Student Performance and Learning Outcomes

Programme Outcomes (POs) and Course Outcomes (COs) for all Programmes offered by the institution are stated and displayed on website and attainment of POs and COs are evaluated

Under Graduate Programme (UG)

Programme: B. Sc. Botany

POs:
The students graduating with the degree B.Sc. with Botany will be able to
PO1.Critical Thinking: Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PO2.Effective Communication: Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.

PO3. Social Interaction: Elicit views of others, mediate disagreements and help reach conclusions in group settings.

PO4. Effective Citizenship: Demonstrate empathetic social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO5. Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.

PO6. Environment and Sustainability: Understand the issues of environmental contexts and sustainable development.

PO7. Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes

PSOs: Upon completion of the programme successfully, students would be able to
1. Identify major groups of plants and compare the characteristics of lower (microbes, algae ,fungi, bryophytes and pteridophytes) and higher (Gymnosperms and angiosperms).
2. use evidence based comparative botany approach to explain the evolution of organism and understand the genetic diversity.
3. explain various plant processes and functions, metabolism, concepts of gene, genome and how organism's function is influenced at the cell, tissue and organ level.
4. understand adaptation, development and behavior of different forms of life.
5. demonstrate the experimental techniques and methods of their area of specialization in Botany.

Semester 1

Code of the Course/Subject Title of the Course/Subject

BOT(1S)/Botany DIVERSITY Of MICROBES , PHYCOLOGY, MYCOLOGY AND PHYTOPATHOLOGY

(Total Number of Periods) : **72**

CO's (Course Outcomes)

After completion of this course successfully , the students would be able to

1. understand microbial diversity, reproduction and economic importance.
2. differentiate the microbes, algae and fungi on the basis of morphology, cellular organization, nutrition and metabolic activities.
3. classify and identify the various algal genera.
4. classify and identify the various fungal genera.
5. Systematize the plant diseases and their pathogens
6. Apply understanding of microbial diversity, phycology and mycology for teaching primary to high school students

BOT(1S)/BOTANY Practical

No. of periods per week: 2

COs

After completion of this course successfully , the students would be able to

1. Identify and classify the algae on the basis of morphology and other characters.
2. Create monograph of Algae and Fungi.
3. Demonstrate the structural details of viruses and bacteria included in practical work.
4. Evaluate the plant diseases of local plants and diagnosed the diseases on the basis of symptology.

Semester- II

Code of the Course/Subject Title of the Course/Subject

BOT(2S) /Botany: Bryophytes, Pteridophytes, Gymnosperms and Morphology of Angiosperms

(Total Number of Periods) : 60

COs

After completion of this course successfully , the students would be able to

1. demonstrate on understanding of Archegoniate, Bryophytes, Pteridophytes and Gymnosperms.
2. identify and classify plants from Bryophytes, Pteridophytes and Gymnosperms.
3. develop critical thinking on morphology, anatomy and reproduction of Bryophytes, Pteridophytes and Gymnosperms.

4. acquire skill of collection and preservation of Bryophytes, Pteridophytes and Gymnosperms
5. Understand the herbal technology.
6. Develop the skill for cultivation of plants.
7. Acquire the skill of morphological and microscopic examination of herbal plants.
8. List the major herbs, their Botanical names and chemical constituent's.

Practical Sem II BOT(2S)/Botany
Total Number of Periods: 02
COs
By the end of the Lab/Practical Course, generally students would be able to:
1) Understand forms of Bryophytes, Pteridophytes and Gymnosperms.
2) Acquire the skill of preparation of slides of plant body and reproductive organs.
3) Classify and identify different plant parts on the basis of external morphology.
4) Describe the plants in technical language.
5) develop critical understanding on morphology, botanical names and cultivation practices of economically
important plants..

Faculty: Science and Technology

Programme: B.Sc. with Computer Science/ Computer Application [Voc/Non Voc] / IT

POs: After completion of graduation, students will be competent to:

PO1: Critical Thinking: Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PO2: Effective Communication: Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.

PO3: Social Interaction: Elicit views of others, mediate disagreements and help reach conclusions in group settings.

PO4: Effective Citizenship: Demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO5: Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.

PO6: Environment and Sustainability: Understand the issues of environmental contexts and sustainable development.

PO7: Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes

PSOs: At the end of this program, the students would be able to:

PSO1: Understand the computer hardware and software.

