Dayanand Science College, Latur

Programme Outcomes (POs) of B. Sc.

Sr. No.	PO No.	Programme Outcomes (POs) of B.Sc.
1	PO1	It will develop a scientific attitude to make students open minded, critical and curious.
2	PO2	Meet the needs and requirements of the society and to enhance the quality and standards of education.
3	PO3	Logical thinking, ability of expression of thoughts, decision making are encouraged.
4	PO4	Updated education will be provided to the students at large in order to know the importance and scope of the programme.
5	PO5	It will enable the students to face NET, SET, UPSC and other competitive examinations successfully.
6	PO6	There will be development of skill among students in practical work, experiments and handling equipments.

Dayanand Science College, Latur

Programme Outcomes (POs) of M. Sc.

Sr. No.	PO No.	Programme Outcomes (POs) of M. Sc.
1	PO1	It will develop a scientific attitude to make students open minded, critical and curious.
2	PO2	Meet the needs and requirements of the society and to enhance the quality and standards of education.
3	PO3	Logical thinking, ability of expression of thoughts, decision making are encouraged.
4	PO4	Updated education will be provided to the students at large in order to know the importance and scope of the programme.
5	PO5	It will enable the students to face NET, SET, UPSC and other competitive examinations successfully.
6	PO6	There will be development of skill among students in practical work, experiments and handling equipments.
7	PO7	Perform jobs in different fields, such as industry, education, self business, etc.
8	PO8	Provide advanced knowledge in the subject.

Dayanand Science College, Latur

Programme Outcomes (POs) of Ph.D.

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Sr. No.	PO No.	Programme Outcomes (POs) of Ph. D.
1	PO1	Understand the concept and methodology of research.
2	PO2	Find the problems in the subject and work in order to solve them.
3	PO3	Application of the knowledge for welfare of society.
4	PO4	Develop appropriate skills to make them competent.
5	PO5	Get advanced knowledge in the subject.
6	PO6	Critical understanding for up to date knowledge and research methodology in the field.
7	PO7	Able to carry out research projects independently.
8	PO8	To try for getting patent for research.

Dayanand Science College, Latur

Program Specific Outcome (PSOs)

M.Sc. Computer Science

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Sr. No.	PSO No.	Programme Specific Outcomes (PSOs)
1	PSO_1	Provides technology-oriented students with the knowledge and ability to develop creative solutions.
2	PSO_2	Develop skills to learn new technology.
3	PSO_3	Apply computer science theory and software development concepts to construct computing-based solutions for real life.
4	PSO_4	Design and develop computer programs/computer-based systems in the areas related to algorithms, networking, web design, cloud computing, Artificial Intelligence, Mobile applications.
5	PSO_5	Generate solutions by understanding underlying computer science environment
6	PSO_6	Design component, or processes to meet the needs within realistic constraints.
7	PSO_7	Identify, formulate, and solve problems using computational temperaments.
8	PSO_8	Recognize the need for interdisciplinary, and an ability to engage in life-long learning.
9	PSO_9	Knowledge of contemporary issues and emerging developments in computing profession.
10	PSO_10	Utilize the techniques, skills and modern tools, for actual development process.
11	PSO_11	Research insights and conduct research in computing environment.
12	PSO_12	Students will able to take up self-employment in Indian & global software market.
13	PSO_13	Student will able to give the exams like NET/ SET.

Dayanand Science College, Latur

Programme Outcomes (POs)
of M. Sc. Microbiology

Sr. No.	PSO No.	Programme Specific Outcomes (PSOs) of M.Sc. Microbiology
1	PSO1	Students will get Specific knowledge of microbes
2	PSO2	Students will learn distribution of microbes in the universe.
3	PSO3	Students will learn role of microbe in betterment of society.
4	PSO4	Students will get job opportunities in various fields such as pharmaceutical industries, bio fertilizer industries,food industries, fabric industries, dairy industries, distillaries, waste treatment plants, bioinformatics of national international status.
5	PSO5	Students will become good teacher and researchers in the field of life sciences.
6	PSO6	Students will get job opportunities in government sector, such as Pollution control boards, PHC, Public health department, malaria offices, municipal corporations, etc.
7	PSO7	Students will have multidisciplinary profile as the course curriculum provides opportunity to learn subjects related to various disciplines such as microbiology, genetics, statistics ,bioinstrumentation, bioinformatics etc
8	PSO8	Self employment as entrepreneurship, consultant,dealer,etc
9	PSO9	Provide intellectual leadership inlife sciences and biotechnology, which is of direct benefit to the society and nations.
10	PSO10	After completion of Post graduation Students will become responsible citizens as they learn environmental awareness, cleanliness, discipline in daily life.
11	PSO11	The student will understand and be able to explain different branches of Microbiology such as Bacteriology and Virology. The student will be able to explain about various applications of Microbiology such as Molecular Immunology, Microbial Diversity and Extremophiles, Environmental Microbiology, Industrial Microbiology, Fermentation Technology, Food Microbiology, Medical and Pharmaceutical Microbiology and Microbial Pathogenicity. The student will be able to design and execute experiments related to Basic Microbiology, Immunology, Molecular Biology, Recombinant DNA Technology, and Microbial Genetics, and will be able to execute a short research project incorporating techniques of Basic and Advanced Microbiology under supervision. The student will be equipped to take up a suitable position in academia or industry, and to pursue a career in research if so desired.

Dayanand Science College, Latur.
Programme Specific Outcomes (PSOs)
of M.Sc. Mathematics

Sr. No.	PSO No.	Programme Specific Outcomes (PSOs) of B.Sc. Mathematics
1	PSO1	Take care of fast paced development in the knowledge of mathematics.
2	PSO2	Meet the needs and requirements of the society and to enhance the quality and standards of Mathematics Education.
3	PSO3	Solve complex problems in CSIR-NET/SET/GATE
4	PSO4	Get tune with further studies of their area of interest of Mathematics
5	PSO5	Become good teacher in Mathematics
6	PSO6	Provide a broad common frame work, for exchange, mobility and free dialogue across the Inidan Mathematical and associated community.
7	PSO7	Provide multidisciplinary profile and to allow a flexible cafeteria like approach including initiating new papers to cater to frontier developments in the Subject like Mathematics.
8	PSO8	Get placed in scientific computing / Data Analyst related MNC's
9	PSO9	Provide intellectual leadership in Mathematical sciences, which is of direct benefit to the nations.
10	PSO10	Inculcate specific skills in independently comprehending, analyzing modeling and solving problems at a high level of abstraction.
11	PSO11	Create and aptitude for Mathematics in those students who show a promise for higher studies and creative work in Mathematics.
12	PSO12	Create confidence in others, for equipping themselves with that part of Mathematics which is needed for various branches of Sciences or Humanities in which they have aptitude for higher studies and original work.

Dayanand Science College, Latur.
Programme Specific Outcomes (PSOs)
Of M.Sc. Biotechnology

Sr. No.	PSO No.	Programme Specific Outcomes (PSOs) of M.Sc. Biotechnology
1	PSO1	It will help to aquire knowledge on the essential advancements of Biotechnology.
2	PSO2	Students will understand the emerging and advanced concept in life-sciences.
3	PSO3	It will help to aquire their applications in Industry, Medicine and Pharmaceutical research.
4	PSO4	PG students will be able to demonstrate the Principles of bioprocess engineering and their operations.
5	PSO5	Students will be able to demonstrate and understand basics of genetic engineering.
6	PSO6	Students will be able to understand Genomics, Proteomics and Metabolomics.
7	PSO7	Students will be able to gain hands on experience in protein expression and purification.
8	PSO8	Students will be able to gain hands on experience in upstream and downstream processing
9	PSO9	Students will able to enhance the knowledge about fundamental research and problems related to field of biotechnology.
10	PSO10	Students will able to gain knowledge on Environment, Animal, plant biotechnology and their applications.

Dayanand Science College, Latur.
Program Specific Outcomes (PSOs)
Of B.Sc. Computer Science

Sr. No.	PSO No.	Program Specific Outcomes (PSOs) Of B.Sc. Computer Science
1	PSO_1:	Program focuses on giving knowledge of computer from basics to different programming languages like C, C++, JAVA, VB.NET etc.
2	PSO_2:	It will provide the knowledge of Database, Different types of Database Software, its application & implementation in real life software's.
3	PSO_3:	It will enable the student for developing websites using different scripting languages.
4	PSO_4:	It will enable the student for developing application /software's using different programming languages.
5	PSO_5:	Program focuses on giving knowledge of Computer Skill Like java script, Linux and shell programming, R Lang, XML programming, SQL server, MySQL etc. so that students have hands on practice on such subjects.
6	PSO_6:	The students will get awareness about the new subjects like Android, Python, JSP Servlet etc. which are used in MNC
7	PSO_7:	Due to some courses like Digital Image Processing student will take initiative in research Field
8	PSO_8:	Program also focuses on giving knowledge of Basic Networking, Mobile computing so that student will select the Computer Networking field as a Career
9	PSO_9:	students will able to take up self-employment in Indian & global software market.
10	PSO_10:	Program also focuses on to Meet the requirements of the Industrial standards.

Dayanand Science College, Latur.
Programme Specific Outcome (PSOs)
of B.Sc. Chemistry

Sr. No.	PSO No.	Programme Specific Outcomes (PSOs) of B.Sc. Chemistry
1	PSO 1	To understand the fundamentals, principles, mathematical concepts and recent developments in the subject area.
2	PSO 2	To enable the students to understand basic concepts, nomenclature, functional groups, hydrocarbons, aromaticity, and fundamental term in organic chemistry.
3	PSO 3	Students are able to know the elements present in nature & its properties
4	PSO 4	The practical course is in relevance to the theory courses to improve the understanding of concepts in chemistry
5	PSO 5	To development of practical skills of the students
6	PSO 6	To promote inspire the students towards competitive exams in chemistry

Dayanand Science College, Latur.
Programme Specific Outcomes (PSOs)
of B.Sc. Zoology

Sr. No.	PSO No.	Programme Specific Outcomes (PSOs) of B.Sc. Zoology
1	PSO1	To make aware of natural resources and environment and the importance conserving the same.
2	PSO2	To develop ability for the application of the acquired knowledge in the fields of life so as to make our country self reliant and self sufficient.
3	PSO3	To appreciate and apply ethical principles to animal sciences research the studies.
4	PSO4	To develop skill in practical work, experiments, equipments and laboratory use along with collection and interpretation of animal materials and data.
5	PSO5	To expose themselves to the animal diversity amongst life forms.
6	PSO6	To develop an ability to work on their own and to make them fit for the society.
7	PSO7	To develop an scientific attitude to make students open minded, critical and curies.
8	PSO8	To impart knowledge of zoology (animal sciences) as the basic objective of education.
9	PSO9	To update the curriculum by introducing recent advances in the subject and enable the students to face NET,SET,UPSC and other competitive examination successfully.
10	PSO10	To provide an updated education to the students at large in order to know the importance and scope of discipline and to provide mobility to students from one university or state to other.

Dayanand Science College, Latur.
Programme Specific Outcomes (PSOs)
of B.Sc. Mathematics

Sr. No.	PSO No.	Programme Specific Outcomes (PSOs) of B.Sc. Mathematics
1	PSO1	Built up confidence by developing a feel for numbers, patterns and relationships.
2	PSO2	Provide with the opportunity to acquire mathematics to reach it to at leasr key stage UG level
3	PSO3	Enable us to start the postgraduate basic training of mathematics as it is a requirement of the training of Basic application of Mathematics
4	PSO4	Improve students chances of employment
5	PSO5	Solve the problems independently & interpret the results.
6	PSO6	Communicate and apply mathematical concepts to solve real life problems
7	PSO7	Understand and apply mathematical principles and their applications
8	PSO8	Develop the abilities to reason logically, to classify, to generalize and to prove
9	PSO9	Acquire a foundation appropriate to their further study of Mathematics and of other disciplines

Dayanand Science College, Latur.
Programme Specific Outcomes (PSOs)
of B.Sc. Microbiology

Sr. No.	PSO No.	Programme Specific Outcomes (PSOs) of B.Sc. Microbiology
1	PSO1	Take care of fast paced development in the knowledge of microbiology.
2	PSO2	Meet the needs and requirements of the society and to enhance the quality and standards of Microbiology Education.
3	PSO3	Solve complex problems in CSIR-NET/SET/GATE
4	PSO4	Get tune with further studies of their area of interest of Microbiology
5	PSO5	Become good teacher in Microbiology
6	PSO6	Provide a broad knowledge of skills based on microbiological techniques.
7	PSO7	Introduction of various fields like agricultural micro, medical, pharmaceutical, food microbiology, genetic engineering, environmental microbiology.
8	PSO8	Get placed in Agro, Pharma, food related industries.
9	PSO9	Provide intellectual leadership in Microbiological sciences, which is of direct benefit to the nations.
10	PSO10	Inculcate specific skills in independently comprehending, analyzing modeling and solving problems at a high level of abstraction.
11	PSO11	Create and aptitude for Microbiology in those students who show a promise for higher studies and creative work in Microbiology.
12	PSO12	Create confidence in others, for equipping themselves with that part of Microbiology which is needed for various branches of Sciences or Humanities in which they have aptitude for higher studies and original work.

Dayanand Science College, Latur
Programme Specific Outcomes (PSOs)
of B. Sc. Botany

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Sr. No.	PSO No.	Programme Specific Outcomes (PSOs) of B.Sc. Botany
1	PSO1	The program will provide an updated education to the students at large in order to know the importance and scope of the discipline.
2	PSO2	It will provide mobility to students to other university or state.
3	PSO3	It will enable the students to face NET, SET, UPSC and other competitive examinations successfully.
4	PSO4	The students will get knowledge of plant science as the basic objective of education.
5	PSO5	It will develop a scientific attitude to make students open minded, critical and curious.
6	PSO6	The students will develop an ability to work on their own and to make them fit for the society.
7	PSO7	The students will expose themselves to the diversity amongst life forms.
8	PSO8	There will be development of skill among students in practical work, experiments, equipments and laboratory use along with collection and interpretation of plant materials and data.
9	PSO9	The students will get awareness about natural resources and environment and the importance of conserving the same.
10	PSO10	The students will be able to apply the acquired knowledge in the fields of life so as to make our country self-reliant and self-sufficient.

Dayanand Science College, Latur
Program Specific Outcomes (PSOs)
Of B.Sc. Computer Science (Optional)

Sr. No.	PSO No.	Program: B.Sc. Computer Science (Optional)
1	**PSO_1**	Program focuses on giving knowledge of computer from basics to different programming languages like C, C++, JAVA, VB.NET etc.
2	**PSO_2:**	It will provide the knowledge of Database, Different types of Database Software, its application & implementation in real life software's.
3	**PSO_3:**	It will enable the student for developing websites using different scripting languages.
4	**PSO_4**:	It will enable the student for developing application /software's using different programming languages.
5	**PSO_5:**	Program focuses on giving knowledge of Computer Skill Like java script, Linux and shell programming, R Lang, XML programming, SQL server, MySQL etc. so that students have hands on practice on such subjects.
6	**PSO_6:**	The students will get awareness about the new subjects like Android, Python, JSP Servlet etc. which are used in MNC
7	**PSO_7:**	Due to some courses like Digital Image Processing student will take initiative in research Field
8	**PSO_8**:	Program also focuses on giving knowledge of Basic Networking, Mobile computing so that student will select the Computer Networking field as a Career
9	**PSO_9:**	students will able to take up self-employment in Indian & global software market.
10	**PSO_10:**	Program also focuses on to Meet the requirements of the Industrial standards.

Dayanand Science College, Latur.
Programme Specific Outcomes (PSOs)
of B.Sc. Fishery science

Sr. No.	PSO No.	Programme Specific Outcomes (PSOs) of B.Sc. Fishery science
1	PSO1	To provide skill oriented updated education to the students, to know the scope of importance of the subject.
2	PSO2	To impart basic education in fishery science
3	PSO3	To update curriculum by introducing recent advances in the subject, enable the student and fish culturist face skill oriented self development.
4	PSO4	To acquaint the students with diversities animal life.
5	PSO5	Emphasis on ecological importance of fauna
6	PSO6	To develop and ability to work hard on their own and make them fit for society
7	PSO7	Sustainable use of animals resources for the betterment of mankind without interfering the ecosystem.
8	PSO8	Making students and fish culturists aware about the recent trends in the development of fishery science
9	PSO9	To develop the skill in advanced practical work experiments, equipments and laboratory use along with collection, preservation and data interpretation of fish and fishing

Program Specific Outcomes (PSOs)

B. Sc. (Physics)

- The program will provide an updated education to the students at large in order to know the importance and scope of the discipline.
- The Program will provide the need of the students to understand the basics of Physics
- The Students will learn about the basic principles in the development of modern physics. The topics covered in the course build a basic foundation of undergraduate physics students to study the advance branches: quantum physics, nuclear physics, particle physics and high energy physics. The course contains the study of Planck's hypothesis, photoelectric effect, Compton effect, matter waves, atomic models, Schrodinger wave equations, and brief idea of nuclear physics.
- It will provide mobility to students to other university or state for Higher Education.
- It will enable the students to face MPSC, UPSC and other competitive examinations successfully.
- The accumulation of facts of nature and the ability to link the facts to observe and discover the laws of nature i.e. develop an understanding and knowledge of the basic Physics.
- The ability to use this knowledge to analyze new situations and learn skills and tools like mathematics, engineering and technology to find the solution, interpret the results and make predictions for the future developments.
- The ability to synthesize the acquired knowledge, understanding and experience for a better and improved comprehension of the physical problems in nature and to create new skills and tools for their possible solutions.
- It will develop scientific attitude to make students open minded, critical and curious to understand basic concepts.
- The students will get an ability to work on their own.
- There will be development of skill in practical work, experiments, equipments and laboratory use along with collection and interpretation of plant materials and data.
- The student should be Capable of self-paced and self-directed learning aimed at personal development and for improving knowledge/skill development and reskilling in all areas of Physics.
- The students will be able to apply the acquired knowledge in the fields of life so as to make our country self-reliant and self-sufficient.

Program Specific Outcomes (PSOs)
B. Sc. (Industrial Chemistry)

1. The programme is designed on the basis of Industrial opportunities to students which is available in large in this area.
2. It will provides jobs in various Industries viz. Sugar, Metallurgy. Petroleum, chemical, Drug and Dyes etc.
3. Student will get all types of knowledge about Industrial manufacturing process and required instruments of its
4. It motivates his research attitude, for Industrial development.
5. The student will get an ability to work on their own interest to open small scale industries in his area.
6. The students will developed his self confidence and prepare for himself to stand on his own feet.
7. Students will awareness about Environmental pollution and how it is control.
8. It is very convenient to prepare NET, SET, UPSC, MPSC , GATE and other competitive exam.
9. The course enhanced to student to face upcoming challenges and make our country self reliant.
10. The program will provide an **updated** education to the students at large in order to know the importance and scope of the discipline.
11. It will provide mobility to students to other university or state.
12. It will enable the students to face NET, SET, UPSC and other competitive examinations successfully.
13. It will develop scientific attitude to make students open minded, critical and curious.
14. There will be development of skill in practical work, experiments, equipments and laboratory use along with collection and interpretation of industries and data analysis.

