Syllabus-2023-2024

(SOS)(BSc_ComputerScience)

Title of the Course	English-I
Course Code	AEC0201[T]

Part A

Year	1st	**Semester**	2nd	**Credits**	L	T	P	C
					2	0	0	2
Course Type	Theory only							
Course Category	Ability Enhancement Courses							
Pre-Requisite/s	The students have a basic knowledge and understanding of the English language and communication.			**Co-Requisite/s**	Communication skills, Leadership development etc.			
Course Outcomes & Bloom's Level	**CO1-** Determine interpersonal skills and be an effective goal-oriented team player**(BL1-Remember)** **CO2-** Elaborate creativity and lateral thinking**(BL2-Understand)** **CO3-** Examine attitudes, emotional intelligence and understand its influence on behavior**(BL3-Apply)** **CO4-** Justify approaches to conflict resolution.**(BL4-Analyze)** **CO5-** Evaluate goal setting, management, decision-making skills.**(BL5-Evaluate)**							
Coures Elements	Skill Development ✓ Entrepreneurship ✕ Employability ✓ Professional Ethics ✕ Gender ✕ Human Values ✓ Environment ✕		**SDG (Goals)**	SDG4(Quality education)				

Part B

Modules	Contents	Pedagogy	Hours
Module 1	Where the Mind is Without Fear, The Tryst with Destiny The Hero, Indian Weavers The Portrait of a Lady The Solitary Reaper	Classroom Lecture, PPts, Videoes	10
Module 2	Basic Language Skills Synonyms, Antonyms,Homonyms, Word Formation,Prefix, Suffix	Classroom Lecture, PPts,	6
Module 3	Uncountable Noun, Verb, Tense, Adverb	Classroom Lecture, PPts,	6
Module 4	Trading Comprehension, Unseen Passage	Classroom Lecture, PPts, Videos	4
Module 5	Introduction to Report Writing, Major Objectives of Writing Reports, Significance of Business/Technical, Types and Forms of Reports, Styles of Writing Reports – Printed format, Memo Format, Letter Format, Book/Letter Text Format, Layout and Structure of Reports, Components of Report Writing.	Classroom Lecture, PPts, Videos	5

Part D(Marks Distribution)

Theory					
Total Marks	**Minimum Passing Marks**	**External Evaluation**	**Min. External Evaluation**	**Internal Evaluation**	**Min. Internal Evaluation**
100	40	40	12	60	
Practical					
Total Marks	**Minimum Passing Marks**	**External Evaluation**	**Min. External Evaluation**	**Internal Evaluation**	**Min. Internal Evaluation**

Part E

Books	C. Muralikrishna and S. Mishra (2011) Communication Skills for Engineers, Pearson education. ISBN: 9788131733844
Articles	Carnegie Dale, How to win Friends and Influence People, New York: Simon & Schuster, 1998.
References Books	Technical Communication – Principles and Practices by Meenakshi Raman & Sangeeta Sharma, Oxford Univ. Press, 2007, New Delhi.
MOOC Courses	https://nptel.ac.in/courses/109103020
Videos	https://nptel.ac.in/courses/109103020

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	-	-	-	2	2	-	-	-	2	-	-	1	-	1
CO2	2	2	1	2	2	2	-	-	-	2	-	-	1	-	3
CO3	2	1	1	-	1	-	-	-	-	2	-	-	3	2	3
CO4	3	2	-	2	1	-	-	-	-	2	-	-	2	3	3
CO5	3	2	-	2	1	-	-	-	-	2	-	-	2	2	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Syllabus-2023-2024

(SOS)(BSc_ComputerScience)

Title of the Course	Operating System
Course Code	BSCS0201[T]

Part A

Year	1st	**Semester**	2nd	**Credits**	L	T	P	C
					3	0	0	3
Course Type	Theory only							
Course Category	Disciplinary Major							
Pre-Requisite/s	Must have knowledge the computer architecture.			**Co-Requisite/s**				
Course Outcomes & Bloom's Level	**CO1-** To Remember the basics of Computer Knowledge.**(BL1-Remember)** **CO2-** To Understand the concept of System Programmer's view**(BL2-Understand)** **CO3-** To apply the various techniques of Operating system in the field of Computer Science**(BL3-Apply)** **CO4-** To analysis of Inter-process Communication and Synchronization of Operating system.**(BL4-Analyze)** **CO5-** To evaluate the study problem from application point of view by using the results of the different algorithms and solve real life base problems which arise in all applied sciences**(BL5-Evaluate)**							
Coures Elements	Skill Development ✓ Entrepreneurship ✕ Employability ✓ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✕		**SDG (Goals)**	SDG4(Quality education)				

