	Knowledge on Logical Thinking

Course Outcomes (Cos)		
CO Number	Course Outcomes (COs) Statement	Bloom's Taxonomy Knowledge Level
CO1	Understand the fundamentals of C Language	K2
CO2	Implement decision making using branching and looping.	K3
CO3	Develop programs using arrays and functions	K3
CO4	Analyze the use of Strings and pointers.	K4
CO5	Assess programs using structures and files.	K5

Mapping with Program Outcomes:					
Cos / POs	PO1	PO2	PO3	PO4	PO5
CO1	S	M	M	S	M
CO2	M	S	S	M	S
CO3	M	M	S	M	M
CO4	S	M	M	M	S
CO5	M	S	S	M	S

26AIU1CA	PROGRAMMING IN C
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Syllabus

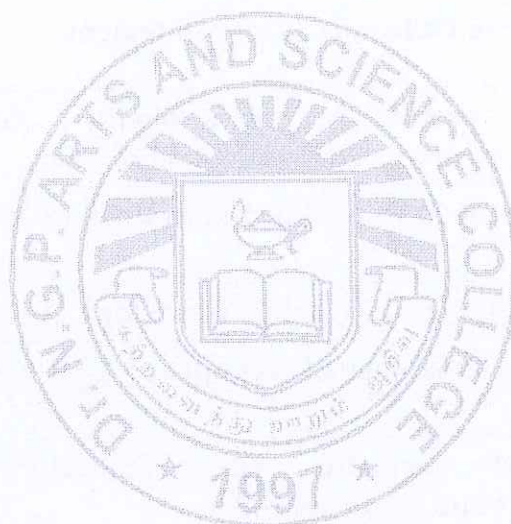
Unit	Content	Hrs	Resources
I	C Programming Introduction to C - Structure of C program - C Tokens- Character set - Keywords -Data types - Variables - Constants - Input/Output statements - Operators - Type Conversion and Type casting.	12	Text Book/ Reference Books/NPTEL
II	Decision making and Iterative statements Conditional and Branching Statements: if statement - if-else statements - if-else-if statement - switch statement - Iterative statements: while loop - do-while loop - for loop - Nested loops - Break and Continue statements - goto.	12	Text Book/ Reference Books/NPTEL
III	Function and Arrays Function: Need for functions - Elements of functions - Function declaration and prototypes- parameter passing- scope of variables - Storage Classes - recursive function. Arrays: Introduction - Types of arrays - Declaration and Initialization of Arrays -Passing arrays to functions.	12	Text Book/ Reference Books/NPTEL
IV	Strings and Pointers Declaring and Initializing the string variables - String handling functions. Pointers: Understanding Pointers - Declaration and Initialization of pointer variables - Accessing variables through pointers - Pointers and arrays - Pointers and Strings - Dynamic memory allocation.	12	Text Book/ Reference Books/NPTEL
V	Structures and Files Structures - Nested structures - Pointer and Structures - Array of structures -Structures and functions- Union. Files: Defining and opening a File - Closing a file - I/O Operations on files - Command Line Arguments.	12	Text Book/ Reference Books/NPTEL
Total		60	

Text book	1.	Reema Thareja, 2016, "Programming in C", 2 nd Edition, Oxford University Press.
Reference Books	1.	E. Balagurusamy, 2017, "Programming in ANSI C", 7 th Edition, TMH.
	2.	Paul Deitel, Harvey Deitel, 2019, "C How to Program", 8 th Edition, Pearson
	3.	Ashok N. Kamthane, 2009, "Programming and Data Structures", 1 st Edition, Pearson Education.
	4.	Anita Goel, Ajay Mittal, 2016,"Computer Fundamentals and Programming in C", 1 st Edition, Pearson.
	5.	Byron Gottfried, 2018, "Schaum's Outline of Programming with C", 4 th Edition, McGraw Hill Education.