PSO2: use the knowledge of software installation.

PSO3: Select modern computing tools and techniques for programming task.

PSO4: Identify, analyze, formulate and develop computer-based solutions to meet desired needs within realistic constraints.

PSO5: Develop databases and perform operations on them.

PSO6: Identify research and development areas in multiple disciplines.

PSO7: Design and develop the small web applications.

Programme: B.Sc. Part I (Computer Science/ Computer Application [Voc/Non-Voc]/IT) Semester 1

Code of the Course/Subject Title of the Course/Subject (Total Number of Periods)

1CS1 Fundamentals of Computer and C Programming 84

COs

Upon completion of this course successfully, Students would be able to –

1. Understand the computer, I/O and peripheral devices.

2. Understand concept of Operating systems.

3. Apply the Programming concepts.

4. Learn C language.

5. Write Simple C Programs.

COs: 1. To draw flowchart, learn Algorithms and write simple programs. 2. To assess the curricular skills acquired by students at college level through Assignments, Unit test, Internal Test, Group Discussion/Seminar/Mini Project, Study Tour

Programme: B.Sc. Part-I Sem-I (Computer Science / Computer Application [Voc/Non-Voc]/IT)

Semester 1

Code of the Course/Subject Title of the Course/Subject (No. of Periods/Week)

1CSLAB1 Laboratory/Practical of Fundamentals of Computer and C Programming 06 periods per Batch per Week

* List of Practical/Laboratory Experiments/Activities etc.

Course Name: Fundamentals of Computer and C Programming

COs

Upon completion of this course successfully,

Students would be able to demonstrate/perform/accomplish the following

1. Write word processing task.

2. Create worksheet and perform operations on it.

3. Design, compile and debug programs in C language.

4. Classify conditional expressions and looping statement to solve problems associated with conditions and repetitions.

5. Demonstrate the programs using arithmetic and relational operators.

6. Implement the concept of various string handling functions.

7. Classify programming components that efficiently solve computing problems in real-world.

Programme: B.Sc. I Semester – II (Computer Science / Computer Application [Voc/Non-Voc]/IT) :Data Structure and OOPS

Code of the Course/Subject : 1CS2

Title of the Course/Subject (Total Number of Periods) : 84 Periods

COs

Upon completion of this course successfully, Students would be able to –

1. Implement basic data structures such as arrays, stacks.

2. use linked list, trees and queues.

3. Apply Algorithm for solving problems like sorting, searching, insertion and deletion of data.

4. Describe the procedural and object-oriented paradigm with concepts of streams, classes, functions, data and objects.

5. Perform programming on functions, inline functions, constructor and destructor.

6. Perform programming on the concept of function overloading, operator overloading, virtual functions and polymorphism.

COs:

1. Acquire skill to work with core components of data structure

2. Acquire object oriented programming skill.

Programme: LAB 2 B.Sc. I Semester II (Computer Science / Computer Application [Voc/Non-Voc]/IT) Semester - II Code of the Course/Subject Title of the Course/Subject (Number of Periods/Week) 1CSLAB2 Data Structure and OOPs 06 Periods/Batch per week Course name: Data Structure and OOPs lab COs Upon completion of this course successfully, Students would be able to demonstrate/perform/accomplish the following

1. Perform various operations Data structure using CPP.

2. Develop the concept of dynamic memory allocation through linked list.

3. Design stack and queue with contiguous and non-contiguous data storage mechanism.

4. Perform the various operations on binary tree.

5. Implement sorting on 1-D array using different techniques

Faculty of Science and Technology

Programme: B.Sc. Electronics

Science

Program Outcomes (POs):

At the end of the programme, students would be able to

1) Utilize the basic knowledge in Electronics science.

2) Identify electronic components and ICs.

3) Design system components that meet the requirement of public safety and offer solutions to the societal and environmental concerns

4) Apply research based knowledge to design and conduct experiments

5) Construct, choose and apply the techniques, resources and modern electronics tools required for Electronics applications.

6) Apply the contextual knowledge to assess societal, health, safety and cultural issues and endure the consequent responsibilities relevant to the professional electronics practice.

7) Examine the impact of electronics solutions in global and environmental contexts and utilize the knowledge for sustained development.

8) Develop consciousness of professional, ethical and social responsibilities as experts in the field of Electronics and Communication.