Dayanand Science College, Latur.
Program Specific Outcomes (PSOs)
of B.Sc. Electronics

- The student acquires learning experiences that develop broad knowledge and understanding of key concepts of electronic science and equip students with advanced scientific/technological capabilities for analyzing and tackling the issues and problems in the field of electronics.
- The student apply knowledge and skills they have acquired to the solution of specific theoretical and applied problems in electronics.
- The student will have the abilities to design and develop innovative solutions for benefits of society, by diligence, leadership, team work and lifelong learning.
- Provide students with skills that enable them to get employment in industries or pursue higher studies or research assignments or turn as entrepreneurs.
- Prepare them with extensive knowledge of the disciplinary foundation in the various areas of Electronics, as well as insight into contemporary research and development.
- To make them capable for specialized methodological knowledge in the specialized areas of Electronics about professional literature, statistical principles and reviewing scientific work.
- It creates the ability to apply electronics knowledge & experimental skills critically and systematically for assessment and solution of complex electronics problems and issues related to communication systems, embedded systems, computers networks, robotics, VLSI Design and fabrication and other specialized areas of electronics.
- The student acquires an ability to model, simulate and evaluate the phenomenon and systems in the advanced areas of electronics.
- The student develops an ability to apply one's electronics knowledge, experimental skills, scientific methods & advanced design, simulation and validation tools to identify and analyze complex real life problems and frame technological solutions for them.
- The student acquires an ability to design and develop industrial products, processes and electronics systems while taking into account the circumstances and needs of individuals, organizations and society with focus on economical, social and environmental aspects.
- The student develops an ability to independently propose research/developmental projects, plan its implementation, undertake its development, evaluate its outcomes and report its results in proper manner.

Program Specific Outcomes (PSOs)

M. Sc. (Physics)

- The Student should get good knowledge and understanding of major concepts, theoretical principles and experintmental findings in Physics and its different subfields like Astrophysics and Cosmology, Material science, Nuclear and Particle Physics, Condensed matter Physics, Atomic and Molecular Physics, Mathematical Physics, Analytical dynamics, Space science and other related fields
- The student will acquire the ability to use modern instrumentation and laboratory techniques to design and perform experiments in almost all the fields of Physics
- The students acquire the ability to employ critical thinking and efficient problem solving skills in all the basic areas of Physics.
- The student gets ability to transmit complex technical information relating all areas in Physics in a clear and concise manner in writing and oral ability to present complex and technical concepts in a simple language for better understanding.
- The students will be Capable of working effectively in diverse teams in both classroom, laboratory, Physics workshop and in industry and field-based situations.
- The students will learn identifying/mobilizing appropriate resources required for a project, and manage a project through to completion, while observing responsible and ethical scientific conduct; and safety and laboratory hygiene regulations and practices.
- The student will be Capable of using computers for simulation studies in Physics and computation and appropriate software for numerical and statistical analysis of data, and employing modern e-library search tools like Inflibnet, various websites of the renowned Physics labs in different countries.
- The student will acquire demonstrating ability to think and analyze rationally with modern and scientific outlook and identify ethical issues related to one's work, avoid unethical behavior such as fabrication, falsification or misrepresentation of data or committing plagiarism, not adhering to intellectual property rights, and adopting objectives, unbiased and truthful actions in all aspects of work.

- The students after completion of Course will be self-paced and self-directed learning aimed at personal development and for improving knowledge/skill development and reskilling in all areas of Physics.

- The PG graduates should be able to develop a national as well as international perspective for their career in the chosen field of the academic activities.

- The student prepare themselves during their most formative years for their appropriate role in contributing towards the national development

and projecting our national priorities at the international level pertaining to their field of interest.

Dayanand Science College, Latur.
Program specific outcome (PSOs)
of M.Sc. ORGANIC CHEMISTRY

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Program Specific Outcomes

1. Global level research opportunities to pursue Ph. D. program targeted approach of CSIR–NET examination.
2. Enormous job opportunities at all level of chemical, pharmaceutical, food products, life oriented material industries.
3. Specific placements in R & D and synthetic division of polymer industries as well as in allied division.
4. To impart the chemistry knowledge of global standard.
5. Discipline specific competitive examinations conducted by different organization.

Dayanand Science College, Latur.
Course Outcomes (COs)
B. Sc. (F Y and S Y) Compulsory English

Sr. No.	Name of Paper	Course Outcomes
1	**Semester-I: Compulsory English** (Ability Enhancement Compulsory Course)**: English Communication**	1) Through responding to and composing a wide range of texts, the learners will begin to use the English language in the best possible manner. 2) Through the close study of texts, students will develop knowledge, understanding and skills in order to communicate effectively in English. 3) Learners will value and appreciate the importance of the English language as a key to learning. 4) Learners will gain the personal enrichment from study of literary pieces in English. 5) Learners will acquire ability to communicate through oral and written texts.
2	**Semester-II: Compulsory English** (Ability Enhancement Compulsory Course)**: English Communication**	1) Through responding to and composing a wide range of texts, the learners will begin to use the English language in the best possible manner. 2) Through the close study of texts, students will develop knowledge, understanding and skills in order to communicate effectively in English. 3) Learners will value and appreciate the importance of the English language as a key to learning. 4) Learners will gain the personal enrichment from study of literary pieces in English. 5) Learners will acquire ability to communicate through oral and written texts.
3	**Semester-III:** (Ability Enhancement Compulsory Course)**: English Communication**	1) The learners will be able to use the English language in a refined way for the personal and social purposes. 2) The students will attain a higher level of understanding and skills in order to carry out communicative activities. 3)Learners will be able to make practical use of the mechanics of the English language. 4)Learners will be acquiring the skill of using English for media and electronic communication. 5)The ability to communicate and interpret written texts shall be augmented.

4	**Semester-IV** (Ability Enhancement Compulsory Course)**:English Communication**	1) The learners will be able to use the English language in a refined way for the personal and social purposes. 2) The students will attain a higher level of understanding and skills in order to carry out communicative activities. 3)Learners will be able to make practical use of the mechanics of the English language. 4)Learners will be acquiring the skill of using English for media and electronic communication. 5)The ability to communicate and interpret written texts shall be augmented.

Dayanand Science College, Latur.
Course Outcomes (COs)
Of B.Sc. Fishery science

Sr. No.	Section and Paper code	Name of Paper	Course Outcomes
1	CCFS-I (Section A)	Taxonomy and general topics P-I	Knowledge about class- Pisces Knowledge about Aquatic animals with their detail classifications
2	CCFS-I (Section B)	Type study Wallago attu P-II	Specific study of Wallago attu
3	CCFS-II (Section A)	Aquaculture P-III	Culture of aquatic shellfish and finfish under controlled and semi controlled conditions
4	CCFS-II (Section B)	Fish seed production technology P-IV	Fish seeds (hatchlings, spawn, fry, fingerlings production techniques by advanced technologies
5	CCFSP-I I & II (Section A& B)	Practical based on section A & Section B of CCFS-I & CCFS-II P-V	To provides different applications of skill by advanced techniques
7	CCFS-III (Section A)	Fish diseases management	The student will be able to identify the fish diseases The student will be able to to diagnose and prevention of the diseases
8	CCFS-III (Section B)	Fish developmental biology P-VII	Student will learn about the embryology of fish The learner will be able to get knowledge about parental care and growth of the fish Student will get knowledge about fish farmin g techniques
9	CCFSP-II (CCFS III & IV (SECTION A)	Practical based on P- VI & P- VIII (P-X)	Student is able to identify fish pathogens He will able to identify fresh and spoiled fish Student is known about different fish by product and preservation methods
10	CCFSP-II (CCFS III&IV (Section B)	SEC–I I Skill/optional	Students can manufacture fish by products They acquired knowledge fish preservation methods

11	CCFS-IV (Section A)	Fish preservation and fish by production technology VIII	Students get knowledge about different techniques in preparation of preservation Students will start their own business
12	CCFS-IV (Section B)	Fishing craft and gear technology IX	Learner is able about the knowledge of fabrication of nets and boats Students are getting practicle knowledge by the study of fishing gears and crafts .
13	CCFSP-III (CCFS- III & IV	Practical based on P- VI & P- VIII (P-(X)& XI	Students will in identifying fish pathogens, fish diseases , fish preservation methods fabrication of fishing nets
14	CCFSP-III (CCFS- III & IV (Section B)	SEC II (I Skill/ optional)	To study different models to enhance the skill by application
15	DECFS-I (Section A)	Mericulture& Indian fisheries P-XII	To study Culture of one or more species for commercial purpose in sea or brackish water To study of different commercially important species in india and their total production
16	DECFS-I (Section B) Elective	Aquaculture Techniques and fish nutrition P-XIII	To study Advanced techniques of culture of aquatic animals and new technologies to culture, exploit and use them To study different fish feed, fish feed ingredients, nutritional values and feeding ratios
17	DECCFS-I (DECFS –I & II (Section A)	Practical based on P- XIII & P- XV (P-XVI)	To provides different applications and models of skill by advanced techniques
18	DECCFS-I (DECFS –I & II (Section B)	SEC III (I Skill/optional)	To study different models to enhance the skills by advanced techniques
	DECFS-II (Section A)	Aquarium keeping & fish Genetics P-XIV	To study different ornamental fishes used in aquarium To study the different verities of aquarium fishes To study fish genetics and new genetic verities of aquarium fish species
	DECFS-II (Section B)	Fish economics marketing, Co-operative and Extension P-XV	To study the economical values of commercially important fishes in india To study fish and fish market and market

			economics To study different co operative organization in india To study extension activities in fisheries in india
	DECFSP-II DECFS-I & II (Section B)	Practical based on P- XIII & P- XIV (P-XVII)	To provides different applications and models of skill by advanced techniques
	DECFSP-II (Section B)	SEC IV (PROJECT)	To study different models to enhance the skills by advanced techniques

Dayanand Science College, Latur.
Course Outcomes (COs)
Of B.Sc. Botany

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Sr. No.	Section and Paper code	Name of Paper	Course Outcomes
1	I (CCB-IA)	Viruses, Bacteria, Algae, Fungi, Lichens and Mycorrhiza	• The students will understand the morphology, structure and importance of various organisms. • They will be able to differentiate between various groups of viruses, bacteria, algae, fungi, lichens and mycorrhiza. • They will learn the life cycles of individuals belonging to viruses, bacteria, algae, fungi, lichens and mycorrhiza.
2	II (CCB-IB)	Plant Ecology, Phytogeography and Environmental Biology	• The students will able to understand the ecological principles, interactions taking place in the ecosystems and the flow of energy. • They will acuire knowledge about the concept of phytogeography and its relation with other disciplines.
3	III (CCB-IIA)	Bryophytes, Pteridophytes, Gymnosperms and Paleobotany	• The students will learn the life cycles of individuals belonging to bryophytes, pteridophytes and gymnosperms.. • They will learn about process of fossil formation and fossil plants.
4	IV (CCB-IIB)	Taxonomy of Angiosperms	• The students will get proficiency with the basic terminology of plant morphology. • They will be able to identify the major families of plants and their economic importance. • The students will understand the methods of collecting and preserving plants.
5	V (CCBP-I)	Practical paper based on theory papers of CCB-I and II	• The students will develop skill of temporary preparation of plant specimens. • They will develop skill of permanent preparation of plant specimens. • They will understand the morphology, structure and life cycle of various organisms.
6	VI (CCB-IIIA)	Plant Anatomy	• The students will be able to understand the meristem (RAM & SAM), different

			simple and complex tissues and secondary growth in root and stem. • The students will acquire knowledge of anatomy of root, stem and leaf in dicot and monocot plants.
7	VII (CCB-IIIB)	Plant Physiology and Biochemistry	• The students will gain the knowledge of water and nutrient uptake, movement in plants, role of mineral elements, translocation of sugars, Role of various plant growth regulators, phytochrome in plants. • Students shall learn different types of biomolecules and secondary metabolites. • Students will learn the flowering physiology, vernalization and seed dormancy in plants.
8	SECB-I(A)	Fruit and Vegetables Processing	• The students will get knowledge about preservation methods of fruits and vegetables. • They will be introduced with skill of processing and preservation of different fruits and vegetables.
9	VIII (CCB-IVA)	Plant Embyology	• This course will be able to demonstrate foundational knowledge in embryology of plants. • The students will be able to understand the development of pollen, ovule, and fertilization and palynological information.
10	IX (CCB-IVB)	Plant Metabolism and Biochemistry	• The students will be able to understand the various metabolic processes such as photosynthesis, respiration, nitrogen metabolism etc. which are important for life. • The students shall become familiar with the gene cloning and its transfer in plants • They shall learn different databases and their applications.
11	X (CCBP-II)	Practical paper based on theory papers-VI and VIII	• The students will study types of tissues in plants. • They will be able to prepare of permanent slides of angiosperms for study of internal structures. • The students will learn about structure of anther, ovule and types of ovules in plants.

			• They will learn the structure of embryo and types of endosperm.
12	XI (CCBP-III)	Practical paper based on theory papers-VII and IX	• The students will get knowledge about different bio-physico-chemical phenomena like osmosis, plasmolysis and permeability. • They will learn to estimate glucose, protein and oil content from plant material. • They will understand method of measurement of plant growth. • The students will be expert in quantitative analysis of biomolecules and secondary metabolites in plants. • They will gain the knowledge of tools in genetic engineering and bioinformatics.
13	SECB-II(A)	Nursery and Gardening	• The students will learn gardening skills. • They will get knowledge about methods of vegetative propagation. • They will acquire knowledge of ornamental plants and garden designs.
14	XII (DSEB-IA)	Plant Physiology	• The students will gain the knowledge of water and nutrient uptake, movement in plants, role of mineral elements, translocation of sugars, Role of various plant growth regulators, phytochrome in plants. • Students shall learn different types of biomolecules and secondary metabolites. • Students will learn the flowering physiology, vernalization and seed dormancy in plants.
15	XIII (DSEB-IB)	Plant Pathology-I	• The students will learn the fundamentals of plant pathology. • They will study the factors involved in plant disease development. • The will get knowledge about enzymes and toxins in plant pathogens. • The students will acquire basic knowledge of identification of plant diseases and their control measures.
16	SECB-III(A)	Floriculture	• The students will get knowledge about fundamentals of floriculture and its scope. • They will study propagation of flowering plants of commercial interest. • They will learn skill of cultivation of flowering plants among the students.
17	XIV	Plant	• The students will be able to understand

	(DSEB-IIA)	Metabolism, Biochemistry and Biotechnology	the various metabolic processes such as photosynthesis, respiration, nitrogen metabolism etc. which are important for life. • The students shall become familiar with the gene cloning and its transfer in plants • They shall learn different databases and their applications.
18	XV (DSEB-IIB)	Plant Pathology-II	• The students will get the knowledge of aerobiology and seed pathology. • They will learn about defense mechanism in plants. • They will know the methods of plant disease management. • The students will get knowledge of identification of plant diseases and their control measures.
19	XVI (DSEBP-I)	Practical paper based on theory Papers-XII and XIV	• The students will get knowledge about different bio-physico-chemical phenomena like osmosis, plasmolysis and permeability. • They will learn to estimate glucose, protein and oil content from plant material. • They will understand method of measurement of plant growth. • The students will be expert in quantitative analysis of biomolecules and secondary metabolites in plants. • They will gain the knowledge of tools in genetic engineering and bioinformatics.
20	XVII (DSEB-II)	Practicals based on theory Papers-XIII and XV	• The students will study methods of isolation and cultivation of plant pathogens. • They will be able to measure the size of fungal spores. • The students will know the effect of environmental factors and fungicides on plant pathogens. • They will gain knowledge about various plant diseases with slide preparation.
21	SECB-IV(A)	Fruits and Vegetables Processing	• The students will get knowledge about preservation methods of fruits and vegetables. • They will be introduced with skill of processing and preservation of different fruits and vegetables.

Dayanand Science College, Latur.
Course Outcomes (COs)
Of B.Sc. Microbiology

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Sr. No.	Section and Paper code	Name of Paper	Course Outcomes
1	CCMB I (Section A	Introductory Microbiology (PI))	• Scope and distribution of microorganism in detail. • Historical development of microbiology. • Characteristics of microorganism and their classification.
2	CCMB I (Section B)	Fundamentals of Microbiology (PII)	• Detailed study of microscope. • Study the basic structure of bacterial cell. • Concept of sterilization and their types. • Nutrition of microorganism.
3	CCMB II (Section A)	Basic Microbiology & Bio-molecules (PIII)	• Different staining techniques used in microbiology. • Detailed study of viruses with respect to structure and classification. • Study of structural and functional properties of biomolecules.
4	CCMB II (Section B)	Microbial Physiology (PIV	• Cultivation and maintenance techniques of bacterial cultures. • Study of uptake mechanism of nutrients. • Detailed study of growth, reproduction and sporulation of bacteria.
5	CCMBP I [CCMB I & II (Section A & B)]	Practical's based on Section A & Section B of CCMB I & CCMB II (PV)	• Introduction to microbiology laboratory equipments. • Differential staining techniques of bacteria. • Preparation of media and isolation techniques for bacterial culture. • Study of qualitative estimation of biomolecules.
6	CCMB III (Section A)	Applied Microbiology (P-VI)	• Applied microbiology trains students for gaining expertise in the microbial world and the way it interacts with humans. It looks at how we can harness and utilize the powers of the microbes in areas ranging from air, water and sewage microbiology to Milk Microbiology and

			extends to industrial applications. A wide range of microbial by-product production, quality assessment and health hazard monitoring is possible by students who get well versed in this course.
7	CCMB III (Section B)	Immunology(P - VII)	• Understand the basic components of the immune system and how this system serves to protect the host against disease-causing microbes. Understand Concept related to cells and organs related to immune system, Immunity, Immune response and immune mechanism of both Immunity & Hypersensitivity.
8	CCMBP II [CCMB III & IV (Section A)]	Practical's based on P-VI & P-VIII (PX)	• Methods of examination of water, air, food, milk. • Ammonification, Nitrification. • Study of Rhizobium and Azotobacter.
9	CCMBP II [CCMB III & IV (Section B)]	SEC I (1 Skill/ optional)	• Water borne infections and analysis • Water quality monitoring. • Food and milk quality.
10	CCMB IV (Section A)	Food, Soil Microbiology and Microbial Ecology (PVIII)	• To apply the knowledge of microorganisms causing food spoilage, pathogens that may cause disease post cooked or storage, those used to produce fermented foods such as cheese, yogurt, bread, beer, and wine, meat and meat products, fruits vegetables and those with other useful roles such as producing probiotics. Understand of principles of soil science, microbiology, and the chemistry and physics of natural elemental cycles, which maintain the balance of our ecosystem. Describe significance of soil fertility, appreciate role of soil microorganisms which play essential roles in the nutrient cycles that are fundamental to life on the planet. Illustrate and explain how microbes are responsible for cycling nutrients through the environment, creating important

			symbiotic relationships, providing energy in the absence of sunlight, and digesting the food we eat.
11	CCMB IV (Section B)	Medical microbiology (PIX)	• Impart Knowledge of the diverse places where microbiology is involved. Understanding of diverse Microbiological processes. Basic skills such as culturing microbes, maintaining microbes, safety issues related to handling of microbes, Good Microbiological practices etc. Moderately advanced skills in working with microbes such as Pathogens.
12	CCMBP III [CCMB III & IV (Section B)]	Practical's based on PVII & P-IX (PXI)	• Staining and counting methods of different cells in blood. • Detailed study of Salmonella spp. And Vibrio spp. • Antibiotic sensitivity testings.
13	CCMBP III [CCMB III & IV (Section B)]	SEC II (1 Skill / optional)	• Diagnosis of diseases. • Collection, examination of different sample.
14	DSEMBI (Section A)	Microbial Genetics (P – XII)	• DNA as genetic material: History, properties of genetic material, chemical stability of DNA and structure of prokaryotic chromosomes. • Prokaryotic DNA replication. • Molecular recombination in Bacteria. • Genetic exchange in bacteria.
15	DSEMB I [Section B I] OR DSEMB I [Section B II]	Microbial Metabolism (P – XIII A)	• Classification and properties of enzymes. • Michaelis-menten equation, enzyme inhibition. • Microbial metabolism • Energy transformations in Microorganisms. • Microbial fermentations.
16	DSEMB II (Section A)	Molecular Biology (P-XIV)	• Genetic expressions, genetic code, ribosomes. • Mutation and repair mechanisms. • Regulation of gene expression in prokaryotes. • Molecular techniques and applications.
17	DSEMB II [Section B I] OR DSEMB II [Section B	Industrial Microbiology (P – XVA)	• Basic concepts of Bioreactor and its types. • Strain improvement, stock cultures, screening techniques, inoculum development.