Journal and Magazines	-
E-Resources and Website	https://nptel.ac.in

Learning Method	Chalk and Talk/ Assignment/Seminar/ Group Discussion/ Case Study
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Focus of the Course	Skill Development/ Employability/ Entrepreneurial Development/ Innovations
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Semester – I							
CORE II: DIGITAL LOGIC DESIGN							
Semester	Course Code	Course Name	Category	L	T	P	Credits
I	26AIU1CB	DIGITAL LOGIC DESIGN	CORE	48	-	-	4

Preamble	This course has been designed for students to learn and understand - the fundamental digital logic concepts. - the combinational logic circuits and sequential logic circuits. - the concepts behind memory design and its memory types.
Prerequisite	A basic understanding of mathematics and logical reasoning

Course Outcomes (Cos)		
CO Number	Course Outcomes (COs) Statement	Bloom's Taxonomy Knowledge Level
CO1	Demonstrate proficiency in binary number representation, base conversions and operations.	K2
CO2	Understanding the functionality and truth tables of basic logic gates.	K2
CO3	Analyze and optimize the combinational logic circuits.	K3
CO4	Understand the fundamental concepts of flip-flops and registers.	K4
CO5	Evaluate and compare the architecture of microprocessors and microcontrollers.	K5

Mapping with Program Outcomes:					
Cos / POs	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	M
CO2	S	M	M	S	M
CO3	S	S	S	S	S
CO4	S	M	S	S	M
CO5	S	M	S	S	M

26AIU1CB	DIGITAL LOGIC DESIGN
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Syllabus

Unit	Content	Hrs	Resources
I	Number System and Boolean Algebra Binary Numbers - Number base conversions- Octal and Hexadecimal conversions - Compliments - Binary codes - Decimal codes. Basic Definitions- Boolean functions - Canonical standard forms: Minterms and Maxterms - Sum of Minterms - Product of Maxterms - conversion between canonical forms.	10	Text Book
II	Logic Gates and Boolean functions Digital Logic Gates: Basic gates - Universal gates - Exclusive gates - The Map Method - Two and three variable Maps- Four variable Map - Five and Six Variable Maps - Sum of Product and Product of Sum simplification - NAND and NOR Implementation - Don't care conditions.	10	Text Book
III	Combinational Logic Adders: Half-Adder, Full-Adder. Subtractors Half-Subtractor, Full-Subtractor. Multilevel NAND Circuits: Universal Gate. Multilevel NOR Circuits: Universal Gate. Binary Parallel Adder - BCD Adder. Decoders: Demultiplexers- Encoders - Multiplexer.	10	Text Book
IV	Sequential Logic Introduction- Flip-flops-Clocked RS Flip-flop - D Flip-flop - JK Flip-flop - Design of Counters- Registers -Shift registers- Ripple Counters- Synchronous Counters- Error Correcting Codes.	10	Text Book
V	Microprocessor and Microcontrollers Introduction- Architecture of Microprocessor - Evolution of Microprocessor - Applications of Microprocessor - Evolution of Microcontrollers - Architecture and Memory Organization of 8051 Microcontroller - Application of Microcontrollers.	8	Text Book
Total		48	

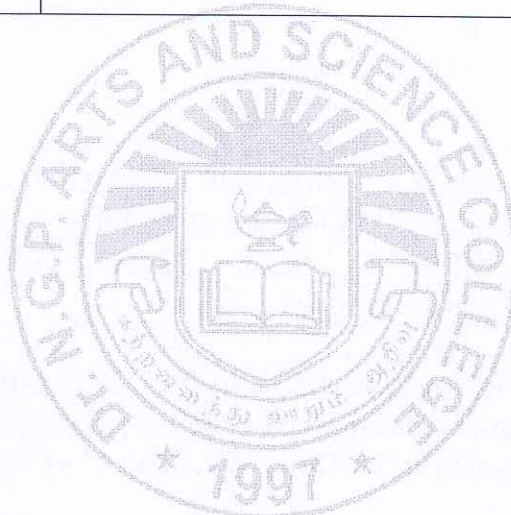
Text books	1.	M. Morris Mano, 2019, "Digital Logic and Computer Design", Pearson India Education.
	2.	Soumitra Kumar Mandal, 2018, "Microprocessors and Microcontrollers: Architecture, Programming and Interfacing using 8085, 8086, 8051", 15th Edition, Tata Mc Graw Hill Education.
Reference Books	1.	M. Morris Mano, 2022, "Computer System Architecture", 3rd Edition, Pearson India Education.
	2.	S. Salivahanan and S Arivazhagan, 2018, "Digital Circuits and Design", 5th Edition, Oxford University Press, Noida.