9) Perform effectively as a member/leader in multidisciplinary teams.

10) Demonstrate resourcefulness for contemporary issues and lifelong learning.

Program Specific Outcomes:

Upon completion of the programme successfully, students would be able to

1. acquire knowledge in fundamental aspects of all branches of Electronics

2. create inquisitiveness and problem-solving skills

3. apply the principles of Electronics in solutions to real world problems

4. get prepared for higher education and career in Electronics

5. develop skills in the proper handling of apparatus and components

6. apply Electronics in their day to day life

7. act as a responsible citizen

8. Select and apply cutting-edge engineering hardware and software tools to solve complex Electronics and Communication Engineering problems

9. Apply the fundamental concepts of electronics and communication science to design a variety of components.

COURSE OUTCOMES DSC-1S

What the student will be able to do at the end of Module/Unit (Knowledge/ Skill achieved OR Application of Knowledge /Skill to do what) /COs

1 At the end of this unit, students will be able to know passive and active components, analysis and verification of network theorems with numericals. Also students will be able to select and identify electronic components such as resistors capacitors etc. of required value.

2. After this unit, students will be able to understand principle and working of different meters and CRO . They will be able to handle and connect the measuring instruments such as Voltmeter, Ammeter etc. at appropriate place

3. At the end of this unit, students will be able to know function of diodes, rectifiers and voltage regulators. They will be able to design simple dc power supply

4. After completion of this unit, students will be able to know types transistor and their working in different modes, amplification and biasing, faults detection in electronic circuits. Also they will be able to design and construct simple amplifiers

5. At the end of this unit, students will be able to know Switching and Optoelectronic devices and their working. They will be able to use these active devices for many applications.

6. After completion of this unit, students will be able to know design and fabrication process of ICs and their scale of integration

COs (COURSE OUTCOMES) DSC-2S

1. After completion of this unit, students will be able to know number systems and binary codes, their interconversion and arithmetic, logic gates, use of logic gates in adders. They will be able to design and construct logic circuits using logic gates.
2. At the end of this unit, students will be able to understand Boolean algebra, De'Morgan's theorem, logic equations, K-map and logic families like DTL,TTL etc. They will be able to minimise logic equation, design and construct logic circuits using logic gates.
3. At the end of this unit, students will be able to know construction and working of multivibrators and flip-flops. Also they will be able to design and construct different types of flip-flops using logic gates.
4. At the end of this unit, students will be understand the construction and working of different types of counters and shift registers and their IC version. They will be able

to design and construct different types of counters and shift registers using flip-flops and logic gates.

5. After this unit, students will be know the construction and working of different types of encoders, decoders, multiplexers and demultiplexers and their IC version. They will be able to design and construct different types of encoders, decoders, multiplexers and demultiplexers using logic gates.
6. At the end of this unit, students will be able to know different types of memories and their working. They will be able to access these memories in serial and parallel mode (to read and write operations).

Faculty: Science and Technology

Programme: B Sc (Microbiology)

- POs: Students of undergraduate general degree programme at the time of graduation would be able to
- PO1.Critical Thinking: Take informed actions after identifying the assumptions that frame our thinking and actions, check out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
- PO2.Effective Communication: Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.
- PO3. Social Interaction: Elicit views of others, mediate disagreements and help reach conclusions in group settings.
- PO4. Effective Citizenship: Demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
- PO5. Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.
- PO6. Environment and Sustainability: Understand the issues of environmental contexts and sustainable development.
- PO7. Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long learning in the broadest contexts socio-technological changes.

- PSOs: Upon completion of the programme successfully, The students would be able to

1. gain insight of Microbiology starting from history and fundamental knowledge about the microorganisms.
2. acquire the skill in the use and care of basic microbiological equipment and can perform basic laboratory procedures in microbiology.
3. be well-informative about the integral role of microorganisms and different branches of Microbiology.
4. Be acquainted with the basic concept of prokaryotes, their taxonomy, their differentiation from eukaryotes.

Programme: B Sc Semester 1 Code of the Course/Subject : MCB1
Title of the Course/Subject : FUNDAMENTALS OF MICROBIOLOGY AND MICROBIAL PHYSIOLOGY
(Total Number of Periods): 90
COs
Upon completion of this course successfully, students would be able to
1. get knowledge of historical aspects of microbes and their importance as well as application in day to day life.
2. differentiate the microbes on the basis of their characteristics and apply the classification scheme for identification.
3. demonstrate the structure of prokaryotic and eukaryotic cell.
4. illustrate different types of microscopes and staining techniques.