	II]		• Down stream processing. • Fermentative production of wine, citric acid, penicillin, thuricide, glutamic acid.
18	DSEMBP I [DSEMB I & II Section A]	Practicals Based on P – XII & P - XIV (P -XVI)	• Purification and quantitative estimation of DNA. • Effects of UV radiations. • Gene expression study experiments. • Conjugation, isolation of autotrophic mutants.
19	SECMB III (A OR B)	Molecular Biology Techniques (B)	• Enzymes involved in genetic engineering. • Hybridization techniques. • Cloning vectors and cloning methods.
20	DSEMBP II [DSEMB I & II (Section B I & II)	Practicals based on P -XIII A & B & P – XV A & B (P -XVII)	• Estimation of sugars, aminoacids. • Production of amylase, citric acid, biofertilizers. Screening of antibiotic producers, organic acid producers, antibiotic producers.
21	SECMB IV (A OR B)	Good Manufacturing Practices (B)	• Agro based bioprocesses • Food and diary bioprocesses • Industrial effluent treatment. • Anaerobic treatment process.

Dayanand Science College, Latur.
Course Outcomes (COs)
Of B.Sc. Mathematics

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Sr. No.	Section and Paper code	Name of Paper	Course Outcomes
1	CCM-1 Section-A	Differential Calculus	• Knowledge of differential calculus with higher order and its applications. • Studies of different mean value theorem and solution of indeterminate. • Application of partial derivatives in real world problems.
2	CCM-1 Section-B	Algebra and Trignometry	• Description of basics properties of matrices and its applications. • Algebra of matrices its working Procedure for system homogeneous equations. • Detailed study of trigonometric functions, circular functions hyperbolic functions etc.
3	CCM-2 Section-A	Integral Calculus	• Integrations and its standard forms with reeducation formulae. • The study integral of transcendental functions. • Solution of areas of curves using multiple integrals
4	CCM-2 Section-B	Geometry	• The enhancement in the study of co-ordinates , plan Geometry. • Representation of line and its equations in the different forms. • Study of sphere and theorem related to sphere cones, cylinder etc.
5	CCMP-1 Based on CCM-1 & 2	Practical on MATLAB	• Introduction to the MATLAB softwear and its application. • Solution of problems of algebra using MATLAB. • Plotting the graphs of different function using MATLAB.
6	CCM-3 Section-A	Real Analysis - I	• Write down the operations on sets and functions for real valued functions. • Description of real number and its sequences.

			• Study of series of real numbers and its convergence, absolute convergence.
7	CCM-3 Section-B	Group Theory	• Introduction to group theory and examples on group • Describe subgroup and cyclic group & properties on quotient groups. • Study of Homomorphism image & Cauchy's theorem for abelian group &automorphism.
8	CCM-3 Section-C	Ordinory Differential Equations	• Study of the first order differential equation. • Introduction to initial value problems for homogeneous equation & linearly independent & dependent. • Application of linear equation with variable coefficient & solution of the homogeneous equation.
9	SECM-I	Skill	• Introduction to mathematical software • Study of scilab software & overview & console of scilab. • Scilab features as programming language.
10	CCM-4 Section-A	Real Analysis - II	• Introduction to Riemann integral and conditions of integrability with examples. • Study of fundamental theorem of calculus &mean value theorem &improper integrals. • Study of series such as Fourier series such as Fourier series. Trigonometric series
11	CCM-4 Section-B	Ring Theory	• Introduction to ring theory and special classes of rings. • Study of ideals & quotient ring with examples. • Describing Euclidean ring & polynomial over the rational field.
12	CCM-4 Section-C	Partial Differential Equations	• Forming partial differential equation & Lagrange's linear equation with examples. • Introduction to Charpit's method Linear homogeneous partial differential equation with example • Application of wave equation by D'Alembert's method & one dimensional beat flow.
13	SECM-II	Skill	• Introduction to matrices in scilab. • Study of operator such as colon (:) dollar ($). • Study of some common functions for linear algebra.
14	DSEM-5	Metric Spaces	• Introduction of metric space & open &

	Section-A		closed set with examples. • Study of convergence & completeness & uniform continuity. • Study of compactness and connectedness.
15	DSEM-5 Section-B	Linear Algebra	• Study of vector spaces & linear independence & bases. • Introduction of inner product spaces with application • Study of linear transformation & application of characteristics toots.
16	DSEM-5 Section-C	Mechanics - I	• Introduction of force action and a particle. • Study of equilibrium of forces acting on a particle. • Application of forces acting on a rigid body & system of forces acting upon a rigid body.
17	SECM-III	Skill	• Calculation of partial Differential equations using Mathematical software. MAPAL, MATHEMATICA, LINGO etc. • Applications of Mathematical software's. • Study of financial of Mathematics and its project.
18	DSEM-6 Section-A	Numerical Analysis	• Introduction of differences operators, interpolation with equal intervals. • Study of properties of divided differences. • Introduction to general quadrature formulas, trapezoidal & Simpson's one – third & three eight rules.
19	DSEM-6 Section-B	Laplace Transformation	• Introduction of Laplace transform and application of Laplace transform of integral of f(t). • Study of inverse Laplace transforms & solution of differential equation by Laplace transforms. • Application of Fourier sine & cosine integrals & Fourier complex integral.
20	DSEM-6 Section-C	Mechanics - II (Dynamics)	• Introduction to kinematics & dynamics of a particle in two dimensions with application • Study of kinetics of a particle 4 conservation of linear momentum. • Description of motion of a projectile & motion in resisting medium.
21	SECM-IV	Skill	• Knowledge of insurance Mathematics. • Solving problems in numerical analysis using Mathematical Software.

Dayanand Science College, Latur.
Course Outcomes (COs)
Of MATLAB Training program (COC)

Sr. No.	Section and Paper code	Name of Paper	Course Outcomes
1	MATLAB 1	MATLAB programming for engineers	• Study of advantages in MATLAB for the engineering process. • Formulation of MATLAB programs in natural life problems • Input output functions in MATLAB
2	MATLAB 2	MATLAB an introduction with applications	• Programming for two dimensional plotting • Programming for three dimensional plotting with mesh and surface plots. • Solving and Equation with multi variable functions.
3	MATLAB 3	MATLAB and its applications in engineering	• Basics of MATLAB, Character set, data Types, built-in functions. • Writing programs and functions of a polynomials • Linguistic variables and membership functions for fuzzy oppression, washing machine problems.
4	MATLAB 4	MATLAB COC Practical Paper-1	• Calculation of problems for algebraic functions • Plotting the graphs of 3D, 2D function with the surface. • Calculation of the problems related to the natural life using MATLAB
5	MATLAB 5	MATLAB COC Practical Paper-2	• Find out left and right limit of different functions using MATLAB. • Calculation of derivation and integration using MATLAB. • Evaluation of beta, gamma functions and its problems using MATLAB

DayanandScience College, Latur.
Course Outcomes (COs)
of B.Sc. Zoology

Sr. No.	Section and Paper code	Name of Paper	Course Outcomes
1	CCZ-I Section-A	Life &diversity animals-I (non- chordata)	• Knowledge about invertibrates • Study of different invertebrate phyla
2	CCZ-I Section-B	Cell biology	• To give knowledge about microscope and cell structure and functions • To study about different cell organelles .
3	CCZ-II Section-A	Life & diversity of animals –II (chordata)	• Knowledge about vertibrates • Study of different vertebrate phyla
4	CCZ-II Section-B	Developmental biology	• To give knowledge about development of embryo • To study about the development of frog chick and stem cells .
5	CCZP-I	Practical paper (CCZ-I&II)	• To provide application of the skill about identification of animals and different techniques .
7	CCZ-III Section-A	Physiology	• On successful completion of the course, the students will be able to 1. Monitor their blood pressure and identify blood groups. 2. Understand function and types of heart & circulatory system. 3. Appreciate the basic function of kidney, main function of nerves. 4. Acquire knowledge on the nature and functions of hormones and learn the mechanism of hormone action. 5. Learn the structure and functions of Endocrine glands. 6. Understand the structure, development and function of reproductive organs in human.
8	CCZ-III Section-B	Biochemistry	• On successful completion of the course, the students will be able to 1. Understand the chemical structure and functions of various biomolecules 2. Learn the signaling of biomolecules in cell membrane. 3. Understand the correlation between metabolism of different types of biomolecules

9	CCZ-IV Section-A	Cell biology,Genetics,	• . On successful completion of the course, the students will be able to 1. Understand the structure and function of the cell as the fundamentals for understanding the functioning of all living organisms. 2. Understand structures and various cellular functions associated with the macromolecules found in cells. 3. Acquire knowledge of Mendelian Genetics and its Extension. 4. Graduates will be able to explain and interpret various processes, phenomena, states and evolutionary tendencies at a biological system level. •
10	CCZ-IV Section-B	Evolutionary biology and genetic engineering	• On successful completion of the course, the students will be able to 1. Understand the theories and concepts of evolution. 2. Learn the process of evolution in animals. 3. Understand the patterns of evolutionary changes in animals. 4. Understand the organization and functions of genetic material in the living world. 5. Understand the Recombinant DNA Technology.
11	CCZP-II Section-A	Practical based on theory paper VIII &IX	• Students would be able to prepare temporary squash preparations of onion root tips for mitosis. 2. Demonstrate the genetic traits in Man. 3. Ability to culture Drosophila flies in the laboratory. 4. Ability for mounting of salivary glands of Drosophila larvae. 5. Students are able to understand the outline of Genetic Engineering. 6. Ability to Learn the role of Genetic Engineering in biology.
12	CCZP-II Section-B	Practical based on theory paper VIII& IX	To study applications in biochemistry, histology and endocrinology
13	SEC-II	SEC-II Anyone skill from skill URINOLOGY	1. Ability to describe function of human urinary system. 2. Skill to collect, preserve, process and store urine samples. 26 3. Skill to perform physical, chemical and microscopic examination of urine samples. 4. Ability to document findings of urine examination/analysis..
14	SEC-II	SEC-II Anyone skill from skill APICULTURE	Ability to understand and describe the life stages and social organization of honey bee species. 2. Ability to correctly explain and perform bee rearing, farming and

			harvesting practices. 3. Appreciate the economic importance of derivative benefits and byproducts of apiculture. 4. To identify and take remedial measures against the different bee diseases and predators
15	DSEZ-V Section-A	Ecology & zoogeography	To understand and appreciate the interactions of organisms with their environments and the consequences of these interactions for population, community, and ecosystem dynamics. To be aware of the current environmental issues with an understanding of the basic ecological concepts involved. To study the local and geographical distribution and abundance of organisms (habitat niche, community, bio-geography). To understand the inter-relationship between individuals in population and communities (population ecology). To study the structural adaptations and functional adjustment of organisms to their physical environment To study the conservation and management of natural resources and pollution (applied ecology).
16	DSEZ-V Section-B	Aquaculture	To introduce student to various types of aquaculture and culture methods. To obtain knowledge of fishery science, with a particular emphasis on the biology, assessment, and management of fish and invertebrate fisheries. To create awareness about manmade hazards to aquaculture. To elaborate the role of Larvivorous fishes in relation to public health.

17	DSEZ-VI Section-A	Ethology, Biometry ,& Bioinformatics	To study the behaviourorganism under natural conditions (Ethology). To understand the concepts of Biometry. To get acquainted with and apply the fundamentals of applied statistical methodology. To give students an introduction to the basic practical techniques of bioinformatics. To emphasize the application of bioinformatics and biological databases for problem solving in real-life & research. To familiarize student with the use of a wide varety of internet applications, biological database and to enable them to apply these methods under various situations.
18	DSEZ-VI Section-B	Pisciculture	To exchange and circulate information, ideas and practical experience on all matters relating to fisheries and their

			management. To enable students with Fishery specific knowledge for entering PG courses or fishery industries. To establish and maintain an appropriate Branch and Specialist section structure to meet the local, specialist and overall needs of fisheries interests.
18	DSEZP-I Section-A	Practical based on theory paper XII & XIV	To improve the skills of students in microscopy, whole mount preparation, observations, drawings and laboratory techniques. To acquaint the students with operations of the different laboratory equipment. To equip the student with the necessary skills in standard operating procedures for laboratories and handling of chemicals, reagents and glassware. To instill an understanding of the methods and protocols for handling and maintenance of animals for experiments. To provide basic practical skills and experience in using laboratory techniques in experimentation. To train the students in the analysis of experimental data with statistical and computer aided techniques. To induct the students in the activity of field observation of natural phenomena and organisms through excursion and drafting of reports in a scientific and objective manner. To equip the students with the understanding of taxonomy and other aspects of different organisms so that they become capable of classifying any given organism, at least up to the level

			of Order.
19	DSEZP-I Section-B	SEC-III(1Skill/Optionnal)	**SECZ –III (F) : Vermiculture and Vermicomposting:** The introduction of this skill in the curriculum is with the objective that the learners should be able to do vermiculture in a systematic way and also be able to get hands on experience in all related activities till vermicomposting. This will increase the awareness and skill availability in the need of the day viz. organic farming.

Dayanand Science College, Latur.
Course Outcomes (COs)
Of B.Sc. Chemistry

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Sr .No.	Section&Paper code	Name of paper	Paper No.	Programme Specific Outcomes (PSOs)
			SEMISTER-I	
1	CCC I (Section -A)	Organic + Inorganic Chemistry	**P-I**	After completion of syllabus students will be able to understand following outcomes. 1. Student should learn basic concept of organic chemistry, Nomenclature. 2. Student get well acquainted with functional group in organic chemistry. 3. To understand the basic concepts and differences aliphatic hydrocarbons. 4. To know about term cycloalkane ,cycloalkene and diene. 5. Learn and practice about organic compounds with their names. 6. Students learn some exceptional electronic configuration, trends and Periodicity in the following properties like atomic size, ionization energy, electron affinity & electro negativity. 7. Understand the inert gases forms compounds, different fluoride compounds of xenon. 8. Understand periodic properties with respect to atomic radii, ionization potential, Electron affinity and Electro negativity.
2	CCC I (Section -B)	Physical + Inorganic Chemistry	**P-II**	1. Developed Numerical Solving Skill through Mathematical Concepts. 2. She/he knows about adsorption and absorption phenomenon and its application. 3. Inculcate the states of matter and its properties with respective its structures. 4. Learn about calculation of oxidation state and balancing of redox reaction. Also he got knowledge about the chemistry of S-block elements.

SEMISTER-II				
3	CCC II (Section -A)	Organic + Inorganic Chemistry	**P-III**	Outcomes: After completion of syllabus students will be able to understand following outcomes. 1. Student should learn the concept of aromatic hydrocarbons, Aromaticity and antiaromaticity. 2. Student should understand the phenols and synthesis of phenols 3. Student knows about the haloalkene and haloarenes compounds. 4. To know the concepts of carboxylic acids and their derivatives. 5. To know about the types of alcohols and reaction of epoxide. 6. To study the different properties of P- block elements. 7. To know the acids & Bases by different concepts.
4	CCC II (Section -B)	Physical + Inorganic Chemistry	**P-IV**	1. Imparted knowledge about the liquid state and colloidal states. 2. Students know about structure of atom through Bohrs Model, Destitution of electron in shell and sub shell through various principle and rules. 3. Students knows concept of catalyst and catalysis. 4. Understanding of structure, Bonding and stereochemistry through concept of hybridization and various theories.
5	CCCP-I(CCC-I&II) (Section – A&B)	Organic + Inorganic Chemistry	**P-V**	1.Developed skills in different laboratory titrations and the theory behind titrimetric analysis 2.Understand various laboratory techniques employed 3.Developed basic knowledge regarding the evaluation of analytical data 4.To learns about various synthesis techniques. 5.To study about industrially important organic chemicals. 6.Understand basic metallurgical operations 7. Study the importance of certain inorganic materials

SEMISTER-III				
6	CCC III (Section -A)	Organic + Inorganic Chemistry	**P-VI**	Learn the mechanism of name reactions. Know the Synthesis, and Reactions of Aromatic Carboxylic and Sulphonic acids. Know the Synthesis, and Reactions of Organometallic compounds. Learn the synthesis, mechanism, applications of active methylene compounds. Gathering basic knowledge of Oils, Fats, Soaps and Detergents. Understand the basic principle and application of Qualitative Analysis. Know the Classification, Properties of Non-aqueous solvents.
7	CCC III (Section -B)	Physical + Inorganic Chemistry	**P-VII**	After completion of these courses students should be able to, Write an expression of Davisson-Germer experiment. Derive Schrondinger wave equation. Understand De-Broglie's hypothesis and uncertainty principle. Solve the numerical problems based on De-Broglie. Understand concept of entropy. Understand statements of first, second and third law of thermodynamics. Know the meaning of phase, component and degree of freedom. Know the nuclear structure & different energy of nuclear. Understand the different steps & procedure in the gravimetric separation method
8	CCCPII [CCC III&IV] (Section -A)	Practica ;s based on P-VI&P-VIII	**X**	Organic chemistry 1.To develop skills required for the qualitative analysis of organic compounds 2.To study unit operations and processes such as; Filtration, 2. Crystallization
9	SECC-I	SEC-I Anyone skill from optional	–	
SEMISTER-IV				

10	CCC IV (Section -A)	Organic + Inorganic Chemistry	**P-VIII**	Learn the stereoisomerism of Chiral compounds. Know the Classification, and Reactions of carbohydrates. Know the Synthesis, and Reactions of Nitrogen Compounds. Gathering applications of Reagents in Organic Synthesis. Understand the Characteristics of d-Block Elements. Know the Characteristics of d-Block Elements.
11	CCC IV (Section -B)	Physical + Inorganic Chemistry	**P-IX**	After completion of these courses students should be able to, Know the rate constant and factors affecting rate of reactions. Write an expression for rate constant (K) for first order, second order reaction. Know the terms cell constant, specific conductivity, equivalent conductivity and molar conductivity. Know the applications of Kohlrausch's law. Compare between thermal and photochemical reactions. Discuss different types of photochemical process. Know the preparation, properties, structure & application of different compounds. Discuss different inter halogen compounds by preparation, properties, structure and uses.
12	CCCP-III [CCC III&IV] (Section -B)	Practical's based on P-VII&P-IX	**XI**	After completion of this course students should be able to, Calculate normality and strength of the solution using potentiometer and conductivity meter. Find pka value on pH meter. Verify Lamberts-Beer's law colorimetrically and determine unknown concentration of the solution. Determine energy of activation. Determine heat of solution. Study the effect of solute on CST of phenol-water system. Determine the enthalpy of ionization of weak acid / weak base. Determine partition coefficient. Separations of elements from each other &

				analysis by volumetric method.
13	SECC-I	SEC-I Anyone skill from optional	_	Skill developed about preparation and standardization of solutions
SEMISTER-V				
14	DSEC-V (Section -A)	Organic + Inorganic Chemistry	**P-XII**	1. Developed theoretical knowledge about aromatic and non aromatic five, six and fused heterocyclic compounds with respect to its preparation, properties and applications. 2. Impart the fundamentals about drugs, dyes and its application. 3. Inculcate knowledge about alkaloid, vitamin and pesticides. 4. Students knows about terminologies and theories in co-ordination chemistry, also knows about use of different transition metals in medicines.
15	DSEC-V (Section -B) (Elective)	Physical + Inorganic Chemistry OR Elective paper Physical + Inorganic Chemistry	**P-XIII B-1** **P-XIII B-2**	1. Developed theoretical knowledge about various spectroscopic techniques. 2. Students understand the bonding ,structure and properties of organometallic compounds and metal carbonyl.
16	DSEC-IV [DSEC P-V&VI] (Section -A)	Practical's based on P-XII&P-XIV	**P-XVI**	Students understand estimation of organic compounds And organic qualitative analysis.