Part B

Modules	Contents	Pedagogy	Hours
1	Introduction: Evolution of operating system, Types of operating systems, Multitasking, Timesharing, Multithreading, Multiprogramming and, Real time operating systems, Different views of the operating system, System Programmer's view, User's view, Operating system concepts and structure, Layered operating system, Monolithic systems.	White Board, Group Discussion	8
2	Processes: The Process concept, The process control block, System programmer's views of processes, Operating system services for process management, Scheduling algorithms, FCFS, Round robin, Shortest run time next, Highest response ratio next, Multilevel Feedback Queues, Performance evaluation of scheduling algorithms.	White Board, Group Discussion	8
3	Memory Management : Memory management without swapping or paging, Concepts of swapping and paging, page replacement algorithms namely, Least recently used, Optimal page replacement, Most recently used, Clock page replacement, FIFO, Modeling paging algorithms, Design issues for paging system, Segmentation, Segmented paging, Paged Segmentation.	White Board, Group Discussion	8
4	Inter-process Communication and Synchronization: The need for Inter-process Synchronization, Concept of Mutual exclusion, binary and counting semaphores, Classical problems in concurrent programming, Dining Philospher's problem, Bounded Buffer Problem, Readers and Writers problem, Critical section, Critical region and conditional Critical region, Monitors and Messages.	White Board, Group Discussion	8
5	Deadlocks: Concepts of deadlock detection, deadlock prevention, deadlock avoidance, Banker's Algorithm, Disk: Disk hardware, Disk scheduling algorithms, Error handling, Track at a time caching, RAM Disks.	White Board, Group Discussion	8

Part D(Marks Distribution)

Theory					
Total Marks	**Minimum Passing Marks**	**External Evaluation**	**Min. External Evaluation**	**Internal Evaluation**	**Min. Internal Evaluation**
100	40	60	18	40	22
Practical					
Total Marks	**Minimum Passing Marks**	**External Evaluation**	**Min. External Evaluation**	**Internal Evaluation**	**Min. Internal Evaluation**

Part E

Books	Operating System Concepts An Introduction to Operating System
Articles	
References Books	Gavlin P, .L. Abraham Silberschatz. Deitel, H.M.
MOOC Courses	
Videos	https://www.youtube.com/watch?v=vBURTt97EkA

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	2	-	-	2	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	3	-	-	-	3	-	-	-	-	-	-
CO4	-	4	-	-	-	-	-	-	-	4	-	-	-	-	-
CO5	-	-	-	5	-	5	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Syllabus-2023-2024

(SOS)(BSc_ComputerScience)

Title of the Course	DBMS
Course Code	BSCS0202[T]

Part A

<table>
<tr><td rowspan="2">Year</td><td rowspan="2">1st</td><td rowspan="2">Semester</td><td rowspan="2">2nd</td><td rowspan="2">Credits</td><td>L</td><td>T</td><td>P</td><td>C</td></tr>
<tr><td>3</td><td>0</td><td>1</td><td>4</td></tr>
<tr><td>Course Type</td><td colspan="8">Embedded theory and lab</td></tr>
<tr><td>Course Category</td><td colspan="8">Disciplinary Major</td></tr>
<tr><td>Pre-Requisite/s</td><td colspan="3">Basic understanding of software and programming language. Basic data manipulation operations, file handling, file organization. Set Theory (Mathematics) Cartesian, cross product and discrete mathematics.</td><td>Co-Requisite/s</td><td colspan="4"></td></tr>
<tr><td>Course Outcomes & Bloom's Level</td><td colspan="8">CO1- To Remember the basics of Computer Knowledge. (BL1-Remember)
CO2- To Understand the basic theory of the relational model and both its strengths and weaknesses(BL2-Understand)
CO3- To apply the various techniques of SQL programs in the field of Computer Science(BL3-Apply)
CO4- To analysis of design entity-relationship diagrams to represent simple database application scenarios(BL4-Analyze)
CO5- To evaluate the study problem from User point of view by using the results of the different SQL Programs and Familiar with various recent trends in the database area.(BL5-Evaluate)</td></tr>
<tr><td>Coures Elements</td><td colspan="2">Skill Development ✓
Entrepreneurship ✓
Employability ✓
Professional Ethics ✕
Gender ✕
Human Values ✕
Environment ✕</td><td>SDG (Goals)</td><td colspan="4">SDG4(Quality education)</td></tr>
</table>