5. compare and design different nutritional media for microbial growth.

COs:

1. Student will be able to get employment in different laboratories related with Microbiology work.
2. Student will be able to get employment in Microbial culture collection centers dealing with isolation, identification and maintenance of microorganism.

Semester 1

Code of the Course/Subject: MCB lab1

Title of the Course/Subject (Laboratory/Practical/practicum/handson/Activity): FUNDAMENTALS OF MICROBIOLOGY AND MICROBIAL PHYSIOLOGY Lab 1

(No. of Periods/Week): 06/week/batch

COs

Upon completion of this course successfully, students would be able to

1. acquire the skill in the use and care of basic Microbiological equipment.

2. perform basic laboratory procedures in microbiology; proper collection and forwarding of microbiological and parasitological specimens to the laboratory.

3. demonstrate different staining techniques.

4. acquire skill in bacterial motility.

Semester II

Code of the Course/Subject: MCB 2

Title of the Course/Subject : GENERAL AND APPLIED MICROBIOLOGY

(Total Number of Periods) : 90

COs

Upon completion of this course successfully, students would be able to

1. apply the knowledge of bacterial growth in industrial productions and determine the growth of bacteria.

2. demonstrate the nature, structure, general properties and replication of viruses as well as acquainted with the knowledge of interferon.

3. apply the concept of microbial control methods for prevention against infections.

4. formulate different microbial products using production strains of microorganisms.

5. evaluate microbe- host relationship in nature, humans and plants.

Semester 2

Code of the Course/Subject : MCB Lab 2

Title of the Course/Subject (Laboratory/Practical/practicum/handson/Activity) : GENERAL AND APPLIED MICROBIOLOGY

(No. of Periods/Week) : Lab 2 06/week/batch

COs

Upon completion of this course successfully, students would be able to

1. acquire the skill in the use and care of basic Microbiological equipment.

2. get employment in diagnostic laboratories.

3. analyze the effect of different parameters on growth of bacteria.

4. determine the nutritional requirement of microorganisms.

Faculty of Science and Technology

B. Sc. Zoology

POs: At the time of graduation, Students will be able to
PO1.Critical Thinking: Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid,and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PO2.Effective Communication: Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.

PO3. Social Interaction: Elicit views of others, mediate disagreements and help reach conclusions in group settings.

PO4. Effective Citizenship: Demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO5. Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.

PO6. Environment and Sustainability: Understand the issues of environmental contexts and sustainable development.

PO7. Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes

PSOs By the end of the programme, Students would be able to

1. Develop a deeper sense with respect to phylum Protozoa to Echinodermata relation to taxonomy, classification, body organization and general characteristics this strengthens students' capability in basic zoology.

2. grasp various the Systematic positions from Protozoa to Echinodermata their pathogenicity and its epidemiology.

3. describe unique characters and recognize life functions of Protozoa, Porifera, Coelenterate, Helminthes, Arthropoda, Annelida, Mollusca and Echinodermata. Improve ability and apply Knowledge of Nonchordates for its execution in Agriculture especially with the phylum Arthropoda.

4. Implement an extensive idea about economic and ecological significance of various non-chordates phylum's in human life.

Semester :I ,DSC -1-01S

Subject: Zoology

Name of the course (Paper): Life and diversity of Animals (Non-chordata)

Course Outcomes Code :

COs-01

About the course:

The course is a walk for the Bachelor's entrant through the amazing diversity of living organism from simple to complex. The course makes a detail comparison of the systematic study of different taxa of Non-chordate. It enlightens how each group of organisms arose and how did they establish themselves in the environment with their special characteristics. It also deals with the differences and similarities between organisms on the basis of their morphology and anatomy which led to their grouping into taxa and clades.

COs: Upon completion of this course successfully, students would be able to

1. Develop a deeper sense with respect to phylum Protozoa to Echinodermata relation to taxonomy, classification, body organization and general characteristics this strengthens students' capability in basic zoology.

2. grasp various the Systematic positions from Protozoa to Echinodermata their pathogenicity and its epidemiology.

3. describe unique characters and recognize life functions of Protozoa, Porifera, Coelenterate, Helminthes, Arthropoda, Annelida, Mollusca and Echinodermata.