17	DSEC P-III SEC-III Anyone skill from optional	A)Applied analytical Chemistry OR A) Computer application in chemistry	_	1.Students understand application of Chem – Draw software in chemistry. 2. Students understand applied techniques.
			SEMISTER-VI	
18	DSEC-VI (Section -A) (Elective)	Organic + Inorganic Chemistry OR Organic + Inorganic Chemistry	**P-XIV-A1** **P-XIV-A2**	1. Developed theoretical and practical skills about elucidation of organic molecule though UV, IR, NMR spectroscopic techniques. 2. Study of amino acids and peptides. 3. Knows about VBT,CFT for structure and bonding in co-ordination compounds and electronic transition spectra.
19	DSEC-VI (Section -B)	Physical + Inorganic Chemistry	**P-XV** **P-XIII B-2**	1.Understanding of theoretical knowledge thermodynamics, Electrochemistry. 2. Students knows about structure and function of biological molecule ,also knows the structure and bonding in metal clustre
20	DSEC-IV [DSEC P-V&VI] (Section -B)	Practical's based on P-XIII&P-XV	**P-XVII**	Students known about handling of instruments like colorimeter, Potentiometer, P^H meter.
21	DSEC-	Practica	_	. Students known about handling of

	IV (Section -B)	l's based on Elective		instruments like colorimeter, potentiometer,P^H meter ,also known about separation of binary mixture and estimations of metal in the solution
22	DSEC P-IV SEC-IV Anyone skill from optional	A)spectroscopic techniques and Cosmetic preparations OR A) Basic analytical Chemistry	–	1. Developed theoretical knowledge about aromatic and non aromatic five, six and fused heterocyclic compounds with respect to its preparation, properties and applications. 2. Skill developed in Synthetic method for cosmetics.

Dayanand Science College, Latur.
Course Outcomes (COs)
of B.Sc. [CS]-FY

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Semester First

Sr. No.	Section and Paper code	Name of Paper	Course Outcomes
1	BCS-101	Basic of Computer Science	• To learn Basic Function of Devices like I/O, HDD etc. • To Understand the Fundamental of Software and Hardware. Understand the Concept of Operating System and Network.
2	BCS-102	Computer Network	• To study of structure of programming languages, structure of c program. • To study different keyword for making program. • To develop programs using operators and control statement. • To describe an array. • Student are able to develop application software.
3	BCS-103	Web Technologies	At the end of the course, students should be able to: Design and implement dynamic websites with good aesthetic sense of designing
4	BCS-104 (Elective)	A (Elective) Office Automation	After completion of this course student will be able to understand the computer software, hardware, made available to simplify and automate a variety of office operations such as data processing, data manipulating and data presentation with various application those are presents in Microsoft office tools packages.

		B(Elective) Fundamentals of Digital Electronics	• After studying this course the students would gain enough knowledge:- • Can have a thorough understanding of the fundamental concepts and techniques used in digital electronics. • To understand and examine the structure of various number systems and its applications in digital design. • The ability to understand, analyze and design various combinational and sequential circuits. • To develop skill to build and troubleshoot digital circuits.
5	BCS-305	A (Open Elective) University recognized MOOC (NPTEL / SWAYAM / others)	
		OR Intra / Inter Departmental courses OR BCS-305 B (Open Elective) Numerical Abilities	• Solve mathematical problems using analytical methods; • Solve mathematical problems using computational methods; • Students can develop design and analyze numerical techniques to approximate solutions to problems .
6	BCS - 105	Open Elective A : University recognized MOOC (NPTEL / SW A Y AM / others) OR Intra / Inter Departmental courses **OR** Open Elective B: Communication Skills-1	• Understand and demonstrate Basic English usages for their different purposes. • Clear entrance examination and aptitude tests. • Write various letters, reports required for professional life.

Dayanand Science College, Latur.
Course Outcomes (COs)
of B.Sc. [CS]-FY

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Semester Second

Sr. No.	Section and Paper code	Name of Paper	Course Outcomes
1	BCS-201	Operating System	Fundamental understanding of the role of Operating Systems. To understand the various memory management techniques To apply the cons of process/thread scheduling To understand the concept of a process and thread.
2	BCS-202	Introduction to Programming Language Using C Part – 2	To describe a function, storage classes, structure, union, string and functions, Pointers, File Handling, Student are able to develop application software
3	BCS-203	Database Management System	students will be able to think of ER modelling and creation of own database schema.
4	BCS-204 (Elective)	A (Elective) : Desktop Publishing	• Create personal documents such as business cards and resumes. • Create business documents such as flyers and advertisements. • Create a newsletter with graphics and draw objects. • Create a course project illustrating Desktop Publishing techniques
		B (Elective) 8085 Microprocessor	• To understand CICS and RISC based Microprocessor. • To understand techniques for faster execution of instruction and increase speed of operation of 8085 Microprocessor. • Write programs to run 8085 Microprocessor based system.

5	BCS-205 (Open Elective)	A (Open Elective): University recognized MOOC (NPTEL / SWAYAM / others) OR Intra / Inter Departmental courses	• Understand and demonstrate Basic English usages for their different purposes. • Clear entrance examination and aptitude tests. • Write various letters, reports required for professional life.
		B(Open Elective): Communication Skills-2	• Understand and demonstrate Basic English usages for their different purposes. • Clear entrance examination and aptitude tests. • Write various letters, reports required for professional life.

DayanandScience College, Latur.
Course Outcomes (COs)
of B.Sc. [CS]-SY

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Semester Third

Sr. No.	Section and Paper code	Name of Paper	Course Outcomes
1	BCS-301	Object Oriented	• Ability to explain the difference between object oriented programming and procedural programming concepts . • Ability to program using object oriented features such as inheritance and polymorphism, , operator overloading, dynamic memory allocation, file I/O, exception handling, etc • Ability to apply object oriented techniques to solve computing problems.
2	BCS-302	Computer Network	• After completing this course the student get the knowledge and ability to: • Understand basic computer network technology. • Students can identify the different types of network topologies and protocols. • Students can Identify the different types of network standards
3	BCS-303	Data Structure and Algorithms	• Ability to analyze algorithms and algorithm correctness. • Ability to summarize searching and sorting techniques • Ability to describe stack, queue and linked list operation. • Ability to have knowledge of tree and graphs concepts.
4	BCS-304 (Elective)	A (Elective) Discrete Mathematics	• Apply mathematical foundation to the discipline of Computer Science.
		Mathematical Technique in Computer Science (MTCS)	• Able to use standard mathematical techniques to solve elementary problem. • Understand the nature of mathematical proof & be able to write clear & concise proof.
5	BCS-305	A (Open Elective) University recognized MOOC (NPTEL / SWAYAM /	

		others)	
		OR Intra / Inter Departmental courses OR BCS-305 B (Open Elective) Numerical Abilities	• Solve mathematical problems using analytical methods; • Solve mathematical problems using computational methods; • Students can develop design and analyze numerical techniques to approximate solutions to problems .

DayanandScience College, Latur.
Course Outcomes (COs)
of B.Sc. [CS]-SY

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Semester Fourth

Sr. No.	Section and Paper code	Name of Paper	Course Outcomes
1	BCS -401	Programming in JAVA	• The knowledge of the structure and model of the Java programming language. • To use the Java programming language for various programming technologies • To develop software in the Java programming language.
2	BCS-402	Software Engineering	• Ability to learn various methods of software development • Ability to apply various software testing techniques
3	BCS-403	Relational Database Management System	• To study the basic concepts of relational databases • Learn and practice data modeling using the entity-relationship and developing database designs. • Understand the use of Structured Query Language (SQL) and learn SQL syntax for writing queries. • Apply normalization techniques to normalize the databases.
4	BCS-404 (Elective)	A (Elective) Principle of Compiler Design	• To understand overall design of compiler with their types and phases. • To understand the basic concept of essential syntactic elements and identifying those elements. • One can easily construct the recognizer system for language constructs as a input. • Understanding context free grammar. • Understanding various parsing techniques and intermediate code.
		B (Elective) Essentials of Computer Security	• To develop a basic understanding of cryptography • To develop a basic understanding of security policies. • To develop a basic understanding of authentication and access control • To determine mechanism for protecting information

5	BCS-405 (Open Elective)	A (Open Elective) University recognized MOOC (NPTEL / SWAYAM / others) OR Intra / Inter Departmental courses	•
		Logical Reasoning	• Identify logical relations among statements. • Analyse logically complex statements into their truth functional or quantificational components • This enable students to develop their ability to reason by introducing them to elements of formal reasoning

DayanandScience College, Latur.
Course Outcomes (COs)
of B.Sc. [CS]-TY

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Semester Fifth

Sr. No.	Section and Paper code	Name of Paper	Course Outcomes
1	S5.CC.1	Windows Programming with C#.NET	• To impart the knowledge on basics concepts of object oriented programming. • To outline the various characteristics of c#. • To provide the familiarity in the concept of developing window application. • To converse an idea of creating application using ADO.Net. • To convey the idea of CLR and .Net framework
2	S5.CC.2	Python Programming	• To impart the knowledge on basics concepts of object oriented programming. • To outline the various characteristics of Python. • To provide the familiarity in the concept of developing web based & game application. • To converse an idea of creating application using Database Handling. • To convey the idea of Python Machine learning concept.
3	S5.CC.3	Java Server Pages(JSP) and Servlet	• Awareness of existing demanding trends in IT industry in order to get placement & research • Understand the JSP, Servlet and MVC architecture • Install and use appropriate tools for JSP and Servlet development, including IDE, Web Server etc. • Build user interfaces with JSP, Servlet Java Beans and MVC and more.

4	S5.CC.5 (Core Course Elective)	I (Elective) **Operating System**	• Fundamental understanding of the role of Operating Systems. • To understand the concept of a process and thread. • To apply the cons of process/thread scheduling. • To apply the concept of process synchronization, mutual exclusion and the deadlock. • To realize the concept of I/O management and File system. • To understand the various memory management techniques
		II (Elective) Mobile Communication	• Evaluate the usability of mobile devices such as smart phones. • Select appropriate wireless technologies in commercial and enterprise applications. • Assess the capabilities of next generation networks and role of mobile technologies.
		III(Elective) Distributed Computing	• Distinguish between distributed computing and parallel computing. • Understand concepts of architectural Styles, Communication, and Synchronization. • Demonstrate different naming & synchronization technologies • Explore various distributed concepts.
5	S5.SEC.1 (Skill Enhancement Course - 1)	JavaScript	• Use operators, variables, arrays, control structures, functions and objects in JavaScript. • Identify popular JavaScript Libraries. • Use regular expressions for form validation. • Use Array, Math and String methods to access proper data. • To build dynamic web pages and web applications.
6		Linux and Shell programming(Skil l Enhancement)	• Awareness of existing demanding trends in IT industry in order to get placement & research in open source market. • Understand the Linux OS

			architecture. • Install and use different types of distributions available in market..
7		R Programming	• Access online resources for R and import new function packages into the R workspace • Import, review, manipulate and summarize data-sets in R • Explore data-sets to create testable hypotheses and identify appropriate statistical tests • Perform appropriate statistical tests using R • Create and edit visualizations with R
8	S5.Lab.1	Windows Programming with C#.NET	• To impart the knowledge on basics concepts of object oriented programming. • To outline the various characteristics of c#. • To provide the familiarity in the concept of developing window application. • To converse an idea of creating application using ADO.Net. • To convey the idea of CLR and .Net framework.
9	S5.Lab.2	Python Programming	• To impart the knowledge on basics concepts of object oriented programming. • To outline the various characteristics of Python. • To provide the familiarity in the concept of developing web based & game application. • To converse an idea of creating application using Database Handling. • To convey the idea of Python Machine learning concept.

10	S5.Lab 3	Java Server Pages(JSP) and Servlet	• Awareness of existing demanding trends in IT industry in order to get placement & research • Understand the JSP, Servlet and MVC architecture. • Install and use appropriate tools for JSP and Servlet development, including IDE, Web Server etc. • Build user interfaces with JSP, Servlet Java Beans and MVC and more.

DayanandScience College, Latur.
Course Outcomes (COs)
of B.Sc. [CS]-TY

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Semester Sixth

Sr. No.	Section and Paper code	Name of Paper	Course Outcomes
1	S6.CC.1	Cloud Computing	Awareness of existing demanding trends for Clouds and Virtualizations in the IT industry in order to get placement as well as in research
2	S6.CC.2	Android Programming	• Awareness of existing demanding trends in IT industry in order to get placement & research • Understand the Android OS architecture. • Install and use appropriate tools for Android development, including IDE, device emulator, and profiling tools. • Understand the Android application architecture, including the roles of the task stack, activities, & services. • Build user interfaces with fragments, views, form widgets, text input, lists, tables, and more.
3	S6.CC.3	Digital Image Processing	• Review the fundamental concepts of a digital image processing system. • Analyze images in the frequency domain using various transforms. • Evaluate the techniques for image enhancement and image restoration. • Categorize various compression techniques. • Interpret Image compression standards. • Interpret image segmentation and representation techniques.

4	S6.CC.4	Software Engineering	• Ability to learn various methods of software development. • Ability to apply various software testing techniques
5	S6.CC.5 (Core Course Elective)	I (Elective) :Software Testing	• Determines the correctness, completeness and quality of software being developed. • Technical documentation is well organized using testing.
		II (Elective) **Data Mining & Data Warehousing**	Process raw data to make it suitable for various data mining algorithms. Discover and measure interesting patterns from different kinds of databases. Apply the techniques of clustering, classification, association finding, feature selection and visualization to real world data.
6		III(Elective) Cyber Security	• Explain the concepts of confidentiality, availability and integrity (CIA) in context of Information Assurance. • Understand the objectives of IT Act and Cyber Law. • Understands Encryption and decryption methods. • Understand Digital signature and it‟s technical aspects. • Understand the concept of Domain Name Disputes ,Cyber squatting and Reverse Hijacking. • Will understand cybercrimes such as hacking and other offences.
7	S6.SEC.1	XML Programming	• Use XML Markup and Core Concepts. • Use of Document Models: A Higher Level of Control. • Use different template rules. • To build dynamic web pages and web applications.
8		SQL Server	Detailed understanding of MS SQL Server database. oKnowledge of writing SQL queries. oKnowledge of DDL, DML, DCL commands o Knowledge of maintaining relation between table and database normalization.

			oUnderstanding different numerical, string handling and date handling function.
9		MySQL	Detailed understanding of MySQL database. oKnowledge of writing SQL queries. oKnowledge of maintaining relation between table and database normalization. oUnderstanding different numerical, string handling and date handling function.
10	S6.Lab1	Android Programming	• Awareness of existing demanding trends in IT industry in order to get placement & research • Understand the Android OS architecture. • Install and use appropriate tools for Android development, including IDE, device emulator, and profiling tools. • Understand the Android application architecture, including the roles of the task stack, activities, & services. • Build user interfaces with fragments, views, form widgets, text input, lists, tables, and more.
11	S6.Lab2	Digital Image Processing	• Review the fundamental concepts of a digital image processing system. • Analyze images in the frequency domain using various transforms. • Evaluate the techniques for image enhancement and image restoration. • Categorize various compression techniques. • Interpret Image compression standards. • Interpret image segmentation and representation techniques

Subject Industrial Chemistry

Courses Outcomes

B.Sc FY

Paper – I, Unit operations-I

Objective (S)	To acquire basic knowledge about Fluid Mechanics-I: . Transportation and Metering of fluids: Manometers, U-tube manometer, Inclined Manometer, Differential Manometer, Continuous gravity decanter.
Course Outcome(S)	
CO1	To learn the various Organic Methods for.Classification of fluids, Properties of fluids, Fluid Pressure, Pressure
CO2	Explain the VariousTypes of flow, Laminar flow, Shear Rate and Shear Stress, Turbulence-Reynolds number & Transition from Laminar to Turbulent flow, Reynolds experiment.
CO3	Intercepts the theoretical & Experimental Methods : Equation of Continuity, Bernoulli's equation, Pump work in Bernoulli's equation and its application
CO4	To Illustrate the synthesis& reaction : Classification of Pump, Developed head, Power requirement, Suction lift and cavitations, Positive- displacement pumps, Reciprocating pumps, Rotary pumps, Centrifugal pumps, Centrifugal pump theory, Ideal pump, .
CO5	Know the application, types Principle, Construction and Working, Advantages and Disadvantages of Venturimeter ,Orificemeter , Pitot Tube, Rotameter..

Unit operations-II

Objective (S)	To acquire basic knowledge about Heat Transfer .
Course Outcome(S)	
CO1	To learn the various Organic Methods for. Heat Transfer Classification Basic law of Conduction, Thermal conductivity, Compound resistances in series, Heat flow through a Cylinder
CO2	Explain the VariousTypes Classification of Convection.. Radiation: Absorptivity, Reflectivity and Transmissivity, Krichhoff's law, Laws of black body radiation, Steafan-Boltsmann law, Heat Transfer by radiation.
CO3	Intercepts the theoretical & Experimental Methods Introduction, physical & Chemical Properties of Glass, Characteristics, Raw Materials, Chemical Reactions, Methods of Manufacture of Glass & Uses.
CO4	To Illustrate the synthesis& reaction : Introduction ,manufacture of pulp,chemicalprocess,sulphate of pulp,sulphatepulp,Rag pulp Manufacture of Paper, Caladering, Uses of Pape, .

CO5	Know the application, types Principle, Introduction, Composition, Types of Cement, Raw Materials, Manufacture of Cement by Wet & Dry Process, Reactions in the Kiln, Setting of Cement, Testing & Uses of Cement..

Process Calculations-I

Objective (S)	To acquire basic knowledge about Units and Dimensions: Introduction, Dimensions & Systems of Units, Fundamental Quantities, Derived Quantities, Conversions& Problems.
Course Outcome(S)	
CO1	To learn the various Organic Methods for. Introduction, Mole, Atomic Mass & Molar Mass, Equivalent Mass, Solids, Liquids & Solutions, Important Physical, Properties of Solutions,
CO2	Explain the VariousTypes Classification of Classification of Material Balance Problems, Material balances without chemical reactions, Outline of Procedure for Material Balance Calculations, Distillation, Evaporation, Absorption, Extraction, Drying,
CO3	Intercepts the theoretical & Experimental Methods IntroductionStoichiometry, Stoichiometric Equations, Stoichiometric Coefficients, Stoichometric ratio, Limiting reactant, Excess reactant, Conversion, Yield and Selectivity and Problems on Material Balances with Chemical Reactions..