Part B

Modules	Contents	Pedagogy	Hours
1	Purpose of date base system, views of data, data models: relation, network, hierarchical, instances and schemas, data dictionary, types of database languages:- DDL, DML, structure of DBMS, advantages and disadvantages of DBMS, 3-level architecture proposal:- external, conceptual & internal levels	White Board, Group Discussion	8
2	Entity relationship model as a tool of conceptual design: entities & entities set, relationship and relationship set, attributes and mapping constraints, keys, ER diagram:- strong and weak entities, generalization specialization & aggregation, reducing ER diagram to tables.	White Board, Group Discussion	8
3	Fundamentals of set theoretical notations: relations, domains, attributes, tuples, concept of keys: primary key, super key, alternate key, candidate key, foreign key, fundamentals of integrity rules: entity & referential integrity, extension and intention, relational algebra: select, project, Cartesian product, different types of joints: theta, equi, natural, outer joins, set operations.	White Board, Group Discussion	8
4	Functional Dependencies, Good & Bad Decomposition and Anomalies as a database: A consequences of bad design, Universal relation, Normalization: 1NF, 2NF, 3NF, & BCNF normal forms, multi valued dependency, join dependency, 4NF, 5NF.	White Board, Group Discussion	8
5	Basic concepts:- Indexing and Hashing, B-tree Index files, Hashing: Static & Dynamic hash function, Index definition in SQL: Multiple key accesses.	White Board, Group Discussion	8

Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
1	WAQ to insert some new records in emp table.	Experiments	BL2-Understand	2
2	WAQ to list the number of employees whose name is not „ford", „jams" or „jones"	Experiments	BL2-Understand	2
3	WAQ to list the name and salary and sort them in descending order of their salary	Experiments	BL2-Understand	2
4	WAQ to list the details of employees whose name is starts from „a"	Experiments	BL2-Understand	2
5	WAQ to delete all records form emp table	Experiments	BL2-Understand	2
6	WAQ to list the student name having „d" as second character.	Experiments	BL2-Understand	2
7	WAQ to list the name and salary and sort them ld descending order of their salary	Experiments	BL2-Understand	2
8	WAQ in employee table find all the manager who earns between 1000 and 2000	Experiments	BL2-Understand	2

Part D(Marks Distribution)

Theory					
Total Marks	**Minimum Passing Marks**	**External Evaluation**	**Min. External Evaluation**	**Internal Evaluation**	**Min. Internal Evaluation**
100	40	60	18	40	22
Practical					
Total Marks	**Minimum Passing Marks**	**External Evaluation**	**Min. External Evaluation**	**Internal Evaluation**	**Min. Internal Evaluation**
100	50	40	20	60	30

Part E

Books	Database System Concepts by Henry Korth and A. Silberschatz Simplification approach to DBMS, Prateek Bhatia, Gurvinder Singh Kalyani Publication
Articles	
References Books	An Introduction to Database System by Bipin Desai An Introduction to Database System by C.J. Date.
MOOC Courses	
Videos	https://www.youtube.com/playlist?list=PLxCzCOWd7aiFAN6I8CuViBuCdJgiOkT2Y

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-
CO3	3	-	-	-	3	-	-	-	-	-	-	-	-	-	-
CO4	-	4	-	-	-	-	-	-	-	-	-	4	-	-	-
CO5	-	-	5	-	5	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Syllabus-2023-2024

(SOS)(BSc_ComputerScience)

Title of the Course	Environmental Studies
Course Code	BSFC0201[T]