4. Improve ability and apply Knowledge of Non-chordates for its execution in Agriculture especially with the phylum Arthropoda.

5. Implement an extensive idea about economic and ecological significance of various non-chordates phylum's in human life.

Name of the programme: B.Sc. I Class : Part II S

Semester :II ,

DSC-2-02S

Subject: Zoology

Name of the course (Paper): Life and diversity of Animals (Chordata) and concept of Evolution

Course Outcomes Code : COs-02

Max Marks : 80

About the course

The course is a walk for the Bachelor's entrant through the amazing diversity of living organism from simple to complex. The course makes a details comparison of the systematic study of different taxa of Non-chordate. It enlightens how each group of organisms arose and how did they establish themselves in the environment with their special characteristics. It also deals with the differences and similarities between organisms on the basis of their morphology and an anatomy which led totheir grouping into taxa and clades.

COs: Upon completion of this course successfully, students would be able to

1. know what the chordates are.

2. Learn about the different phylum of chordates.

3. confidently explain the general characters and classification of Protochordates upto class Mammalia. 4. understand the level of organization in chordate.

5. explain the origin and evolutionary relationship in different subphylums of chordates.

6. describe specific features of Protochordates upto class Mammalia.

7. recognize and differentiate life functions of Protochordates upto class Mammalia.

8. understand Migration in fishes and birds , parental care in Amphibians and Poisonous and non-poisonous snakes.

9. explain the adaptations in Birds and Mammals.

Programme: B.Sc. (Chemistry)

POs:

At the time of graduation, Students would be able to

PO1. Critical Thinking: Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PO2. Effective Communication: Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.

PO3. Social Interaction: Elicit views of others, mediate disagreements and help reach conclusions in group settings.

PO4. Effective Citizenship: Demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO5. Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.

PO6. Environment and Sustainability: Understand the issues of environmental contexts and sustainable development.

PO7. Self-directed and Life-long Learning: Acquire the ability to engage in independent andlife-long learning in the broadest context socio-technological changes

PSOs:

Upon completion of the programme successfully, the learners would be able to-

1. Understand the scope, methodology and application of modem chemistry.
2. Apply theoretical and practical concepts of instruments that are commonly used-in most chemistry field.
3. Plan and conduct scientific experiments and record the results of such experiments.
4. Get acquainted with safety of chemicals, transfer, and measurements of chemicals, preparation of solutions, and using physical properties to identity compounds and chemical reactions.
5. Describe how chemistry is useful to solve social, economic and environmental problem and issues facing our society in energy, medicine, and health.

Employability Potential of the Programme:

A degree in Chemistry is an intelligent choice for future employability and earning potential for

learners. Degree program with Chemistry offers the necessary knowledge, develop skills and nurture creativity to achieve success in virtually any field that's even distantly related in some way to chemistry. A degree in chemistry is recognized as a symbol of quality and commitment by employers both inside and outside the chemical industries. Chemistry provides jobs in cuttingedge technologies within science and research as well as in many fields of distant relations.

Chemistry graduates apply their skills within the areas of environmental sciences, medical fields, scientific equipment sales, science communication, teaching or academic research, a few to mention. Thus, a degree in chemistry widens numerous prospects and opportunities for a wide variety of careers in many different fields like science, research, business and health care, etc. Chemistry inculcates excellent analytical and mathematical skills, which lead to enhanced problem-solving abilities and critical thinking. This improves the likelihoods to secure job in other fields too. Some important skills and abilities honed by chemistry learners include:

- Cutting-edge scientific and numerical skills
- Curiosity to understand and solve
- Attention to collect and analyse details
- Patience and determination
- Research and development skills
- Analytical skills
- Use of ICT enabled techniques
- Written and oral communications skills