Process Calculations-II (Stoichiometry)

Objective (S)	To acquire basic knowledge about Forms of Energy, Kinetic Energy, Potential Energy, Internal Energy, Heat, Work, General Energy Balance Procedure, Energy Balances on Closed Systems, Heat Capacity, Relation between Cp&Cv for an Ideal Gas
Course Outcome(S)	
CO1	To learn the various Organic Methods for. Introduction, Mole, Atomic Mass & Molar Mass, Equivalent Mass, Solids, Liquids & Solutions, Important Physical, Properties of Solutions Empirical equation for Heat Capacities, Mean Molal Heat Capacities of Gases, Heat Capacities of gaseous mixture, Enthalpy Changes Accompanying Chemical Reactions, Heat of Reaction, Heat of Formation, Standard Heat of Formation, Heat of Combustion, Hess's law of Constant Heat Summation, standard Heat of reaction from heat of formation, Standard Heat of Reaction from Heats of Combustion, E,
CO2	Explain the VariousTypes Classification Fuels. recycling-meaning & purpose Recycle Stream, Recycle Operation –block diagram, Purging Operation, Recycle reactor with purge,,
CO3	Intercepts the theoretical & Experimental Methods Petroleum, Composition & Classification, Definition of Flash Point & Fire Point, Knocking, Octane Number, Aniline Point, Refining of Petroleum, Cracking, Thermal &

	..
CO4	Water Analysis: Chemical & Physical Examination of Water, Chemical Substances affecting potability, Colour, Turbidity, Odour, Taste, Temperature, pH, Conductivity, Suspended Solids, Acidity, Alkalinity, Free Chlorine, Calcium & Magnesium,

Subject Industrial Chemistry

Courses Outcomes

B.Sc Ty

Unit Process in Organic Synthesis (P-XII)

Objective (S)	To acquire basic knowledge about Synthesis of Organic Products by Nitration, Amination by Reduction, Halogination,Sulphonation, Sulfation , & Polymerization.
Course Outcome(S)	
CO1	To learn the various Organic Methods for Industrial synthesis of Nitro Derivative & Methods of Nitration.
CO2	Explain the Various Industrial Methods of reduction of Nitro Compounds to Amine.
CO3	Intercepts the theoretical & Experimental Methods of Chlorination, Bromination, Fluorination,&Iodinations.
CO4	To Illustrate the synthesis& reaction Mechanism method of Sulfonation&Sulfation of Benzene,Napthalene ,Anthraquinone .
CO5	Know the application, types & Industrial Synthesis Method of Polymerization.

Process Equipment Design, Process Instrumentation(P-XIII)

Objective (S)	To enable students to acquires basic knowledge in scope of equipment design& process Instrumentation.
Course Outcome(S)	
CO1	Know the importance of distillation process , types of distillation & different types Fractionating Column.
CO2	Understand the basic types of Agitators, Baffling&classification of Reaction Vessel.
CO3	Study the Corrosion.
CO4	Introduction &Application of Various types of Thermometers , Radiation & Pyrometers
CO5	Introduction &Application of Various types of Manometers, Diaphragm or Capsule type sensors, Pressure Gauges.

Chemical Engineering Thermodynamics (P-XIII)

Objective (S)	To enale the students to acquire basic knowledge in scope of thermodynamics & Classification of Energy
Course Outcome(S)	
CO1	To understand the basic concepts of Thermodynamics ,Physical Parameters like Pressure,Volume,temperatureetc& Lows of Thermodynamics.
CO2	Analyze the PVT Behavior of pure substances various types of Reactions & Standard heat of formation.
CO3	Know the theory & application of thermodynamics,thermodynamic properties
CO4	To Illustrate the Classification of Various Combustion Engines, JET Engines ,Rocket Engines .
CO5	Calculation of Enthalpy, Work done etc.

SEC IIIFermentation ,Pesticides&Cosmetics Perfumes Industry

Objective (S)	Creative awareness among students about the importance of various unit process in Inorganic Synyhesis
Course Outcome(S)	
CO1	Know the importance synthesis of ammonia ,Nitric acid & Urea & various polymer, polyvinyl Chloride ,Phenol formaldehyde & Epoxy Polymer
CO2	Explain the Various Industrial Methods of reduction of Nitro Compounds to Amine.
CO3	Understand the classification , types & Synthesis of Drugs.
CO4	Study the applications ,Classification& application of Dyes.
CO5	Analyse the Application of Industrial Safety various types of Fire Extiguisher

Spectroscopy Chromatography & Plant Utilities(P-XV) B1

Objective (S)	To Familiarize the students with the concepts & Principle of Spectroscopy ,Chromatography & Plant Utilities
Course Outcome(S)	
CO1	To learn the basic concepts of Electromagnetic Waves & study of UV, IR, NMR, Mass spectroscopy
CO2	Understanding the Column Chromatography ,Paper Chromatography, TLC, Calculate RF Values
CO3	Know the sources of Water, Industrial Treatment of Water
CO4	Explain the types, Classification of Industrial Steam generator
CO5	Explain the types, Classification of Industrial Boiler

Plant Design & Economics for Chemical EngineersTheory Paper-XV credits:02

Objective (S)	To study the Plant Design &Economics for Chemical Engineers
Course Outcome(S)	

CO1	To learn the International System of Units
CO2	Explain the process Design Development. To Know the Design Information the Litereture.
CO3	Intercepts the theoretical Knowledge Plant Location, Pant Layout Structural Design
CO4	To Illustrate the Cash Flow for Industrial Operations ,CostEstimation,Interest&Investement Cost .

Industrial Skill for Data Analysis

Objective (S)	To acquire basic knowledge about Analysis of Data.
Course Outcome(S)	
CO1	To replicate analysis of analytical Data.
CO2	Explain the Precision & Accuracy &solve problem on it
CO3	To Illustrate Concept of Error & solve problem on it
CO4	Learn the Test for Rejection of Data &Solve problem on it
CO5	Know the averages.& Solve Problem on it.

Subject Industrial Chemistry

Courses Outcomes

B.Sc SY

Unit Operations – III

Objective (S)	To acquire basic knowledge about General Overview – Introduction to Mass Transfer operations, Benefits, General Principles of Mass Transfer, Importance & Classification of Mass Transfer Operations.
Course Outcome(S)	
CO1	To learn the various Distillation Introduction, Flash Distillation, Simple Distillation, Steam Distillation, Rectification, Material Balances in Plate Columns, Number of Ideal Plates,
CO2	Explain the VariousTypes ofLiquid Extraction Terminology, Introduction to liquid-liquid extraction, Applications of Liquid-Liquid Extraction, Principles of liquid-liquid equillibria, Triangular diagrams, Types of extraction system, I & II, Temperature effects on systems types, Solvent selection, Commercial extraction system, Typical extraction system, Extraction calculations-Single Stage Operations
CO3	Intercepts the theoretical & Experimental Methods Introduction, Design of Packed Towers, Contact between Liquid & Gas, Pressure drop & limiting flow rates, Principles of absorption material balances, Limiting gas-liquid ratio, Temperature variations in packed towers
CO4	To Illustrate the synthesis& reaction : Classification of Pump, Developed head, Power requirement, Suction lift and cavitations, Positive- displacement pumps, Reciprocating pumps, Rotary pumps, Centrifugal pumps, Centrifugal pump theory, Ideal pump, .
CO5	Know the application, types PrincipleCrystallization Importance of Crystal Size, Crystal Geography, Crystallographic systems, Invariant Crystals, Principles of Crystallization, Purity of Product, Equillibria& its yields, Enthalpy Balances, Super Saturation, Units of Super Saturation, Temperature differential as a potential, Nucleation-Origins of Crystals in crystallizers, Primary nucleation, Homogeneous nucleation, Equilibrium, Kelvin Equation, Rate of nucleation, Heterogeneous nucleation, Secondary nucleation, Contact nucleation, Crystal Growth-Individual

Chemical Reaction Engineering

Objective (S)	To acquire basic knowledge about Typical Chemical Process, Classification of reactions, Variable Affecting the Rate of Reaction, Definition of Reaction Rate.

Course Outcome(S)	
CO1	To learn the various Organic Methods forThe rate equation, Concentration-Dependent Term of a rate equation, Single & multiple Reactions, Elementary & Non elementary reactions, Molecularity & Order of Reaction, Rate Constant(K), Representation of an Elementary Reaction, Representation of Non elementary Reaction, Kinetic Models for Non elementary Reactions-free radicals, ions & polar substance,
CO2	Explain the VariousTypes Classification Interpretation of Batch Reactor Data Introduction of Batch Reactor, Constant-Volume Batch Reactor, Analysis of Total Pressure data obtained in a Constant-Volume System, Integral Method of Analysis of Data, Irreversible UnimolecularType First Order Reactions, Irreversible Bimolecular-Type Second Order Reactions, Zero Order Reactions, Overall Order of Irreversible Reactions from the Half-Life t1/2, Irreversible reactions in Parallel, Homogeneous Catalyzed Reactions
CO3	Intercepts the theoretical & Experimental Methods Broad Classification of Reactor Types, Material balance for an element of Volume of the reactor, Energy balance for an element of Volume. Size Comparison of Single Reactors, Batch Reactor, Mixed versus Plug Flow Reactors, First & Second Order Reactions,

Unit Operation IV

Objective (S)	To acquire basic knowledge about Drying of Solids 13 Periods Introduction, Classification of Dryers, Solid handling in dryers, Principles of DryingTemperature Pattern in dryers, Heat Transfer in dryers, Heat duty, Heat Transfer Coefficient, Heat Transfer Units, Mass Transfer in Dryers, Phase Equillibra-equillibrium moisture and free moisture, Bound & unbound
Course Outcome(S)	
CO1	Evaporation Introduction, Liquid Characteristics, Types of Evaporators, Performance of Tubular Evaporators, Evaporator Capacity, Boiling Point Elevation and Duhring Rule, Effect of liquid head & friction on temperature drop, Heat Transfer Coefficient, Overall Coefficient, Evaporator economy, Enthalpy balance for single effect evaporator
CO2	Explain the VariousTypes Classification Interpretation of Batch Reactor Data Introduction of Size Reduction Introduction, Principles of Comminution, Criteria for comminution, Characteristics of comminuted products, Energy & Power requirements in comminution, Crushing efficiency, Empirical relationship-Rittingers& Kicks Law,
CO3	Intercepts the theoretical & Experimental Methods Broad Classification Metallurgy 12 Periods Introduction, Occurrence of Metals, Ore dressing, Ion Exchange method in metallurgy, Solvent Extraction Method in Metallurgy. Metallurgy of Iron: Occurrence

	Manfacturing of Cost Iron, Vertities of Cost Iron, Physical and Chemical Properties, uses.

(Pollution Monitoring and Control)

Objective (S)	To acquire basic knowledge Industrial emission, liquids and gases, pollution caused by various chemical industries and its overall effect on quality of human life and environment, environmental legislation, water (prevention and control of pollution) Act 1974 its implication
Course Outcome(S)	
CO1	To learn the various Nature of industrial effluents, gaseous and liquid effluents, methodsof gas analysis, analysis of CO, SO2, NOx, S, Cl2 in the gaseous effluents. Methods of removal of pollutants from gaseous effluents, particulate matter, particle size analysis. AAS applications process for waste water, particle size analysis in waste water, analysis of waste water the free
CO2	Explain the VariousTypes ofWaste Water Treatment: Biodegradable materials and removal of pollutants by microorganisms, methods of waste water treatments, analytical studies, food for microorganisms in waste water,
CO3	Intercepts the theoretical & Experimental Methods Introduction, Removal of Heavy toxic metals Chromium, mercury, lead, cadmium, arsenic, analytical methods of determination of small amounts of metal pollutants, copper recovery, treatment of waste water to remove heavy metals,

दयानंद विज्ञान महाविद्यालय ,लातूर

द्वितीय भाषा मराठी

अभ्यासक्रमाचीउद्दिष्टे (Course Outcome Marathi)

B.sc.l. Sem -l (अक्षरलेणीPaper -l)

1. मराठी साहित्याचीआवड निर्माण करणे

2.मराठी वाङ्मयनिर्मितीच्याप्रेरणांची उकल करणे.

3. मध्ययुगीन व आधुनिक मराठी गद्य-पद्यांचेकालविशिष्ट स्वरूप विशेष समजूनसांगणे.

4. मराठी प्रमाण लेखनविषयकनियमाबद्दलजागृतीघडवणे .5.मराठी व्याकरणातीलशब्दांच्याजातीचा परिचय करूनदेणे.

6.भाषाज्ञान करूनदेणे.

B.sc.l. Sem -ll(साहित्यशिल्पPaper -ll)

1 ..मराठी भाषा व साहित्य याविषयीअभिरुची निर्माण करणे.

2.. विविध वाङ्मयप्रकाराचीओळखकरुनदेणे.

3. भाषा उपयोजनाचे स्वरूप स्वरूपसमजावूनसांगणे.

4. विविध जीवनमूल्ये व कलामूल्येयांचा परिचय करूनदेणे.

5.. विद्यार्थ्यांचेव्यक्तिमत्त्व विकसित करणे.

B.sc.ll. Sem -lll (अक्षरविद्याPaper -lll)

1. मध्ययुगीन व आधुनिक मराठी गद्य व पद्यांचे स्वरूप विशेष समजूनघेणेआणि सांस्कृतिक पार्श्वभूमीसमजूनघेणे.

2. मराठी वाङ्मयनिर्मितीच्याप्रेरणांची उकल करणे.

3. मराठी साहित्याचीआवड निर्माण करणे.

4. मराठी शब्दालंकार याचा परिचय करूनदेणे.

5. मराठी प्रमाण लेखनविषयकनियमाबद्दलजागृतीघडवणे.

B.sc.ll. Sem -lV (साहित्यसरिताPaper -lV)

1 .विद्यार्थ्यांची भाषिकजाणीव समृद्ध करणे.

2. मराठी साहित्याची परंपरा व स्वरूपाचा परिचय करूनदेणे.

3.. विद्यार्थ्यांचे वैचारिक पोषण करणे.

4. मराठी साहित्याचीआवड व मातृभाषाभिवृद्धीकरणे.

5.मराठी भाषाउपयोजनकरणे.

डॉ.शेटकाररामशेट्टी राजेंद्र

मराठी विभाग प्रमुख

दयानंद विज्ञान महाविद्यालय ,लातूर

Sr. No.	Section and Paper code	Name of Paper	Course Outcomes
1	CCEI-A	Basic Electronics and Network Analysis (P-I)	• Understand the current voltage characteristics of semiconductor devices, • Able to understand the phasor diagram. (understanding of electronics in mathematics point of view) • Design and analyze of electronic circuits, • Evaluate frequency response to understand behavior of Electronics circuits.
2	CCEI-B	Basic Digital Electronics (P-II)	• Gain knowledge and evaluate the Boolean expressions, combinational logic circuits and simplifications using Karnaugh maps. • Understand different types of number systems and codes. • Perform different number system interconversion. • Perform different types of Boolean operations. • Analyze digital system design using IC. • Simplify the Boolean equation using Karnaugh map techniques. • Understand basic arithmetic circuits using Gates.
3	CCEII-A	Semiconductor Devices and Electronic Instruments (P-III)	• Understand the fundamental concepts of diodes and difference between different types of semiconductor diodes. • Understand the Voltage-Current characteristics of

			different transistor configuration. • Construct a power supply. • Operate a multimeter and understand several applications of multimeter. • Understand to operate CRO and internal working of CRO.
4	CCEII-B	Digital Logic Circuits (P-IV)	• Analyze the operation of decoders, encoders, multiplexers, adders and subtractors. • Understand the working of latches, flip-flops, designing registers, counters, a/d and d/a converter. • Design and Analyze synchronous and asynchronous sequential circuits. • Students learn to analyze and compare algorithms for efficiency using Big-O notation. • Students implement projects requiring the implementation of the above data structures.
5	ELEC V: Paper – V	Laboratory Course Work	• Identify the different electronic components viz, Resistors, Capacitors, Inductors, transformers. • Understanding of basic Gates using ICs. • Able to understand rectifiers and their characteristics • Understanding of different diodes and their operations. • With the help of different ICs student can perform different combinational circuits.
6	CCC-III Section-A P– VI	Amplifiers, Oscillators&Multivibratos	• A student will learn about basics of load lines and D.C bias circuits in electronics. • A student will learn how to bias a transistor and different

		P – VI	biasing circuits used in electronics. • A student will learn about small signal amplifiers and analyse CE amplifier CB amplifier CC amplifier by using h parameters. • A student get basic information about sine wave oscillators and design and construct a different sine wave oscillators like Hartley, Colpit's, phase shift Wien's bridge etc. • A student gets knowledge and details of Multivibrators working and construction and different sweep circuits**.**
7	CCC-III Section-A P– VII Section-B	Fundamental of microprocessor	• A student gets information about microprocessor its internal structure, pin diagram and its application (especially 8085 microprocessor). • A student learns the instruction set of 8085 microprocessor and addressing modes in brief. • A student is able to write simple programmes of data transfer and arithmetic operations and can execute them. • A student study about Intel 8086 microprocessor. • A student learns internal structure, functional pin diagram and features of Intel 8086 microprocessor.
8	CCEP-II Section-A	Practical based on P-VI and P-VII	• Understanding of operational amplifier and its uses it different circuits • How to use op-amps as inverting and non inverting amplifiers. • Application of IC 555 timer. • Study of different forms of oscillators and oscillator's study using op-amp. • Can perform different practical

			related to multivibrators.
9	CCESI (Section A) OR Section-B	Skill Enhancement Course- I (SEC-I) OR Skill Enhancement Course-II	• Enhancement of students measurement skills like SI to CGS conversions • Can operate vernier caliper, screw guage. • How to operate both analog and digital multimeters. • Operate cathode ray oscilloscope and how to find frequency, time period, voltage using CRO. **OR** • Understanding of basics of semiconductors and diodes. • Study of Light Dependent Resistor (LDR), its construction and working. • Student will able to understand how to determine radius of curvature of Lens using Spherometer. • Able to understand the use of laser source to find slit width and radial spacing of CD. To understand the polarization and how to find angle of polarization.
10	CCEIV Section-A Paper-VIII	Op- Amp its application and some special IC's	• A student learns about internal block diagram of Op-Amp 741 IC and related parameters. • A student learns the application of Op-Amp and its modes of operation. • A student knows about active filters and its design. • A student learns about IC 555 timer and can construct circuit of astable, monostable and bistablemultivibrator circuit.
11	CCE-IV Section-B	Microprocessor Interfacing	• A student learns the interfacing concept and data transfer

			scheme in 8085 microprocessor. • A student study about functional pin diagram, block diagram of different interfacing chips like 8253, 8255, 8259, 8257, etc. • A student get an idea about application of microprocessor like interfacing switches, LED, Relay, etc. • A student gets knowledge of analog to digital and digital to analog converter (0808) and its interfacing using IC 8255.
12	CCEP-III Section-A	Paper No. XI Practicals based on P-VIII and P-IX	• Study of ALP to transfer a data from one location to another location. • Understanding of ALP for addition and subtraction of bits and bytes. • Able to find compliments using ALP. • Study of multiplication and division using ALP. • How to generate square wave using IC 8255.
13	CCESII (Section A) OR Section-B	Skill Enhancement Course- I (SEC-I) Electrical Circuits & Network Skills OR Skill Enhancement Course-II Renewable Energy & Energy Harvesting	• Students learn basic principles of electricity such as voltage, current, resistors, power. • Get familiarized with multimeter, ammeter and voltmeter. • Understanding off different parameters of Op-Amps and transducers. • Students will learn to use LCR meter. **OR** • Students will learn the importance of solar energy. • Understanding of applications of solar energy. (Solar water heater, solar distillation, solar

			cooker, solar green houses) • Able to understand piezoelectric energy harvesting. • Understand the use of thermoelectric modules for energy conversion
14	DECE-I (Section A) (P-XII)	Communication Electronics-I (Compulsory	• Understand different blocks in communication system and how noise affects communication using different parameters. • Distinguish between different amplitude modulation schemes with their advantages, disadvantages and applications. • Analyze generation and detection of AM signal and comparison between amplitude and angle modulation schemes. • Sample analog signal and recover original signal without any distortion. • Differentiate between different pulse modulation and demodulation techniques and signal multiplexing for various applications.
15	DECE-I (Section B) Elective (P-XIII-B)	Introduction to Microcontroller (8051)	• A student will get information about 8051 microcontroller and its internal structure, pin diagram and working of different blocks. • A student learns about its instruction set addressing modes and programming modes of 8051 microcontroller. • A student get knowledge of special function registers in 8051 microcontroller. • A student can write and execute assembly language programs on arithmetic, logical branching and looping etc. using Keil software.
16	SEC-III	SEC-III(A): Linear Circuit Designing	• Students will learn the basics

		OR SEC-III(B): PCB Designing	of some electronic components and circuits of practical importance. • The students will get a skill of circuit designing for a given requirement. • Students will get their hands on circuit assembling, testing and troubleshooting. • Understanding of Load regulations and line regulations of power supply. • Students can design different types of oscillators. **OR** • Students will get idea of circuit drawing. • Know various steps involved in PCB production. • Understand and handling of various tools and software used for PCB designing. • Will get their hands on soldering and de-soldiering methods
17	*DECE-II (Section A)	Communication Electronics-II (P-XIV) (Compulsory)	• Identify different radio receiver circuits and role of AGC. • Discriminate different Radars, find applications and use of its supporting systems. • Understand evolution of mobile communication generations 2G, 3G, and 4G with their characteristics and limitations. • Apply the fundamental principles of optics and light wave to design optical fiber communication systems. • Differentiate losses in optical fiber link and state transmission characteristics of optical fiber.
18	DECE-II [(Section B)	Microcontroller 8051 Programming and Interfacing	• A student learns about I/O port programming of 8051. • A student gets knowledge

	Elective]	(P- XV-B)	about timer/counter programming of 8051. • A student can do serial port programming of 8051. • A student learns interrupt programming of 8051. • A student gets basics knowledge of interfacing various peripheral devices to 8051.
19	SEC-IV	SEC-IV(A): Digital Logic Design OR SEC-IV(B): Programming Skill in 'C'	• Student learns fundamentals of Digital Logic Design. • Understanding of designing of a given combinational logic circuit. • Student studies designing of a given sequential logic circuit. • Get fundamental knowledge of PLDs. **OR** • Student will understand fundamentals of C language • Develop the skill of decision making & looping control structure. • Student Studies the functions, arrays, string in C language. • Students develop software skill by writing programs in 'C' based on some problems. • Student can write C program for any given task.