Part A

Year	1st	**Semester**	2nd	**Credits**	L	T	P	C
					2	0	2	4
Course Type	Theory only							
Course Category	Interdisciplinary Major							
Pre-Requisite/s				**Co-Requisite/s**				
Course Outcomes & Bloom's Level	**CO1-** -The course shall develop in student the scientific background needed to understand how the earth works and how we, as human beings, fit into that.**(BL1-Remember)** **CO2-** At the end of the course, it is expected that students will be able to identify and analyze environmental problems as well as the risks associated with these problems.**(BL2-Understand)** **CO3-** Ability to distinguish between various methods of various pollution analysis.**(BL3-Apply)** **CO4-** Students acquire skills for to communicate, prepare, plan and implement the environmental management project.**(BL4-Analyze)**							
Coures Elements	Skill Development ✓ Entrepreneurship ✕ Employability ✓ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✓		**SDG (Goals)**	SDG3(Good health and well-being) SDG5(Gender equality) SDG6(Clean water and sanitation) SDG7(Affordable and clean energy) SDG11(Sustainable cities and economies) SDG12(Responsible consuption and production) SDG13(Climate action) SDG14(Life below water) SDG15(Life on land)				

Part B

Modules	Contents	Pedagogy	Hours
Unit 1. Study of Environment and Ecology	(a) Environment – Definition and Its segments (Atmosphere, Lithosphere, Hydrosphere and Biosphere). (b) Environmental education- Definition, scope, importance, Need for Public Awareness & multidisciplinary nature of Environmental Science. (c) Elements of ecology (d) Ecosystem- Concepts, components, structure & function, energy flow, food chain, food web, ecological pyramids and types.	Lecture with ppt., Diagrams, Flowchart depiction on whiteboard during online/offline lectures, Audio/Video clips, Group discussion.	6
Unit 2. Environmental Pollution and Population	(a) Air, water, noise, soil and nuclear pollution- definition, causes, effect and prevention of pollution. (b) Environmental issues (c) Population growth, disparities between countries. (d) Population explosion, family welfare program. (e) Environment and human health. Cleanliness and disposal of domestic waste	Lecture with ppt., Diagrams, Flowchart depiction on whiteboard during online/offline lectures, Audio/Video clips, Group discussion.	6
Unit 3. Natural resources, Problems and Conservation	(a) Natural resource- Definition and classification (b) Water resources, Forest resources, Land resources, Food resources and its management (c) Energy resources- Classification and alternatives of conventional energy resources (Solar energy, geothermal energy, wind energy, nuclear energy, biomass and biogas energy)	Lecture with ppt., Diagrams, Flowchart depiction on whiteboard during online/offline lectures, Audio/Video clips, Group discussion.	6
Unit 4. Bio-diversity and its Protection	(a) Introduction- Genetic, species and ecosystem diversity. (b) Value of bio-diversity- Consumable use: Productive use, Social, Moral and Aesthetic uses. (c) India as a nation of mega bio-diversity center, bio-diversity at national and local levels. (d) Threats to bio-diversity – Loss of habitat, poaching of wildlife, man and wildlife conflicts.	Lecture with ppt., Diagrams, Flowchart depiction on whiteboard during online/offline lectures, Audio/Video clips, Group discussion.	6
Unit 5. Disaster Management and Environmental Laws	(a) Concepts of hazard, Vulnerability, Risks, Natural disasters (earthquake, cyclone, floods, volcanoes), and man made disaster (Armed conflicts and civil strip, Technological disasters, Human settlement, Slow disasters (famine, draught, epidemics) and Rapid onset disasters(Air crash, tidal waves, Tsunami) (b) Disaster Management: Prevention, Preparedness and Mitigation (c) Environmental legislations in India: Air conservation act, water conservation act, wildlife conservation act, environment protection act. Role of information technology in protecting environment and health	Lecture with ppt., Diagrams, Flowchart depiction on whiteboard during online/offline lectures, Audio/Video clips, Group discussion.	6

Part D(Marks Distribution)

Theory					
Total Marks	**Minimum Passing Marks**	**External Evaluation**	**Min. External Evaluation**	**Internal Evaluation**	**Min. Internal Evaluation**
100		40	12	60	30
Practical					
Total Marks	**Minimum Passing Marks**	**External Evaluation**	**Min. External Evaluation**	**Internal Evaluation**	**Min. Internal Evaluation**
	0				

Part E

Books	B. S. Chauhan Environmental Science 2008 First Richards T. Wright & Dorothy F. Boorse Environmental Science: Toward a Sustainable Future 2016 S. K. Dhameja Environmental Engg. & Management 2000
Articles	
References Books	Gilbert M. Masters Introduction to Environmental Engineering and Science 1991 Stanley Manahan & Stanley E. Manahan Environmental Chemistry 2009
MOOC Courses	
Videos	