The thriving and widely recognized branches of chemistry like Organic, Inorganic, Physical, Analytical, etc. not only expand critical thinking and the ability to understand other scientific and engineering concepts more easily, but also open new horizons to pursue career in different fields. Organic chemistry offers research and development of organic materials, modify and study carbon-based materials to develop a product having a specific purpose for wider use. They also accomplish various scientific studies to identify or find applications for compounds for society. Many industries like pharmaceuticals, agriculture, paints, dyes, and many more prefer to employ organic chemists. Inorganic chemistry has a greater potential in the fields of metallurgy, synthesis of new materials from different elements, bioinorganic, etc. It focusses on solving the fundamental problems associated with structure of atoms, molecules and their properties. Analytical chemists find their role for toxicology examinations, quality control and assessment, analysis of pharmaceuticals, investigations for forensic analysis, development of equipment, etc. Analytical chemists work for a particular private or government laboratory or organization, and also develop particular specialties like food technology, forensics or toxicology, to name a few. Physical chemistry enhances critical ability and inculcates problem solving skills among the learners. All industries rely heavily on physical parameters for manufacturing and quality

assurance of products. Apart from the technical and specific skills, a chemistry graduate also acquires fundamental professional skills throughout the degree program to pursue careers not directly related to the field.

These skills include:

• Effective listening and communication skills

• Presentation and interaction skills

• Data collection, analysis and reporting skills

• Modern ICT enabled skills

• Aptitude to work proficiently independently or in a team

Future scope for B.Sc. Chemistry graduates:

● Prestigious institutions like IIT, NIT, IISER, IISc, BARC, TIFR, a few to mention, offer higher studies such M.Sc. and Ph.D.

● Likewise, foreign Universities also accept chemistry graduates for higher studies.

● Chemistry student can become small or medium scale entrepreneur (own industry).

● Union and State Public service commissions like UPSC, MPSC, Bank Probationary officers, other competitive examinations, etc. offer a multitude of jobs and positions like Drug Inspector, Lab chemist, forensic analyst, etc. for chemistry graduates.

● Students can take teaching jobs at Kendriya Vidyalaya, Navodaya Vidyalaya, High Schools after completing B.Ed. or respective eligibility criteria.

● Laboratory technician in various Public Sector Units like ONGC, IOCL, NTPC, BARC, and Private sector industries.

● Students can become Content Developer for IT industries.

● Students can become Quality Control Chemists/ Food Inspector at Food Co-operation of India, Food Safety and Standards etc

● Laboratory technicians to look after sophisticated instruments like NMR, Mass Spectrometer, UV-Visible Spectrophotometer, Single crystal machines, XRD, SEM, AAS, TEM etc. in research laboratory of academic institutions as well as private sector companies

● Research Scientist/ Operations Manager/ Chemists / Quality Manager / Research Manager at various industries like Pharmaceuticals, Cement, Plastic, Drugs, Paint, Dyes, Agricultural sector, etc.

● Employee at Security Printing and Minting co-operation of India

● Employee at Office of Controller general of Patent design and trade work

Syllabus Prescribed for Three Year UG/PG Programme

Semester 1 Code of the Course/Subject Title of the Course/Subject

CHE(1S)T Chemistry 1S

COs:

By the end of this course, the students would be able to:

1. Solve the conceptual questions using the knowledge gained by studying periodicity in atomic radii, ionic radii, ionization energy and electron affinity of elements.
2. Apply concepts of acids and bases as well as non-aqueous solvents and their industrial usage.
3. Compare different reaction intermediates, functional group chemistry through the study of methods of preparation, properties and chemical reactions with underlying mechanism.
4. Choose correct synthetic approach to prepare derivatives of industrially important molecules
5. Solve different numerical problem of varying difficulty associated with gaseous and liquid state.
6. Apply the concepts from advanced mathematics to solve the derivation of different chemical formulae.

Late Ku. Durga K. Banmeru Science College, Lonar
Department of Physics
Program Outcome, Program Specific Outcome and Course Outcome

Programme Outcomes

	At the time of graduation, Students will be able to
	PO-1: Critical Thinking: Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives. **PO-2:** Effective Communication: Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology. **PO-3:** Social Interaction: Elicit views of others, mediate disagreements and help reach conclusions in group settings. **PO-4:** Effective Citizenship: Demonstrate empathetic social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering. **PO-5:** Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them. **PO-6:** Environment and Sustainability: Understand the issues of environmental contexts and sustainable development. **PO-7:** Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes
	Programme Specific Outcomes **PSOs:** Upon completion of the Programme successfully, students would be able to **PSO-1:** acquire a comprehensive knowledge and sound understanding of fundamentals of Physics **PSO-2:** develop laboratory skills, enabling them to take measurement in a physic laboratory and analyze the measurements to draw valid conclusions. **PSO-3:** be prepared to acquire a range of general skills, to solve problems, to evaluate information, to use computers productively, to communicate with society effectively and learn independently. **PSO-4:** Develop good oral and written scientific communication skill.