20	DECEP-I (Section A) P-XVI	Practicals based on P-XII and P-XIV	• Students will understand class C amplitude modulation. • Get the knowledge of linear diode detector and to measure detection efficiency. • Student will know about two stage IF amplifier. • Get the basic knowledge of optical fiber and to calculate bending loss and numerical aperture. • Understand the use of photodiode to study different characteristics.
21	DECEP II (Section B) P-XVII	Practicals based on P-XIII and P-XV (A or B)	• Understand the basics of UJT and its characteristics. • Students will get the idea behind the use of Silicon Controlled Rectifier (SCR). • Student will understand the applications of SCR such as in AC voltage stabilizer, in choppers, in inverters and in power control. • Students will get to know about the characteristics of DIAC and TRIAC

Dayanand Science College, Latur

Course Outcomes

दयानंद विज्ञान महाविद्यालय,लातूर

हिंदी विभाग

पाठ्यक्रमउद्देश

(हिंदीद्वितीय भाषा)

बी.एस्सी प्रथम वर्ष

प्रथमसत्र:- साहित्यभारती – I

द्वितीयसत्र :- साहित्यभारती - II

1) द्वितीयभाषाहिंदीकेरूपमेंछात्रोंकोहिन्दीभाषाऔरसाहित्यकासामान्यपरिचयदेना।

2) कालानुरुपकहानीऔरकाव्यमेंआएपरिवर्तनकोसमझाना।

3)कहानीऔर काव्यकेमाध्यमसेछात्रोंकोपरिष्कृत करना।

4)छात्रोंकोहिन्दीकेव्यवहारिकज्ञानसेअवगत करना।

5) हिन्दीभाषाकेप्रतिछात्रोंमेंरुचि उत्पन्न करना।

6) रचनाओंमेंव्यक्तसमस्याओं के समाधानकेलिए
छात्रोंकोप्रेरितकरनैतिकमूल्यकोस्थापितकरना।

बीएससीद्वितीय वर्ष

तृतीयासत्र:- कथेत्तर गद्य- III

1)हिन्दीसाहित्यकी कथेत्तर गद्य विधाओंसेछात्रोंकोपरिचितकरना।

2)कथासाहित्यकेमाध्यमसेछात्रों कीचिंतन तथालेखनकौशल्यकी क्षमताकोविकसित करना।

3) कथासाहित्यकेमाध्यमसेछात्रों कोविविध समस्याओं सेअवगतकरउनसमस्याओं
केसमाधानकेलिए उन्हें प्रेरित करना।

4)कथेत्तर साहित्य की रचनाओ मेंव्यक्तजीवनमूल्यद्वारा छात्रोंपरउचित संस्कार करना।

5)याहारचनाएवं छात्रोंकेलिएपथदर्शीसिद्धांतो को समझाना।

चतुर्थ सत्र:-नाटकतथाप्रयोजनमूलकहिंदी – IV

1) हिन्दीसाहित्यकीनाटकविधासेछात्रोंकोपरिचितकरना।

2) रंगमंचतथाअभिनयकेप्रति आकर्षणनिर्माणकरना।

3) विविधपात्रोंकीमानसिकताएवंक्रियाकलापोसेछात्रोंमेंसहि और गलत को परखने की क्षमता विकसित करना।

4) छात्रों मे संवाद,लेखन-वाचनकौशल्य काविकासकरना।

5) छात्रोंकोहिन्दीकेव्यवहारिकज्ञानसेअवगतकरना।

डॉ.गजाननहरिरामबने

हिंदीविभाग

दयानंदविज्ञान महाविद्यालय,लातूर

Dayanand Science College, Latur.
Course Outcomes (COs)
of M.Sc. Biotechnology

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Sr. No.	Section and Paper code	Name of Paper	Course Outcomes
1	BT-I	Cell and Developmental Biology	• To understand the basics of Cell Biology and developmental Biology. • To know the communication as well as transportation in cells. • To become aware about the stem cell technology.
2	BT-II	Microbiology and Virology	• To understand the basic principles of Microbiology and Virology. • To learn the cultivation methods of Microorganisms.
3	BT-III	Biochemistry	• Structure, classification and the properties of Biomolecules • Functions of biomolecules in Human health • Laboratory skills for the study of biomolecules
4	BT- IV	(A) Techniques in Biotechnology (B) Plant Metabolism and Development	• To know the basic principles, working and applications of biological techniques likeMicroscopy, electrophoresis, chromatography and spectroscopy. • To learn the fundamental process in plant system. • To understand the basic aspects ofplant physiology.
5	BT-V	Molecular Genetics	• To learn the Principles of Mendelian inheritance. • To understand the Genome organization and gene regulation of Prokaryotes and eukaryotes.
6	BT-VI	Immunotechnology	• To understand the basic concepts of Immune System Cells and organs of immune system.

			• To learn the vaccines and development in vaccine technology
7	BT-VII	Process Biotechnology	• To learn the microbial techniques for the Isolation, Screening, Preservations andmaintenance of Microorganisms. • To become aware about the designs and types ofbioreactors.
8	BT-VIII	(A) Enzymology (B) Nanobiotechnology	• To know the fundamental details of Enzymes. • To learn the various methods of enzyme immobilization and enzyme kinetics. • To know the use of Biotechnology at nanoscale and learn the various methods for the • development of nanoparticles and IPR
9	Lab Course I	Practicals based on course BT-I and BT-II	• Students will learn various techniques to know Cell Biology, transportation in cells and stem cell technology. • Students will study isolation, characterization andcultivation methods of Microorganisms
10	Lab Course II	Practicals based on course BT-III and BT-IV	• Students will learn various techniques of Structure, classification and the properties of Biomolecules • Students will learn techniques like Microscopy, electrophoresis, chromatography and spectroscopy.Students will learn various instrumental techniques.
11	Lab Course III	Practicals based on course BT-V and BT-VI	• Students will Study Principles of Mendelian inheritance, Genome organization of Prokaryotes and eukaryotes. • Students will study Cells and organs of immune system, vaccine technology
12	Lab Course IV	Practicals based on course BT-VII and BT-VIII	• Students will be acquainted with the techniques in bioprocess engineering. • Students will practically study enzymes and their characterization.
13	BT- IX	Genetic Engineering	• Students will become aware about rDNA technology, its advantages and disadvantages in addition to tools and techniques. • It will help in avoiding spread of misconception about GMO in society
14	BT- X	Industrial Biotechnology	• On completion of this course, the students shall demonstrate the knowledge about the techniques of microbial productions andacquire comprehensive knowledge on quality contro and quality assessment. • Acquire knowledge in Production and purification of fungal enzymes Amylase, Pectinase and other industrial products.

			• Able to work in the section of quality control of Food industry. • Shall develop scientific skills to work in Pharmaceutical and Research laboratories.
15	BT- XI	Plant Biotechnology	• On completion of this course, the students shall Demonstrate the knowledge about the techniques of Plant Tissue Culture and acquire comprehensive knowledge on GM technology for quality characteristics and their role in crop improvement. • Acquire knowledge in metabolic engineering and industrial products. • Develop skills in molecular markers studies and their use in plant breeding. • Shall develop scientific skills to work in Plant tissue culture, Pharmaceutical and Research laboratories.
16	BT- XII	English and Science Communication Skills	• Students will be able to Understand and demonstrate the use proper writing techniques relevant to the present day technological demands, including anticipating audience reaction. • 2. Write effective and concise letters and memos, prepare informal and formal reports, proofread and edit copies of business correspondence. • 3. Develop interpersonal skills that contribute to effective personal social and professional relationships.
17	BT- XIII	Intellectual Property Right/Online certification course NPTEL /SWAYM /MOOC of equivalent credit (Minimum of 4 weeks)	• Students will be able to understand the procedure of patenting of biological inventions. Thesis and Manuscript writing • Plant breeder's right and Farmer are right.
18	BT- XIV	Computational Biology	• Students will be able toConstruct the phylogenetics of different sequences. • Analyze sequence and structure of bio-macromolecule data • Edit the three dimensional structure of protein using structural bioinformatics tools • Explain the properties of genetic materials and storage and processing of genetic information. • Analyze genomic data. • Explain biological phenomena based on comparative genomics
19	BT- XV	Pharmaceutical	• Students will be able toexplain the strategies and

		Biotechnology	various steps of new drug discovery process. • Explain the concept of pharmacodynamics andpharmacokinetics • Apply the knowledge of pharmaceutical manufacturing in the production ofbiopharmaceuticals like antibiotics, vaccines, proteins and hormones • Carry out the quality control procedures in the production of various biopharmaceuticals • Explain the regulatory aspects in the development of pharmaceuticals.
20	BT- XVI	Environmental Biotechnology	• Students will be able to Comprehend environmental issues and role of biotechnology in the cleanup of contaminated environments • Comprehendfundamentals of biodegradation, biotransformation and bioremediation of organiccontaminants and toxic metals • Apply biotechnological processes in waste water and solid waste management. • Comprehend biofuels/bioenergy systems; attributes for biofuel / bioenergy production. • Demonstrate innovative biotechnological interventions to combat environmental challenges.
21	BT- XVII (Elective)	(A) Animal Biotechnology (B) Food Biotechnology	• Students will be able toExplain the fundamental scientific principles that underlie cell culture • Acquire knowledge for isolation, maintaince and growth of cells. • Develop proficiency in establishing and maintaining of cell lines. • Acquire knowledge in animal cloning and its applications.
22	Lab Course V	Practicals based on course BT-IX and BT-X	• Students will learn laboratory techniques about rDNA technology, tools, isolation,detection of DNA • Techniques of microbial productions, Production, purification of fungal enzymes Amylase Pectinase.
23	Lab Course VI	Practicals based on course BT-XI and BT-XII	• Students will get theknowledge in metabolic engineering, industrial products, molecular markers studies, Plant tissue culture Techniques, Pharmaceutical and Research laboratories. • Techniques relevant to the present day technological demands, Develop interpersonal skills.
24	Lab Course VII	Practicals based on course BT-XIV + XV+XVI+XVII	• Students will learn patenting of biological inventions, Thesis and Manuscript writing • Students will learn concept of

			pharmacodynamics and pharmacokinetics, production of various biopharmaceuticals. • Students will learn concept of biodegradation, innovative biotechnological interventions biotransformation and bioremediation of organiccontaminants and toxic metals • Knowledge in animal cloning and its applications, isolation, maintaince and growth of cells.
25	Lab Course VIII	Project/ Review Writing	• Students will learn research on various topics

Dayanand Science College, Latur.
Course Outcomes (COs)
Of M.Sc. Mathematics

Sr. No.	Name of Paper	Course Outcomes
1	Abstract Algebra I (Group & Ring Theory)	• Basic concepts of group theory and its various types. • Introduction to some important theorems & its application. • Describe the concepts of ring theory in detail.
2	Real Analysis	• Describe the Riemann integral with its significance. • Study the basic concepts of sequence & series of functions and classifying the nature of convergence. • Identify continuously differentiable functions introduction to inverse function theorem and implicit functions theorem.
3	Ordinary Differential Equation	• Introduction to linear Equations with constant coefficients. • Describe the linear equations with variable coefficients, significance of Legendre equation, Euler equation the Bessel equation. • Applications of exact equations, Lipchitz condition, Green's functions &sturm-liouviue boundary value problem.
4	Complex Analysis I	• Study some basic mappings, different functions & its properties. • Describe the Cauchy Riemann equation with examples and operations on power series. • Introduction to curves, parameterizations line integrals, Cauchy's theorem.
5	Dynamics and Continuum Mechanics I	• Introduction to some basic concepts and describe various motions of rigid body. • Study Newton's laws of motion various forces and angular momentum. • Describe the theorem of parable and perpendicular axes, illustrating the laws of motion the law of conservation of energy.
6	Tutorial- I	
7	Linear Algebra	• Introduction to vector spaces, linear transformations and invertibility and isomorphism. • Stud the matrix operations, knowledge of finding Eigen value and Eigen vectors Cayley-Hamilton theorem & its application. • Describe the gram-Schmidt orthogonalization process with its applications, analyzing bilinear forms Jordan canonical form I & II quadratic forms and Rational canonical form.
8	Measure and Integration Theory	• Study measurable sets & function Riemann & Lebesgue integrals with its significance. • Overview of Abstract measure spaces.

		• Theorem of Raydon - Nikodym with its applications.
9	Partial Differential Equations	• Introduction to linear equation of first order with its various methods. • Describe wave equation, Laplace equation, boundary value and the Cauchy's problems with its applications. • Study Harnack's theorem kelvin's inversion's theorem & and Neumann problem for different regions.
10	Complex Analysis II	• Knowledge of Cauchy's inequality and applications. • Study conformal mapping, Riemann Mapping theorem. • Study infinite products, special functions and Weierstra's product theorem & its application.
11	Dynamics and Continuum Mechanics II	• Study some basic concepts of indices, tensor, scalor and vector fields • Description of motion of continumm, deformation, compatibility conditions of infinitesimal strain components. • Study of fluids, mathematical principles and its applications.
12	Tutorial-II	
13	Functional Analysis	• Introduction to banach spaces and applications of the Hahn-Banach theorem & the open mapping theorem. • Study Hilbert spaces with its properties and types of operators. • The spectral theorem with its examples.
14	Topology	• Study basic of topology & its various types. • Introduction to connected and compact spaces of real line. • Describe countability and separation axioms and some important theorems and its significance.
15	Analytical Number Theory	• Describe theory of congruence's, Chinese remainder theorem & Fermat's little theorem with its application. • Introduction to concepts of primitive roots and quadratic reciprocity. • Study arithmetical functions and dirichect multiplication.
16	Fluid Mechanics I	• Introduction to fluids and analyzing its motion in various medium. • Study Euler's equation of motion, Bernoulli's equation with Examples. • Describe the two-dimensional flow and line sources, sinks, doublets and vortices with examples.
17	Integral Transform	• Introduction to Laplace transform with its properties and applications. • Study Fourier integrals and Fourier transform & Fourier integral representations. • Application of Fourier transforms and Evaluation of mellin transform with applications.
18	Tutorial-III	
19	Numerical Analysis	• Introduction to different method for salving first and second degree equations.

		• The various methods for solving system of linear algebraic equations. • Study of interpolations and approximations.
20	Abstract Algebra II (Field Theory)	• Introduction to Irreducible polynomial and Eisenstein criterion with its applications. • Study Galois theory fundamental theorem of Galois theory & fundamental theorem of algebra with its applications. • Describe ruler and compass construction and polynomials solvable by radicals.
21	Classical Mechanics	• Study mechanics of system of particles Different forms of Lagrange's Equation and its application. • Introduction to functional isoperimetric problem variation of problem with subsidiary conditions. • Describe Hamilton's principle & its canonical equations and application of Hamilton's formulation.
22	Fluid Mechanics II	• Describe two-dimensional image systems the Milne-Thomson circle theorem & its applications. • Study compressibility effects in real fluids. The various flows in the medium of gas, shockwaves & its uses. • Introduction to the Navier stokes equations of mation of a viscous fluid with some solvable problems dimensional analysis.
23	Integral Equations	• Introduction and classification of integral equations special rinds of kernels. • Knowledge of solutions of fredbolm and volterra integral equation of successive approximations. • Study integral equations with symmetric kernels and integral transform methods with its applications.
24	Project Work	• Solve problems in CSIR-NET/SET/GATE • Inculcate specific D-kills in independently and solving problems at a high level of abstractions.

Dayanand Science College

Course outcome

M.Sc Physics Objectives and Outcomes as per new syllabus

M.Sc Ist Year: -

Sem-I: -

1. Paper Name - Mathematical Methods in Physics

Paper Number – PHYCT- 101

Outcomes:

- After completion of this course students are capable of using the learned mathematical techniques to solve problems in physics such as the use and applications of matrices, the differential equations, the special functions, Fourier series and integral transform and complex functions.
- Students can apply these learned techniques not only to physics related problems but can extend the use and their applications to Engineering Science and Technology, Biotechnology, Biophysics etc.

2. Paper Name - Numerical Techniques in Physics

Paper Number - PHYCT -102

Outcomes:

- After completion of the course students shall be able to employ the studied numerical techniques to solve problems in physics related to the applications like data handling and fitting, finding solutions and root of equations,
- Apart from this students will be capable of solving the differential and integral equations, simultaneous equations and partial differential equations.
- They shall also be well versed with writing their programmers using C-language of computer programming.
- Students can apply these learned techniques not only to physics related problems but can extend the use and their applications to Engineering science and technology, Biotechnology, Biophysics etc.

3. Paper Name - Classical Mechanics

Paper Number –PHYCT- 103

Outcomes:

- After completion of the course the students shall be able to apply Newton's laws of motion to solve complicated problems involving multiple bodies and use the concepts of classical mechanics to the classical rigid bodies.

- The knowledge acquired through this course will enable the students to lay the foundation of application of the classical dynamics, space dynamics and also for modern physics.

4. Paper Name - Electronic Devices and Applications
Paper Number - PHYCT -104
Outcomes:

- After completion of this course, students will be able to explain the working principles and application of various electronic devices used in various electronic gadgets of domestic uses.
- They will also understand the construction, working and operational characteristics of semiconductor devices and their applications in advanced electronics industries.
- The students will also understand the utility and functioning of the microprocessors, the heart of the advanced computing machines.

`M.ScIst Year:-
Sem-II:-

1. Paper Name - Condensed Matter Physics
Paper Number - PHYCT -201

Outcomes:

- After completing the course students will have knowledge of different types of solids.
- Also an understanding of how their microscopic structure affects their mechanical, thermal and electrical properties.