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	-	-	-	-	1	-	-	-	-	-	1	2	3
CO2	1	-	-	-	-	-	1	-	-	-	-	-	1	-	1
CO3	1	2	-	-	-	-	1	-	-	-	-	-	1	2	-
CO4	1	2	-	2	-	-	-	2	-	-	-	-	1	2	3
CO5	1	2	-	-	-	-	-	2	-	-	-	-	1	-	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Syllabus-2023-2024

(SOS)(BSc_ComputerScience)

Title of the Course	Abstract Algebra
Course Code	BSMA0201[T]

Part A

Year	1st	**Semester**	2nd	**Credits**	L	T	P	C
					4	0	0	4
Course Type	Theory only							
Course Category	Disciplinary Minor							
Pre-Requisite/s	Basic Knowledge of Set theory and Basic understanding of elementary mathematics.			**Co-Requisite/s**	Understanding of sets, subsets, operations on sets, and basic set operations such as union, intersection, and complement. Familiarity with fundamental algebraic structures such as groups, rings, and fields, including their definitions, properties, and basic examples.			
Course Outcomes & Bloom's Level	**CO1-** CO1: To remember the basic knowledge of the Groups, Subgroups, Normal Subgroups, Cyclic Groups, Homomorphism and Isomorphism of groups, Automorphisms, Ring and Field.**(BL1-Remember)** **CO2-** CO2: To understand the fundamental concept and properties of Groups, Rings, Fields and integral domains.**(BL2-Understand)** **CO3-** CO3: To apply the knowledge of groups, rings, fields and integral domains in all the fields of learning including higher research and extensions.**(BL3-Apply)** **CO4-** CO4: To analyze and solve the well-defined problems in mathematics related to the different groups, rings, and fields.**(BL4-Analyze)** **CO5-** CO5: To evaluate the studied problems from application point of view by using the results of the different theorems.**(BL5-Evaluate)**							
Coures Elements	Skill Development ✓ Entrepreneurship ✕ Employability ✓ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✕		**SDG (Goals)**	SDG4(Quality education)				

Part B

Modules	Contents	Pedagogy	Hours
1	Definition and basic properties of groups, subgroups, Subgroups generated by a subset, Cyclic groups and simple properties.	Audio/Video clips, group discussion, lecture with ppt, quiz	8
2	Coset decomposition, Lagrange's theorem and its corollaries including Fermat's theorem, Normal subgroups and Quotient groups.	Audio/Video clips, group discussion, lecture with ppt, Review Analysis	9
3	Homomorphism and Isomorphism of groups, Fundamental theorem of homomorphism, Transformation and Permutation group, sn (Various subgroups of Sn n< 5 to be studied),Cayley's theorem.	Audio/Video clips, group discussion, lecture with ppt, classroom presentations, Analysis	10
4	Group Automorphisms, Inner Automorphism, Group of Automorphisms,Conjugacy relation and Centralizer,Normaliser, Counting principle and class equation of a finite group, Cauchy's theorem for finite abelian groups and non- abelian groups.	Audio/Video clips, group discussion, lecture with ppt, quiz	9
5	Definition and basic properties of rings, Ring homomorphism subrings, Ideals and Quotient rings, Polynomial rings & its properties, Integral domain and Field.	Audio/Video clips, group discussion, lecture with ppt, quiz	8

Part D(Marks Distribution)

Theory					
Total Marks	**Minimum Passing Marks**	**External Evaluation**	**Min. External Evaluation**	**Internal Evaluation**	**Min. Internal Evaluation**
100	40	60	18	40	22
Practical					
Total Marks	**Minimum Passing Marks**	**External Evaluation**	**Min. External Evaluation**	**Internal Evaluation**	**Min. Internal Evaluation**
0	0	0	0	0	0

Part E

Books	I. N. Herstein, Topics in Algebra Wiley Eastern Ltd. New Delhi,
Articles	
References Books	Shantinarayan A Text Book of Modern Abstract Algebra S. Chand and Company, New Delhi
MOOC Courses	https://onlinecourses.nptel.ac.in/noc24_ma06/preview
Videos	https://onlinecourses.nptel.ac.in/noc24_ma06/preview