3.	Thomas Floyd L., 2015, "Digital Fundamentals", 11th Edition, Pearson Publication Ltd, New Delhi.
4.	David H, Ganzolo S, Patrick G, Robert B, Jerome H, 2017, "IoT Fundamentals: Networking Technologies, Protocols, and use cases for the Internet of Things", 1st Edition, Cisco Press.
5.	Aditya P Mathur, 2016, "Introduction to Microprocessor", 3rd Edition, McGraw Hill Education.

Journal and Magazines	-
E-Resources and Website	https://www.coursera.org/learn/digital-systems https://www.nesoacademy.org/ec/05-digital-electronics

Learning Method	Chalk and Talk/ Assignment/ Role Play
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Focus of the Course	Skill Development/ Employability
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Semester – I CORE PRACTICAL - I: C PROGRAMMING							
Semester	Course Code	Course Name	Category	L	T	P	Credits
I	26AIU1CP	C PROGRAMMING	CORE PRACTICAL	-	-	48	2

Preamble	This course has been designed for students to learn and understand • strong C programming foundation with hands-on I/O, operators, and control structures. • implement arrays, functions, pointers, and strings to enhance structured programming skills. • explore structures and dynamic memory allocation for efficient data management.
Prerequisite	Knowledge on Logical Thinking and Problem Solving

Course Outcomes (Cos)		
CO Number	Course Outcomes (COs) Statement	Bloom's Taxonomy Knowledge Level
CO1	Understand and apply basic I/O operations, operators, and control structures in C.	K2
CO2	Implement arrays and functions for structured programming.	K3
CO3	Apply string handling and pointer concepts in C programming.	K3
CO4	Analyze structured data representation and dynamic memory management.	K4
CO5	Assess file handling and command-line argument concepts for efficient data processing.	K5

Mapping with Program Outcomes:					
Cos / POs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	M	S	M	M
CO3	S	S	S	M	S
CO4	S	S	S	S	S
CO5	S	M	M	S	M

26AIU1CP	C PROGRAMMING
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S.No	List of Programs
1	Implement programs using I/O Statements.
2	Write programs with Operators in C.
3	Experiments using Conditional Statements.
4	Design programs using Looping Statements.
5	Implement One Dimensional and Two Dimensional Arrays in C.
6	Programs using Functions.
7	Implement the String handling functions in C.
8	Experiments using Pointers and storage classes.
9	Implement programs using Structures.
10	Programs using Dynamic memory allocation.
11	Create files using File handling in C.
12	Programs using Command line arguments.

Reference Books	1.	Reema Thareja, 2016, "Programming in C", 2 nd Edition, Oxford University Press..
	2.	Ashok N. Kamthane, 2017, "Object Oriented Programming with ANSI and Turbo C++", 3rd Edition, Pearson Education.