2. Paper Name - Atomic and Molecular Physics
Paper Number - PHYCT -202

Outcomes:

- Upon successful completion of these modules, students will be able to understand the atomic spectra of one valance electron atoms.
- students will be able to understand what is meant by L-S and J-J coupling in case of two valance electron atoms and the origin of spin orbit interaction
- Students will learn to Use appropriate quantum numbers for labeling of energy levels/terms symbols and the change in behavior of atoms in external applied electric and magnetic field.

- Students will learn Diatomic molecules, the origin of electronic, vibrational and rotational energy levels, calculate energy levels,
- students will be able to understand and Analyze rotational, vibrational, electronic and Raman spectra of molecules
- To undertake simple calculations of bond lengths, rotational constant, dissociation energy, and relative level populations

3. Paper Name - Statistical Mechanics
Paper Number - PHYCT 203

Outcomes:

- The main outcome after learning the course is that students can apply and extend concepts learned in this course to theoretical physics.
- Students will be well acquainted with the particle nature on the basis of distribution laws and their uses in order to illustrate properties of most exotic systems like white dwarf stars, super fluid materials, etc.

4. Paper Name - Quantum Mechanics
Paper Number - PHYCT 204

Outcomes:

- Upon successful completion of these modules, students will be able to understand that quantum mechanics is basic of many branches of Physics and will be able to apply quantum theory to other applied areas like nuclear physics, atomic and molecular physics, solid state physics, laser physics etc.
- The students will be able to relate the ideas and concepts from physics to chemistry, materials science and engineering.
- Students will be able to use quantum theory to model natural and physical phenomena in materials science, chemistry and nanotechnology.
- Students will be able to understand and explain the differences between classical and quantum mechanics.
- They will be able to understand the idea of wave function and to solve Schrodinger equation for simple potentials.

M.Sc IInd Year:

SEM-III:

1. Paper Name — Electrodynamics

Paper Number - PHY 301

Outcomes:

- Upon successful completion of this course students will be able to apply the knowledge of Maxwell's equations to a variety of problems including various types of charge distributions including time-dependent processes
- tackle the problems related to the propagation and scattering of EM waves in a variety of media, understand how to design EM sources of different powers
- And will also be able to have a good understanding of the relativistic electrodynamics.

1. Paper Name –– Nuclear and Particle Physics

Paper Number- PHY 302

Outcomes:

- After the completion of the subject the students are able to know its Scientific and technological applications.
- In addition, with social, economic and environmental implications.

2. Paper Name: Basics of Lasers and Devices

Paper Number: PHY 303

Outcomes:

- Students will be able to understand all the basic concepts of Laser.
- Also, students will learn the Different types and applications of Laser technology.
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3. Paper Name: – Elective Paper A:- This Film and Nano Physics

Paper Number: PHY 304

Outcomes:

- Students will be able to understand All the basic of Thin films and nanotechnology.
- Students will come across the Different methodology of thin film synthesis right from the nucleation and growth.
- Apart from this student will understand the importance of thin film technology in today's era.

M.ScIInd Year:

SEM-IV:

1. Paper Name: Fiber Optics and Optical Fiber Communication

Paper Number: PHY 401

Outcomes:

- Students will be able to understand the basic of optical fiber.

- How light is propagated through the optical fiber. And what are the different light sources available for the same.
- Student will also get the knowledge of LEDs and their uses in Optical fiber.
- Students will learn about the communication takes place via optical fiber and its applications.

2. Paper Name:Microwaves and Measurements
Paper Number: PHY 402
Outcomes:

- Students will come across the fundamental concepts of Microwaves.
- Students will be able to know about active and passive devices of microwaves.
- Students will get the knowledge of measurements and applications of microwave.

3. Paper Name: Microprocessors and Microcontrollers

Paper Number: PHY 403

Outcomes:

- Students will be able to come across an architectural study ofof Microprocessor 8085
- Students will get the Complete knowledge of Microprocessor 8086 and Micro-controller 8051
- Students will also learn the architecture of 16 Bit Micro-controller and Embedded Controllers along with proper explanation of block diagrams involved in it.

4. Paper Name: – Elective Paper B. Electronic Instrumentation

Paper Number:PHY 404

Outcomes: -

- Students will get the complete idea and purpose of instrumentation.
- Also, they will learn types & importance of measurements.
- Students will come to know about the transducers and its importance in electronic world.
- Students will also learn about the PC and its role in instrumentation.

Dayanandn Science College, Latur.
Course Outcomes (COs)
of M.Sc. [CS]-FY

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First Semester

Sr. No.	Section and Paper code	Name of Paper	Course Outcomes
1	CS-101	Computer Architecture and Microprocessor	1. Students will acquire skill of Assembly Language programming using 8086 Microprocessor 2. Student will be familiar with Internal Processing of Computers
2	CS-102	OOP concepts using C++	1. Students will have the conceptual knowledge of Object Oriented programming. 2. This course will create foundation for student to learn other Object Oriented Programming Languages such as JAVA.
3	CS-103	Mathematical Foundation for Computer Science	At the end of the course student will be able to Understand the notion of mathematical thinking, mathematical proofs and to apply them in problem solving. Ability to understand use of functions, graphs and their use in programming applications. Apply discrete structures into computing problems, formal specification, artificial intelligence, cryptography, Data Analysis.
4	CS-104 A	Relational Database Management System	1. To study the basic concepts of relational databases 2. Learn and practice data modelling using the entity-relationship and developing database designs. 3. Understand the use of Structured Query Language (SQL) and learn SQL syntax for writing queries. 4. Apply normalization techniques to normalize the databases.
5	CS-104 B	Computer Network	1.analyze the requirements for a given organizational structure and select the most appropriate networking architecture and technologies; 2.specify and identify deficiencies in existing protocols, and then go onto formulate new and better protocols; 3.analyze,specify and design the topological and routing strategies for an IP based networking infrastructure 4.Have a working knowledge of datagram and internet socket programming
6	CS-105 Lab -1 :	C++ Programming	1. Confidence in C++. 2. Students will be skilled to learn fundamentals

			of advanced internet programming languages
7	CS-106 Lab-2:	ALP using 8086 Microprocessor	1. Lab work will skill to apply the fundamentals of assembly level programming of microprocessors. 2. Students will be skilled to learn fundamentals of designing embedded systems
8	CS-107A **OR**	University recognized MOOC (NPTEL / SWAYAM / others) OR Intra / Inter Departmental OR Intra / Inter School	
9	CS-107 B	Introduction to E-commerce	
10	CS-108	SK-01	Practically understand the PC and surrounding peripherals. The student will assemble / setup and upgrade personal computer systems; install OS and other application software, diagnose and isolate faulty components; optimize system performance and install / connect peripherals.

DayanandScience College, Latur.

Course Outcomes (COs)
of M.Sc. [CS]-SY

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Second Semester

Sr. No.	Section and Paper code	Name of Paper	Course Outcomes
1	CS-201	Design and Analysis of Algorithms	1. This course will aware the implementation of various advance algorithms to solve real world problem 2. Students will be skilled to select appropriate design techniques to solve various problems.
2	CS-202	Software Engineering	After completion of this course students will be able to 1. Learn various methods of software development. 2. Apply various software testing techniques.
3	CS-203	Programming with VB.NET	1. Students will able to develop simple as well as complex applications using .Net framework

			2. Students will learn to use web applications for creating GUI based programs
4	CS-204 A	Advanced Operating System	1. Students will be able to Analyze the structure of OS and basic architectural components involved in OS design 2. Students will be able to Conceptualize the components involved in designing a contemporary OS
5	CS-204 B	Compiler Designing	1. To realize the students basics of compiler design and apply for real time applications. 2. Students will get knowledge about compiler generation tools and techniques
6	CS-205 Lab-3:	VB.NET Programming	Students will get the Hands on practical knowledge of VB.NET Programming
7	CS-206 Lab-4:	Based on Elective Subjects	Students will get the Hands on practical knowledge of Elective subject.
8	CS-207A OR	University recognized MOOC (NPTEL / SWAYAM / others) OR Intra / Inter Departmental OR Intra / Inter School	
9	CS-207 B	Information Technology	: After complication of this course student will be able to: 1. Understand basic concepts in IT and their use in actual working
10	CS-208	SK-02	Networking Essentials deals with knowing what is a network, how to install, configure, and troubleshoot a computer network It includes knowledge of the fundamental building blocks that form a modern network, such as various cables, switches, routers, connectors, LAN-NIC cards and network operating systems. It then provides in-depth coverage of the most important concepts in contemporary networking like connecting computers/ peripherals, servers and clients, Wi-Fi connectivity, etc. Students are expected to have the skills to build a network / LAN from scratch and maintain, upgrade, and troubleshoot an existing network

Dayanand Science College, Latur.

Course Outcomes (COs)
of M.Sc. [CS]-SY

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Third Semester

Sr. No.	Section and Paper code	Name of Paper	Course Outcomes
1	CS-301	Advance Database Administration	Students Will be able to explain and evaluate the fundamental theories and requirements that influence the design of modern database systems. Students can analyze the background processes involved in queries and transactions, andexplain how these impact on database operation and design
2	CS-302	Web-Technologies	Students Will be Students are able to develop a dynamic webpage by the use of PHP and java script. On completion of this course, a student will be able to develop a web application using PHP and java script.
3	CS-303	Data Mining & Data Warehousing	Students Will be Understand Data Warehouse fundamentals, Data Mining Principles. Identify appropriate data mining algorithms to solve real world problems
4	CS-304 (Elective)	(A) Artificial Intelligence	Students will be able to compare AI with human intelligence and traditional information processing and discuss its strengths and limitations as well as its application to complex and human-centered problems. Students Will be able to apply the basic principles, models, and algorithms of AI to recognize, model, and solve problems in the analysis and design of information systems.
		(B) Mobile Application Development	Student will be able to write simple GUI applications. Students will be also able to use built-in widgets and components, work with the database tostore data locally.
		(C)Research Methodology	Students Will be demonstrate knowledge of research processes (reading, evaluating, and developing), Perform literature reviews using print and online databases.
5	CS-305	Lab-5: Adv. Database Admin	Students will get the Hands on practical knowledge of Advance database admin

6	CS-306	Lab-6: Web Technologies	Students will get the Hands on practical knowledge of Web Technologies
7	CS-307-A	University recognized MOOC	
8	CS-307-B	Cyber Security	Students will understand principles of web security. Students will understand key terms and concepts in cyber law, intellectual property and cybercrimes, trademarks and domain theft.
9	CS-308	SK-03 Seminar Presentation Activity	Help the student increase self-motivation, personal responsibility, and understanding of his or her role in being an informed participant in the educational process. Create an environment that helps the student establish healthy relationships and support networks.

Dayanand Science College, Latur.

Course Outcomes (COs)
of M.Sc. [CS]-SY

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Fourth Semester

Sr. No.	Section and Paper code	Name of Paper	Course Outcomes
1	CS-401	Digital Image Processing	Students will be Analyze images in the frequency domain using various transforms. Evaluate the techniques for image enhancement and image restoration and also categorize various compression techniques.
2	CS-402	Linux Administration	Students will be able carry the duties of a Unix system administer. Students will learn to do file processing, process management, IO management, queues management, networking, storage backup, account management, proper system start-up and shutting down, as well as other tasks.
3	CS-403	Major Project development Activity	Project based learning will increase their capacity and learning through shared cognition. Students will have an ability to identify, formulate and implement computing solutions. Students will be able to design a system, component or process as per needs and specification

4	CS-404-(Elective)	A (Elective) Client Server Technology	Gain Exposure on most common used servers. Understand the concept of client-server development and learn problem solving skills through design scenarios for network environment.
		B (Elective) Software Testing Tools	At the end of the course the students will be able to Design test cases suitable for a software development for different domains.Identify suitable tests to be carried out and prepare test planning based on the document.Document test plans and test cases designed and Use of automatic testing tools.
5	CS-405	DIP(Digital Image Processing)	Students will get the Hands on practical knowledge of Digital Image Processing.
6	CS-406	Based on Elective Subject	Students will get the Hands on practical knowledge of Elective subject.
7	CS-407-A	University recognized MOOC	
8	CS-407-B	Logical Reasoning and Quantitative Aptitude	Understand the basic concepts of QUANTITATIVE ABILITY and LOGICAL REASONING Skills, acquire satisfactory competency in use of VERBAL REASONING and Solve campus placements aptitude papers covering Quantitative Ability, Logical Reasoning and Verbal Ability
9	CS-408	SK-04 Soft Skills	Strong technical skills are essential for any IT (information technology) position. However, IT employees also need soft skills, sometimes known as interpersonal skills. IT professionals need to be able to interact successfully with others, as well as manage projects and teams

Sr. No.	Section and Paper code	Name of Paper	Course Outcomes
1	CH-411	Inorganic Chemistry - I Paper : I	• Learn various approaches in analyzing structures of simple molecules. • Understand the proposed pathways for reactions taking place in coordination complexes such as substitution reactions, redox reactions etc. and the various factors affecting to rates of these reactions. • Learn about mechanisms proposed for reactions taking place in coordination complexes, and will be able to understand to explain the product formation based on these mechanisms. • Understand how to construct molecular orbital diagrams for simple molecules as well as coordination complexes. • Draw molecular orbital diagrams for sigma and pi bond formation in coordination complexes and will be able to understand and explain the difference between respective molecular orbital diagrams.
2	CH-412	Organic Chemistry - I	• Understand the various types of Reaction Mechanism. • Adopt the concept of Bonding in Organic Molecules. • Learn the concept of Stereochemistry and to identify the Stereo chemical reactions. • Explain the various problems of aromaticity, homoaromaticty and antiaromaticity. • Familiarize the various types of Substitution reactions and their mechanism • Gain knowledge of free radical reactions.

			• Justifies the various effect of substrate.
3	CH-413	Physical Chemistry	• Explain basic concepts, laws and postulates of quantum mechanics • Describe different wave functions and operators • The Schrodinger wave equation for the calculation of Energies of rigid rotor and harmonic oscillator and solve it for hydrogen atom • Explain the concept of angular momentum • Describe the electronic structure of atoms • Good overview of laws of thermodynamics, partial molar properties for different systems and concept and examples of non-ideal systems • Discuss concept distribution with examples, they will be able to explain most probable distribution and thermodynamic probability • Concept of partition functions and its significance • Can relate and explain the entropy production in different system and understand Onsager's relations • Solve problems related to quantum chemistry, will have large horizon of critical thinking and analytical reasoning
4	CH-414	Physical Method in Chemistry	• Understand how to recognize symmetry elements in a molecule. • Assign the point group to a molecule. • Deal with degenerate and non-degenerate representations.
5	ECH-411	Bioorganic Chemistry (Elective)	• The basic principles govering the metabolic reactions, energy pathwasys, functioning of catalytic systems , evolution of life and fundamental process governing it
			• Learn basic terms regarding electronic spectra of coordination

6	CH-421	Inorganic chemistry	complexes, interpretation of electronic spectra and various important parameters necessary for it, drawing of OrgelandT-S diagrams used for electronic spectra, prediction of possible electronic transitions present in electronic spectra of coordination complexes etc. • He/she will understand magnetic nature of complexes, measurement of magnetic moment in coordination complexes, prediction of magnetic nature of complexes using spin only formula. • He/she will learn the terms such as diamagnetic and paramagnetic nature of coordination complexes, difference between them, anomalous magnetic moments, spin cross over etc. • He/she will understand the chemistry of carbonyl and nitrosyl molecules, their application as ligand molecules in complex formation, structure and bonding present in various carbonyl and nitrosyls complexes, applications etc. • He/she will learn chemistry of boranes, carboranes and metal clusters, the concept of 3C-2e bond used to explain structural aspects in boranes and carboranes, polyhedral skeletal electron pair theory and its applications in explaining structures of metal clustes etc.
7	CH-422	Organic Chemistry-II	• Gain the knowledge of addition reaction between a hetero atom and double bonded carbon compounds. • Learn familiar name Reaction Obtain an outline about mechanism of Aromatic Substitution reactions • Know synthetically the process relevant Organic –Chemical reactions and be able to discuss the mechanism of these reactions. • Understand the skill of solving problems of pericyclic reactions • Get the clear picture of about

			pyricyclic reactions
8	CH-423	Physical Chemistry	• Understand the basic concepts and properties of surfactants and macromolecules • State and apply different laws, principles, theories related to the electrochemistry of the solutions. • Discuss and apply the information about corrosion, its monitoring and presentation. • Distinguish different theories of reaction rates. • Understand the kinetics of complex reactions, catalysis etc. • Perform the calculations and solve the numerical of electrochemistry and chemical kinetics. • Develop skill in problems solving, critical thinking and analytical reasoning.
9	CH-424	Principles of Spectroscopy	• Explain the basic principles of rotational, vibrational, electronic and Raman spectroscopy. • Identify and explain factors that influence the strength and frequency of peaks in the Microwave, IR spectra. • Describe the selection rule for rotational, Vibrational and electronic spectroscopy. • Determine the vibrations for a molecule and identify whether they are active in infrared and/or Raman spectroscopy. • Explain the difference between Stokes and anti-Stokes lines in a Raman spectrum and justify the difference in intensity between Stokes and anti-Stokes lines. • Draw the Stokes and anti-Stokes lines in a Raman spectrum of a compound when given the energies of the different transitions. • Understand the electronic spectra of atomic and diatomic molecular systems. • Justify the absorption lines in atomic electronic spectra and the

	ECH-421		broad bands in molecular electronic spectra. • Able to interpret the molecular electronic spectra and deduce the electronic structure information in ground and excited states of diatomic molecules. • Importance of the Nuclear Quadrupole Resonance Spectroscopy in the characterizing organic and inorganic compounds. • Know how the electric fields gradient in molecules influences NQR, and ESR spectra.
		B (Elective) Biophysical Chemistry	• Students will learn biological organisation of cells, constituents of cell , structure and its functions in the living organisation. • The biochemical processes such as oxidation, reductions, enzyme catalysis bioenergetics nerve conduction, muscle contraction in the human body are very much important thus the study of chemical basis of life and chemical reactions strengthen the knowledge of Biochemistry also.
10	Paper : XI (LCH-411)	Laboratory Course – I (Inorganic Chemistry)	• Learn synthesis methods for the preparation of various coordination complexes and will understand the basic principles involved in operational procedures while synthesizing the complexes to a deeper level. • To characterize a synthesized complex using various characterization techniques such as melting point determination, solubility behavior in various solvents, molar conductance, magnetic susceptibility measurements, IR and electronic spectra etc. • While following all these methods he/she will be able to understand operation procedures, care that should be taken while using these techniques and the practical utility of these techniques.

			• Understand the basic principles lying behind inorganic analysis such as precipitation, solubility product, buffer solution, applications of buffer solution in maintaining pH, common ion effect etc. and this much information will be helpful while analyzing any inorganic compound in future.
11	Paper XII : (LCH - 412)	Laboratory Course II (Organic Chemistry)	• Learn the pilot separation of the binary mixture • Familiarize the systematic procedure of organic mixture analysis • The preparation involving nitration, bromination, Sandmayer reaction, and Aldol condensation • Learn the test involving identification of special elements • Learn the confirmatory test for various functional groups • Understand the technique involving drying and crystallization by various methods • Expertise the various techniques of preparation and analysis of organic substances • Learn the estimation of various organic compounds • Understand micro scale technique.
12	Paper XIII : (LCH - 413)	Laboratory Course III (Physical Chemistry)	• Apply their knowledge for setting various experiments based on the instrumentations studied • Perform different qualitative and quantitative analysis.
14	Paper XIV : (LCH - 414)	Laboratory Course – IV (Analytical Chemistry)	• Understand the basic principles and theory of different instruments used during the conduction of the experiments • Perform the different experiments on conductometer, pH meter, potentiometer, colorimeter, polarimeter, flame photometry • Apply their knowledge for setting various experiments based on the instrumentations studied • Perform different qualitative and quantitative analysis.