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	-	-	3	-	-	-	-	1	-	-	-	-	-	-
CO2	1	-	-	2	-	-	-	-	1	-	-	-	-	-	-
CO3	-	2	-	-	1	-	-	-	-	2	-	-	-	-	-
CO4	2	-	1	-	-	-	-	2	-	-	-	-	-	-	-
CO5	1	-	-	2	-	-	-	2	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Syllabus-2023-2024

(SOS)(BSc_ComputerScience)

Title of the Course	Thermodynamics and Kinetic Theory of Gases
Course Code	BSPH0201[T]

Part A

Year	1st	**Semester**	2nd	**Credits**	L	T	P	C
					3	0	1	4
Course Type	Embedded theory and lab							
Course Category	Disciplinary Major							
Pre-Requisite/s	Knowledge of Physics upto Class 12			**Co-Requisite/s**	Knowledge of Mathematics upto Class 12			
Course Outcomes & Bloom's Level	**CO1-** To remember the basic laws of Thermodynamics and Kinetic theory of Gases**(BL1-Remember)** **CO2-** Understand the basic concepts of Thermodynamics and Kinetic theory of Gases**(BL2-Understand)** **CO3-** To apply the concepts of Thermodynamics and Kinetic theory of Gases to different system**(BL3-Apply)** **CO4-** To Analyze the laws of Thermodynamics and Kinetic theory of Gases **(BL4-Analyze)** **CO5-** To evaluate the laws of thermodynamics and Kinetic theory of Gases**(BL5-Evaluate)**							
Coures Elements	Skill Development ✕ Entrepreneurship ✓ Employability ✕ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✕		**SDG (Goals)**	SDG4(Quality education)				

Part B

Modules	Contents	Pedagogy	Hours
1	First Law of Thermodynamics and Heat engines Basic Concepts of Thermodynamics Reversible and irreversible process, First Law of Thermodynamics Heat engines, Definition of efficiency, Steam engine, Otto engine, Petrol engine, Diesel engine, Effective way to increase efficiency Carnot's ideal heat engine, Carnot's cycle, Second law of thermodynamics, Various statements of Second law of thermodynamics, Carnot's theorem Refrigerator, Coefficient of performance.	Audio/Video clips, group discussion, lecture with ppt, on white board, quiz	8
2	Entropy & II law of thermodynamics Concept of entropy, Change in entropy in adiabatic process, Change in entropy in reversible Cycle Principle of increase of entropy, Change in entropy in irreversible process .T-S diagram, Physical significance of Entropy, Entropy of a perfect gas	Audio/Video clips, group discussion, lecture with ppt, on white board, quiz	8
3	Thermodynamic Potentials and Maxwell Relations Thermodynamic Potentials and Maxwell Relations and its applications like Clausius-Clapeyron equation, CP – CV , CP / CV Change in temperature in adiabatic change, TdS equations	Audio/Video clips, group discussion, lecture with ppt, on white board, quiz	8
4	Production of Low Temperatures Introduction, Traditional methods of cooling, Adiabatic cooling, Joule┐Thomson effect, Adiabatic demagnetization, Practical uses and applications of low temperatures.	Audio/Video clips, group discussion, lecture with ppt, on white board, quiz	8
5	Kinetic Theory of Gases Behavior of real gas and its deviation from an ideal gas, viral equation, Andrew's experiment on CO2 gas. Critical constants, continuity of the liquid and gaseous states. Vapour and gas state Boyal Temperature, Van der Waals equation for real gas, Values of critical constant, Law of corresponding state.	Audio/Video clips, group discussion, lecture with ppt, on white board, quiz	8

Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
1	To determine the Specific heat capacity of a given substance with help of electric kettle.	Experiments	BL2-Understand	3
2	To study of different thermocouples and Plot a graph between thermo EMF and temperature of hot junction.	Experiments	BL4-Analyze	3
3	To determine the mechanical equivalent of (J) with the help of Joule's calorimeter	Experiments	BL2-Understand	3
4	To verify Newton's law of cooling	Experiments	BL2-Understand	3
5	To Find the Melting Point of a given substance (Wax), Using Platinum Resistance Thermometer.	Experiments	BL2-Understand	3
6	Determine the Melting Point of Paraffin wax using thermocouples.	Experiments	BL2-Understand	3
7	To determine the Brake power of a Disel Engine	Experiments	BL2-Understand	3
8	To determine the specific fuel consumption. of a Disel Engine	Experiments	BL2-Understand	3