Learning Method	Demonstration/ Hands on Experiments
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Focus of the Course	Skill Development/ Employability
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Semester – I IDC: MATHEMATICS FOR COMPUTING - I							
Semester	Course Code	Course Name	Category	L	T	P	Credits
I	26MTU1ID	MATHEMATICS FOR COMPUTING - I	IDC	48	12	-	4

Preamble	This course has been designed for students to learn and understand - the concepts of matrices and linear systems - the technique of obtaining eigen values and eigen vectors - the method of solving linear system of equations
Prerequisite	Knowledge on Basic Mathematics

Course Outcomes (Cos)		
CO Number	Course Outcomes (COs) Statement	Bloom's Taxonomy Knowledge Level
CO1	Recall definitions of systems of linear equations, matrices, and basic matrix operations.	K1
CO2	Apply matrix methods to solve problems in network analysis, electrical circuits, and chemical equations.	K3
CO3	Explain minors, cofactors, and methods of determinant evaluation.	K2
CO4	Analyze systems of differential equations using eigenvalues and eigenvectors.	K4
CO5	Evaluate and compare different numerical methods for solving algebraic and linear systems.	K5

Mapping with Program Outcomes:					
Cos / POs	PO1	PO2	PO3	PO4	PO5
CO1	M	S	M	S	S
CO2	S	S	M	S	S
CO3	M	M	M	M	S
CO4	M	S	M	S	S
CO5	M	M	M	M	M

26MTU1ID	IDC: MATHEMATICS FOR COMPUTING - I
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Syllabus

Unit	Content	Hrs	Resources
I	Systems of Linear Equations: Introduction to system of linear equations- - linear systems in two and three unknown - augmented matrices and elementary row operations - Gaussian elimination- Matrices and Matrix operations - inverses - algebraic properties of matrices - elementary matrices - method for finding A^{-1} - invertible matrices.	13	Text Book 1
II	Matrix Transformations and Applications: Diagonal matrices - triangular matrices - symmetric matrices - Matrix Transformations - Network Analysis - Electrical Circuits - Balancing Chemical Equations - Polynomial Interpolation - Leontief Input-Output Models.	12	Text Book 1
III	Determinants: Introduction - determinants by cofactor expansion- minors and cofactors - technique for evaluating 2×2 and 3×3 determinants - evaluating determinants by row reduction - elementary row operations - Matrices with proportional rows or columns - properties of determinants - Cramer's rule.	12	Text Book 1
IV	Eigenvalues and Eigenvectors: Definition of eigenvalues and eigenvectors - computing eigenvalues and eigenvectors - Diagonalization - Geometric and Algebraic multiplicity - complex vector spaces - vectors in C^n - differential equations - first order linear systems - solution by diagonalization.	10	Text Book 1
V	Solution of Algebraic, Transcendental Equations and Linear Systems: Introduction - Newton-Raphson method - Direct methods - Matrix inversion method - Gaussian elimination method - Gauss Jordan method - Iterative methods - Gauss Seidel Method - Gauss Jacobi method.	13	Text Book 2
Total		60	

Note: Distribution of marks 80% Problem and 20% Theory
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Text book	1.	Howard Anton and Chris Rorres, 2015 "Elementary Linear Algebra with Supplemental Applications", 11 th Edition, Wiley India Pvt. Ltd, New Delhi. (Unit I to IV).
	2.	Sastry S.S, 2012, " Introductory methods of Numerical Analysis", Prentice- Hall of India. New Delhi. (Unit V).
Reference Books	1.	Partha Karmakar, Chandan Bikash Das, Pabitra kumar Gouri, 2021 "Introduction to Linear Algebra", 1 st Edition, Books and Allied(P) Ltd, Kolkata.
	2.	Gilbert Strang, 2005, "Linear Algebra and its Applications", 4 th Edition, Brooks/Cole, Noida.
	3.	Veerarajan T, Ramachandran.T, 2004. "Theory and Problems in Numerical Methods with Programs in C and C++", 10 th Edition, Tata Mc-Graw Hill Publishing Company Limited, New Delhi.
	4.	Venkataraman M.K. 2004, "Numerical Methods in Science and Engineering", 4 th Edition, NPC.

Journal and Magazines	https://www.ijream.org/papers/ICRTET0062.pdf
E-Resources and Website	<u>Matrices: Definition, Properties, Types, Formulas, and Examples</u> (geeksforgeeks.org) https://nptel.ac.in

Learning Method	Chalk and Talk/ Assignment/Seminar
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Focus of the Course	Skill Development
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 Head / HOD
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