Sr. No.	Section and Paper code	Name of Paper	Course Outcomes
1	Paper–XV, [OCH-511]	Advanced Spectroscopic Methods	• Learn the structure determination of organic molecules by spectroscopic methods. • Know the use electronic spectroscopy to determine absorption maximum in dienes, enones and aromatic compounds. • Know the applications of IR spectroscopy for functional group determination. • Learn the structure elucidation of organic compounds by PMR spectroscopy. • Gathering basic knowledge to know the position of carbon in carbon compounds. • Recognize the molecular mass of the organic molecule by fragmentation pattern. • Know the complete structure of compounds using UV, IR, PMR, CMR and Mass spectroscopic methods.
2	Paper–XVI, [OCH-512]	Natural Products	• Structureelucidation, degradation,applications, stereochemistry of Vitamins,Terpenoids,Steroids. • Synthetic methods for total synthesis of natural products • Medicinal Application of different natural products • Rotenones,pyretheroids ,prostoglandins and their applications
3	Paper–XVII, [OCH-513]	Organic Synthesis	• To understand the Dakin reaction, Etard reaction, HVZ reaction, Umpolung synthesis and Stephen reaction . • To know about the Barton reaction, Jones oxidation, Oppenauer oxidation and Michel addition .

			• To familiarize the different types of reduction reaction . • To learn about the synthesis and applications of the organic reagents like 9Borabicyclo(3.3.1)nonane (9-BBN) and n-butyl lithium . • To learn the synthesis and applications of the organic reagents like ceric ammonium nitrate (CAN), DCC, Grignard reagent, LDA, Gilman reagent, NBS and PCC. • To know about the complex metal hydrides, Hilmans reagent, lithium dimethyl cuprate and dicyclohexyl carbodimide,1,3-dithiane. • To know the detail study of woodward, provost hydroxylation, selenium dioxide, crown ethers and Peterson's synthesis, Wilkinson's catalyst and Baker yeast.
4	Paper–XVIII, [OCH-514]	Medicinal Chemistry	• Understand key component of drug discovery process and drug designing • Understanding the role of medicinal chemist in development of medicinal agents • Have understanding about functional group modification and their utility in SAR and QSAR. • Analyze the recent research articles related with drug design of antimycobacterial agents and antibiotics.
	Paper–XVIII, [EOCH-514]	Elective: Green Chemistry	• To learn about the different enzymes participating in the chemical reactions inside the body and their functions • To study about the different oxygen carriers present in the body with their structure and stereochemistry • To study in detail about nitrogen fixation reactions and microorganisms involved in nitrogen fixation reactions • To know about the biological redox systems and their classifications • To create awareness about metal toxicities, their detection and

			permissible levels in
5	Paper–XX, [OCH-521]	Advanced Heterocyclic Chemistry	• This course aims at giving a fundamental theoretical understanding of heterocyclic chemistry, including alternative general methods for ring synthesis and application of such methods for the preparation of specific groups of heterocyclic systems. • The student will get familiar with particular properties and reactions for the most important heterocycles as well as different systems of nomenclature.Wilkinson's catalyst and Baker yeast.
6	Paper–XXI, [OCH-522]	Advanced Organic Chemistry	• The basic Principles of Green Chemistry, • Applications and uses of Green catalysts and Reagents. • Use of Ionic Liquids and PTC in Green Synthesis.
7	Paper–XXII, [OCH-523]	Organic synthesis: Retro synthetic Approach	• To persuade the subject specific knowledge as well as relevant understanding of the Retrosynthesis • The academic and professional skills required for Chemistry-based professions. • Learning experiences gained from this Disconnection approach is important for industrial purpose.
8	Paper–XXIII, [OCH-524]	Medicinal Chemistry	• Understand key components of drug discovery of Anti-cancer and Anti-AIDS agents,Hypoglycemic agents, Cardiac drugs, antiviral antimalarial agents
	Paper–XXIII [EOCH-521]	Elective: Environmental Chemistry	• Familiar with environmental chemistry and its effects on living organisms.
	Paper–XXV [LOCH-525]	Mixture Analysis	• Learn basics practical knowledge of qualitative analysis. • Become skilled at organic compounds determination.
	Paper–XXVI [LOCH-526]	Synthesis of Organic Molecules	• Learn basics practical knowledge of multistage synthesis of organic molecules.

			• Learn fundamentals of organic synthesis in drug discovery. • Learn about the one-pot organic synthesis by microwave techniques.
	Paper– XXVIII [LOCH-527]	Physico-Organic Estimations	• Gain the knowledge of estimation of drugs by Titrimetric. • Learn about the Isolation of natural products. • Develops the techniques for the estimation of drugs by Instrumental Methods
	Paper– XXVIII [LOCH-528]	Project	

Dayanand Science College, Latur.
Course Outcomes (COs)
of M.Sc. Microbiology F.Y

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Sr. No.	Section and Paper code	Name of Paper	Course Outcomes
1	MB101	Microbial Physiology	Study of Physiological groups o bacteria. • Detailed study of bacterial respiration and transport mechanisms. • Study of bacterial sporulation
2	MB102	Advances in Virology	• Detailed study of classification cultivation Detection and multiplication of viruses. • Study of viral pathogenesis • Prevention and control of viruses, viral evolution and emergence of new viruses.
3	MB103	Food and Dairy Microbiology	• Study of various food and dairy fermentations. • Awareness of preservation and spoilage of food. • Knowledge of quality assurance of foods, government regulatory practices.
4	MB104	Bioinstrumentation	• Knowledge of various laboratory techniques and instruments. • Study of chromatographic and elecrophoretic techniques for separation and detection of biomolecules. • Study of advanced biotechnological techniques i.e. spectroscopic and radioisotopic techniques.
5	MB105	Seminar based on MB101,102,103,104	• Students acquire stage courage and soft skills.
6	MB201	Microbial Metabolism	• Basic aspects of bioenergetics and energy transduction in biological systems. • Study of carbohydrate metabolism in bacteria. • Study of organic nitrogenous compound metabolism. • Study of utilization of hydrocarbons by bacteria.
7	MB202	Modern Microbial Genetics.	• Study of bacterial DNA replication,damage and repair. • Study of bacteria DNA transfer methods. • Study of regulation of gene expression in bacteria • Study of gene recombination and mapping in bacteria.
8	MB203	Bioprocess Engineering	• Students will be acquainted with the basics of bioprocesses carried out in pharmaceutical and fermentation industries.

			• Students will learn various methods extraction and purification, recovery of industrial bio products.
9	MB 204	Enzyme Technology	• Students will learn basic concepts of enzymes ,their function, and applications in industries and environment.
10	MB 205	Seminar based on MB 201, 202, 203,204	• Students acquire stage courage and soft skills.
11	Lab Course I	Practicals based on MB101 and MB 102	• Students will learn various techniques to know bacterial physiology. • Students will study isolation and characterization of bacterial viruses
12	Lab Course II	Practicals based on MB 103 and 104	• Students will learn various techniques of isolation of food born pathogens, their identification • Students will learn food quality testing, preservation of some foods. • Students will learn various instrumental techniques.
13	Lab Course III	Practicals based on MB 201 and 202	• Students will Study metabolic processes in bacteria • Students will study genetic processes in bacteria
14	Lab Course IV	Practicals based on MB 203 and MB204	• Students will be acquainted with the techniques in bioprocess engineering. • Students will practically study enzymes and their characterization.
15	MB301	Molecular Immunology	• Student will be able to explain and categorize different types of lymphoid organs as primary and secondary lymphoid organs, immunogen and immunoglobulin, Organization and Expression of Immunoglobulin genes, and Major, Minor Histocompatibility Complexes and Clinical immunology
16	MB 302	Recombinant DNA Technology	• Student will be able to understand and explain the recombinant DNA technology, explain steps and tools in genetic engineering and apply recombinant DNA technology in medicine agriculture and veterinary sciences.
17	MB 303	Microbial diversity and Extermophiles	• Student will be able to understand and explain the microbial diversity present in different extreme environmental conditions in terms of their distribution, abundance, classification, structure and applications of their products.
18	MB 304	Biostatistics, Computer applications and Research methodology	• Student will be able to understand explain and apply the biostatistics, computer andresearch methodology during his further studies.
19	MB305	Seminar	• Students acquire stage courage and soft skills.
20	MB 401	Fermentation	• Student able to understand and develop skill of the

		Technology	different microbial fermentation processes, production of fermentation products, therapeutic compound. Bioplastic production, biofertilizer production. Get aware of procedure of IPR, Trademark, copyright.
21	MB 402	Medical and Pharmaceutical Microbiology	• Student able to understand and develop skill for construct antibiotic, microbiological assay drug resistance. Explain the mechanism and action of antibiotic antimicrobial agent. apply safety in microbiology. students will gain the knowledge and can work in hospital, pharmacy and industry
22	MB 403	Environmental Microbiology	• Student able to understand and recognise characteristic of environment and ecosystem, characteristics of waste water, solid waste and its treatment by various methods such as aerobic and anaerobic treatment. Also explains biodeterioration, biotransformation & recovery of Metals & Metalloids and impact of these factors on environment.
23	MB404	Bioinformatics ,Proteomics and Genomics	• Students are able to predict the significance of the biological phenomenon on the basis of available data set. Student develops skill to apply the knowledge of bioinformatic for the analysis of microbial genome and proteins.
	MB405	Seminars	• Students acquire stage courage and soft skills.
24	Lab Course V	Practicals based on MB301, MB 302	• Students will learn laboratory techniques in immunology, lab diagnosis of some diseases • Students will learn to isolate ,detect DNA • Will learn identification of DNA by advanced techniques like RFLP,RAPD,
25	Lab Course VI	Practicals based on MB 303 and 304	• Students will perform some microbial fermentations on laboratory scale, • Study of pharmaceutical product testing. • Sterility testing
26	Lab Course VII	Practicals based on MB 401,402,403 and 404	• Students will learn use of microorganisms for treatment of solid and liquid waste, • Determination of BOD, COD, TS,TDS,TSS • Students will learn, database search techniques, sequence comparison techniques
27	Lab Course VIII	Project	• Students will learn research on various topics

Dayanand Science college

B.Sc Physics Course outcomes

- **B.Sc First Year Physics**

1. **Course Name**:- : Mechanics and Properties of Matter
   Course Number:- CCP I - (Section A) P-I
   Outcomes:-

1. The objective of this course is to introduce the students to the world of mechanics and properties of the matter that exists in different phases i.e., solid, liquid and gas.
2. Laws of motion and its applications to various systems studied in this paper is of fundamental nature and enable the students to handle different types of problems and is the pre-requisite for several other advanced courses in physics and chemistry.
3. The pre-requisite for this course is knowledge of calculus, wave theory and modern physics. This course is the core course and every student pursuing B Sc with physics as one of the optional is required to study this course.

2. **Course Name**:- : Mathematical Methods in Physics
   Course Number:- CCP I - (Section B) P-II
   Outcomes:-

1. This course is also aimed to develop knowledge in mathematical physics and its applications, to develop expertise in mathematical methods required in the study of Physics, to develop critical thinking and problem solving skill.
2. After completion of this course students will be able to apply the concept of vectors and complex variables to various physical quantities.
3. This course will also enable the students to solve the problems related to partial differentiation. Fourier analysis unit will enable the students to analyze the periodic functions.

3. **Course Name**:- : Heat and Thermodynamics
   Course Number:- CCP II - (Section A) P-III:
   Outcomes:-

1. This course will introduce the students to the world of heat and thermodynamics and the behaviour of the physical systems at different thermodynamically conditions.
2. After completing this course students will understand the difference in the behavior of the ideal and real gases, transport phenomenon in gases.
3. Students will also understand the working of various heat engines and the ways to increase their working efficiency.

4. **Course Name**:- : Electricity and Magnetism
   Course Number:- CCP II - (Section B) P-IV
   Outcomes:-

1. The objective of this course is to introduce the students to the concepts of static and dynamical electrical magnetic fields, the sources for generating such fields, polarization and induction effects, understand the basic difference between the DC and AC circuits and their functioning.
2. This course is of most applied nature and will enable the students to understand the role of electricity in everyday life, relate electrical conduction, vlate using Ohm's law
3. And will also enable the students to understand the working principles of various electrical components and gadgets.
4. After completion of this course students will be able to apply the concept of vectors and complex variables to various physical quantities.

- B.Sc Second Year Physics

1. **Course Name**:- Waves and Oscillations
   Course Number:- : CCP III - (Section A) P-VI
   Outcomes:-

1. The objective of this course is to introduce the students to the concepts of mechanical waves, their properties, propagation and reflection properties, formation of standing waves, their applications in resonance tubes, energy distribution in the standing waves, free and forced vibrations, acoustics and acoustical designs and also introduces the students to the concepts of ultrasonic waves and their applications.
2. This course is the pre-requisite for several advanced courses in physics and chemistry and is necessary for understanding the behavior of the mater when mechanical waves passes through them.
3. Pre-requisite for this course is the knowledge of elementary mathematics and calculus, wave theory, etc. This forms the core course of the programmes and every student pursuing B Sc with physics as one of the optional is required to study this course.

2. **Course Name**:- Statistical Physics, Electromagnetics and Theory of Relativity
   Course Number:- : CCP III - (Section B) P-VII
   Outcomes:-

1. The objective of this course is to introduce the students to the concepts of macroscopic world, statistical approaches for understanding properties of the macroscopic bodies, ensembles, their classification on the basic of macroscopic and microscopic basis, their applications to photonic and electronic gases, electromagnetism, Maxwell's equations and their applications in the electromagnetic waves, energy carried by the EM waves and theory of relativity.
2. This course is the prerequisite for several advanced courses in physics, chemistry, life sciences and the modern communication systems. Pre-requisite for this course is the knowledge of elementary mathematics and calculus.

3. This forms the core course of the programmes and every student pursuing B Sc with physics as one of the optional is required to study this course.

3. **Course Name**:- Optics and Lasers
   Course Number:- : CCP IV - (Section A) P-VIII Core
   Outcomes:-

1. This course is aimed to introduce the students to important core subject optics and its applications.
2. This course begins with the introduction to the concepts of geometrical optics, properties of optical instruments, interference and diffraction of light, polarization of light and finally introduces to the advanced source like LASERS and conditions for the lasing action.
3. This course is the advanced course having applications in nearly all the branches of science.
4. Pre-requisite for this course is the knowledge of light waves and their properties in different media and requires the knowledge of EM waves. This forms the core course of the programmes and every student pursuing B Sc with physics as one of the optional is required to study this course.

4. **Course Name**:- Basic Electronics
   Course Number:- : CCP IV - (Section B) P-IX
   Outcomes:-

1. After completing this course students will be able to Identify and understand construction and properties of different types of P-N junction diodes
2. Apply knowledge of semiconductor devices to use them in different combinations to see their applications as amplifiers and oscillators
3. Design different circuits using semiconductor devices and demonstrate their usage.

5. **Course Name**:- Skill Enhancement Course I B. Electrical Measurements
   Course Number:- : CCPS I - (Section A) SEC-I
   Outcomes:-

1. This is a skill based course and is aimed to acquire skills related to characteristics and usage of the instruments for measurement of the electrical quantities like voltage, current, impedance and various other quantities using analogue and digital meters.
2. The students will learn the skills selecting meters of proper scales, connecting and handling them and also to use them. As this is a skill based course therefore it is expected that students will spend nearly half of the time in laboratory for gaining hands-on training.
3. This course is the pre-requisite for several advanced courses in physics, chemistry, and in almost all other disciplines. Pre-requisite for this course is the knowledge of physical quantities and their measurement.

6. **Course Name**:- Skill Enhancement Course II A. Electronic Devices and Equipments
   Course Number:- : CCPS I - (Section B) SEC-II
   Outcomes:-

1. This is a skill based course and is aimed to educate students about the working and usage of electrical appliances and other electrical devices.
2. This course enables the students to know the behavior of active and passive devices under ac and dc conditions and also to use them for designing various circuits such as signal generators and amplifiers. As this is a skill based course, therefore, after completing this course the students will be able to acquire skills and apply them in daily hood purpose.
3. As this course is of doit-yourself nature, therefore, the students are required to spend more than half of the time in laboratory. This course is the pre-requisite for several advanced courses in physics, chemistry, and in almost all other disciplines.
4. Pre-requisite for this course is the knowledge of semiconductor physics, knowledge of the semiconductor devices and their characteristics.

- B.Sc Third Year Physics

1. **Course Name**:- Quantum Mechanics

   Course Number:- P-XII DSEP I (Section A)

   Outcomes:-

1. The objective of this course is to introduce the students to the world of microscopic particles such as molecules, atoms, atomic nuclei and elementary particles, study their dynamics employing wave analogy, and also to make the connections between the rules governing the microscopic particles with that of the macroscopic bodies around us.
2. This course is the pre-requisite for several advanced courses in physics and chemistry and is necessary for understanding the behavior of molecules, atoms and elementary particles.
3. The pre-requisite for this course is knowledge of calculus, wave theory and modern physics. This course is the core course and every student pursuing B Sc with physics as one of the optional is required to study this course.

2. **Course Name**:- A. Solid State Physics
   Course Number:- P-XIII A - DSEP I (Section B)
   Outcomes:-

1. This course is designed to provide fundamental knowledge of the crystallography, principles behind the formation of matter, their structure and physical properties.
2. This course also enables the students to understand the relationship between the internal structure and various properties of matter such as periodicity, structure and bonding in solids, making these solids an attractive material for the device applications.

3. At the end of this course, students will be able to classify the materials in different classes based on their physical, thermal, electrical, and magnetic properties. This is an elective course of 02 credits offered at Semester V.

3. **Course Name**:-: Atomic, Molecular & Nuclear Physics
   Course Number:- P-XIV DSCP II (Section A)
   Outcomes:-

1. Aim of this course is to introduce the students to the world of physics of atoms, molecules and nuclei, their structures, emission of Gamma rays, X-rays, optical and microwave spectra from these systems, the interaction of atoms and molecules with electric and magnetic fields.
2. This course also provides adequate knowledge on the nuclear energy sources and reactions with its application in establishing nuclear reactors.

4. **Course Name**:-:. Digital and Communication Electronics
   Course Number:- P-XV A - DSEP II (Section B)
   Outcomes:-

1. This course enabels the students to understand the importance and interconvertibility of various number systems, principles of digital gates, and working principle of communication systems.
2. After completing this course students will be in a position to know the working of communication systems i.e., modulators, demodulators, transmitters and receivers, etc.
3. Students will be able to apply these concepts in future assignments.

5. **Course Name**:-:. Skill Enhancement Course: B. Electrical Circuit Analysis Skill
   Course Number:- SEC III (B)
   Outcomes:-

1. Aim of this course is to create awareness among the students about the electrical circuits, wiring of the electrical appliances and enable them to check for troubleshoots through hands-on exercises.
2. This course introduces the students to various electrical components including their characteristics and power losses.
3. As this course is of skill based, therefore, after completing this course students will not only be able to check the electrical connections at house-hold but will also learn the skill to repaire the electrical appliances for the general troubleshoots and wiring faults

6. **Course Name**:-:. Skill Enhancement Course Physics Workshop Skills
   Course Number:- SEC IV (A)

   Outcomes:-

1. Aim of this course is to create awareness among the students about the mechanical, electrical and electronic tools through hands-on activities.
2. This course introduces the students to the workshop skills like cutting, drilling, filing, different types of AC and DC generators, soldering-desoldering of electrical and electronics components, constructing regulated power supplies, etc.,

3. therefore, after completing this course students will gain skills of using various workshop tools and also to find faults and general troubleshoots and wiring faults.