Part D(Marks Distribution)

Theory					
Total Marks	**Minimum Passing Marks**	**External Evaluation**	**Min. External Evaluation**	**Internal Evaluation**	**Min. Internal Evaluation**
100	40	60	18	40	
Practical					
Total Marks	**Minimum Passing Marks**	**External Evaluation**	**Min. External Evaluation**	**Internal Evaluation**	**Min. Internal Evaluation**
100	50	60	30	40	

Part E

Books	Thermal Physics by Garg, Bansal and Ghosh
Articles	
References Books	Thermodynamics, Kinetic theory of gases and statistical thermodynamic by Sears and Salinger
MOOC Courses	
Videos	

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	2	2	1	-	-	-	-	-	-	-	-
CO2	1	-	3	-	-	-	-	-	-	-	-	-	-	-	-
CO3	1	3	-	2	2	-	-	-	-	-	-	-	-	-	-
CO4	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	1	-	-	3	-	2	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Syllabus-2023-2024

(SOS)(BSc_ComputerScience)

Title of the Course	NCC (optional)
Course Code	NCC0201[T]

Part A

Year	1st	**Semester**	2nd	**Credits**	L	T	P	C
					2	0	2	4
Course Type	Theory only							
Course Category	Generic Elective							
Pre-Requisite/s	Should be acquainted with the basics knowledge of General Awareness about Leadership Quality, Personality Development, Defense system etc			**Co-Requisite/s**				
Course Outcomes & Bloom's Level	**CO1-** Develop the qualities of social skills.**()** **CO2-** Imbibe leadership qualities. **()** **CO3-** Be motivated to serve the nation by joining Armed forces. **()** **CO4-** Contribute in environmental awareness and conservation activities**()** **CO5-** Keep abreast of current affairs & general awareness.**()** **CO6-** Effectively contribute in managing disaster relief tasks**()**							
Coures Elements	Skill Development ✓ Entrepreneurship ✕ Employability ✓ Professional Ethics ✕ Gender ✕ Human Values ✓ Environment ✓		**SDG (Goals)**	SDG3(Good health and well-being) SDG4(Quality education) SDG6(Clean water and sanitation) SDG13(Climate action) SDG15(Life on land)				

Part B

Modules	Contents	Pedagogy	Hours
Unit 1. Personality Development	Group Discussions – Social Skills & Time management.	Lecture, Tutorials, Group discussion, Collaborative work, self-study, Seminar presentations by students, individual and group drills, group and individual field-based assignments, Educational Excursion	5
Unit 2. Leadership Development	Case Studies – Case Studies – Ratan Tata, Rabindra Nath Tagore, Role of NCC cadets in 1965 war.	Lecture, Tutorials, Group discussion, Collaborative work, self-study, Seminar presentations by students, individual and group drills, group and individual field-based assignments, Educational Excursion	5
Unit 3. Disaster management	(i) Initiative Trg, Organising Skills. (ii) Dos and Don'ts. (iii) Natural Disasters. (iv) Man Made Disasters. (v) Fire Services and Fire Fighting.	Lecture, Tutorials, Group discussion, Collaborative work, self-study, Seminar presentations by students, individual and group drills, group and individual field-based assignments, Educational Excursion	5
Unit-4.Environmental Awareness	Adventure Environmental Awareness and Conservation, Local and global approaches to conserve nature.	Lecture, Tutorials, Group discussion, Collaborative work, self-study, Seminar presentations by students, individual and group drills, group and individual field-based assignments, Educational Excursion	5
Unit 5. General Awareness & Armed Forces	General Awareness, Army, Navy, Air Force and Central Armed Police Forces.	Lecture, Tutorials, Group discussion, Collaborative work, self-study, Seminar presentations by students, individual and group drills, group and individual field-based assignments, Educational Excursion	5

Part D(Marks Distribution)

Theory					
Total Marks	**Minimum Passing Marks**	**External Evaluation**	**Min. External Evaluation**	**Internal Evaluation**	**Min. Internal Evaluation**
0	0	0	0	0	0
Practical					
Total Marks	**Minimum Passing Marks**	**External Evaluation**	**Min. External Evaluation**	**Internal Evaluation**	**Min. Internal Evaluation**

Part E

Books	R Gupta ; NCC National Cadet Corps A, B & C Certificate Examination Book; Ramesh Publishing House, 2018.
Articles	https://indiancc.mygov.in/
References Books	Singh, Neeraj; A Hand Book of NCC; Kanti Prakashan Publisher Cadet training hand book specialised subjects (2017)
MOOC Courses	
Videos	https://www.youtube.com/watch?v=eBA5t4iepAA

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Syllabus-2023-2024

(SOS)(BSc_ComputerScience)

Title of the Course	SEC-2
Course Code	SEC0201

Part A

Year	1st	**Semester**	2nd	**Credits**	L	T	P	C
					24	0	0	24
Course Type	Theory only							
Course Category	Humanities, Social Sciences and Management							
Pre-Requisite/s				**Co-Requisite/s**				
Course Outcomes & Bloom's Level	**CO1-** 1.At the end of this course, students would be intellectually well equipped to have a sense of modern Indian history and culture . 2. The students will have an understanding of making of India as a nation . 3.The students will have an understanding of salient features of modern India . 4.It will help students to develop their personality and thinking horizon for being a good and concerned Indian citizen **(BL5-Evaluate)**							
Coures Elements	Skill Development ✕ Entrepreneurship ✕ Employability ✕ Professional Ethics ✕ Gender ✕ Human Values ✓ Environment ✕		**SDG (Goals)**	SDG4(Quality education) SDG5(Gender equality) SDG11(Sustainable cities and economies) SDG15(Life on land)				

Part B

Modules	Contents	Pedagogy	Hours
5	1. Idea of India in historical perspective a) Indian culture, b) cultural commonness, c)cultural diversities, d)unity in diversity, e) culturall accomodations ,f) cultural conflicts, g)Idea of India and British Rule , h) Role of Indian Intelligentsia. 2. Emergence and growth of Indian Nationalism a) Anti-colonial basis ,b) Economic Nationalism ,c) communalism and nationalism ,d) revivalism and Indian nationalism ,e)Enlightenment values ,f)European Nationalism and Indian Nationalism 3. Social Reform Movements a) British Rule and Indian introspection ,b)Raja Rammohan Roy, c) social reform movements in 19th century , d)Swami Vivekanand ,e)The women issue ,f)Caste system 4. Indian National Movement a)Early Revolts and 1857 Revolt, b)Early Nationalists ,c) Bang Bhang Movement , d) Gandhi led Mass Movements, e) Socialist and Left trends , f) Princely States and their integration into nation, h)Partition and Independence . 5. India after independence a)Making of Indian Constitution ,b) Post Independent Nehru Era , c) India facing Wars , d) Indian econmy- From Planning to LPG ,e) Achievements, f) Challenges in 21st century India.	Class room Lecuters	24

Part D(Marks Distribution)

Theory					
Total Marks	**Minimum Passing Marks**	**External Evaluation**	**Min. External Evaluation**	**Internal Evaluation**	**Min. Internal Evaluation**
None	0	0	None	None	None
Practical					
Total Marks	**Minimum Passing Marks**	**External Evaluation**	**Min. External Evaluation**	**Internal Evaluation**	**Min. Internal Evaluation**
None	0	0	None	1. Bipan Chandra and others: India's Struggle For Independence , Penguine Publishers. 2. Bipan Chandra: History Of Modern India, Orient Blackswan publishers. 3. Sunil Khilnani: The Idea of India, Penguine publishers. 4. Shekhar Bandopadhyay: From Plastic to Partition and After, A History of Modern India, Orient Blackswan publishers. 5. Rakesh Batabyal: The Penguine Book of Modern Indian Speeches,1878 to Present, Penguine Publishers. 6. A R Desai:Social Background of Indian Nationalism, Popular Prakashan . 7. B R Nanda: Mahatma Gandhi ,A Biography,London 8. B.R.Nanda:Gandhi and His Critics, Oxford 9. Girja Shankar: Socialist Trends in Indian National Movement ,Meerut 10. Urmila Phadnis:Towards the integration of Indian States,1919-1947,Mumbai 11. Bimal Prasad: Gandhi,Nehru and JP,A Study in Leadership,New Delhi 12. Bipan Chandra and others:India Since Independence ,Penguine 13. Ramchandra Guha:Makers of Modern India, Penguine. 14. Austin Granville: The Indian Constitution, Oxford	None

Part E

Books	None
Articles	
References Books	None
MOOC Courses	None
Videos	

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-