	Course Outcomes B. Sc. Physics **Semester – I**
Course/Unit	**Outcomes** On successful completion of the course students would have;
Unit-I	**CO:** Discuss the basic concepts of rotational dynamics.
Unit-II	**CO:** Examine the phenomenon of simple harmonic motion and distinction between un-damped, damped and force oscillations and the concept of resonance
Unit-III	**CO:** Explain the superposition of simple harmonic motion and acquire the knowledge of Ultrasonic waves, their production, detection and applications in different field.
Unit-IV	**CO:** Understand fundamentals the elastic properties of matter. Determine the constants of elasticity and relate it with appropriate things.
Unit-V	**CO:** Interpret the postulates of special theory of relativity. Know the concept of Global positioning system (GPS)
SEM: Skill Enhancement Module	After completion of this course students will able to **CO-1: Apply the principles of measurement and error analysis.** **CO-2: Develop the skills to handle various instruments with precision.**
Physics Practical's	On successful completion of this practical course, the students would be able to **CO-1:** List out, identify and handle various equipment likes different types of pendulums. **CO-2: Learn the procedures of operation of various oscillating objects.** **CO-3: Acquire skills in observing and measuring different types of errors.** **CO-4:** Perform procedures and techniques related to experiments based on mechanics. **CO-5: Conduct experiments collaboratively and ethically.**

	Course Outcomes B. Sc. Physics **Semester – II**
Course/Unit	**Outcomes** On successful completion of the course students would have;
Unit-I	**CO:** Discuss the concept of scalars & vectors and their properties
Unit-II	**CO:** Develop an understanding of Gauss law and its applications to obtain electric filed in different cases.
Unit-III	**CO:** Formulate the relationship between electric displacement vector, electric polarization and dielectric constant.
Unit-IV	**CO:** Distinguish between the magnetic effect of electric current, electromagnetic induction and the related laws in appropriate circumstances
Unit-V	**CO:** Simplify electrical circuits by applying various network theorems.
SEM:	After completion of this course students would be able to

Physics Practical's	On successful completion of this practical course, the students would be able to **CO-1: Simplify various electrical circuits by using network theorems.** **CO-2:** Learn the procedures of operation of electrical components like capacitor, resistor and inductor. **CO-3: Acquire skills in measuring dielectric constants of different materials.** **CO-4:** Perform procedures and techniques related to experiments based on electrical and electronic circuits. **CO-5: Conduct experiments collaboratively and ethically.**

	Course Outcomes B. Sc. Physics **Semester – III**
Course/Unit	**Outcomes** After completion of these courses students should be able to;
Mathematical Background and Electrostatics	**CO1:** To understand concept of Mathematical Physics such as Gradient, divergence and curl of a vector fields, line, surface and volume integral. To study Gauss divergence theorem, Stocks theorem. **CO2:** Know basic concept of Electrostatics & its applications.
Magnetostatics and Maxwell's Equations	**CO1:** To study Faraday's Law, Maxwell's Equations & wave equations for electromagnetic wave. **CO2:** To understand Poynting vector and Poynting theorem.
Solid State Electronics Devices-I	**CO1:** To know semiconductors, charge carriers & electrical conduction, Fermi level & energy level diagrams, mobility and conductivity. **CO2:** To understand Hall effect, Hall coefficient, Semiconductor diode & its biasing, LED and Varactor diode.
Solid State Electronics Devices-II	**CO1:** Study BJT, its construction & working, modes of operation, current gains & their relation & CB & CE characteristics **CO2:** To study JFET- construction & working & it's Characteristics. **CO3:** Gain knowledge of Basic concept of Difference amplifier & to study the Operational Amplifier and their types.
Special Theory of Relativity	**CO1:** To understand the Special of Special Theory of Relativity, Lorentz transformations, Length contraction, Time dilation, relativistic addition of velocities, relativity of mass, Einstein's Mass - energy relation. **CO2:** To solve Numerical for better understanding.
Atmosphere and Geophysics	**CO1:** To study structure of earth, Earthquakes, composition of atmosphere. **CO2:** To understand Radiation in the atmosphere, moisture and clouds.
Physics Practicals	**CO:1** Design circuit & study characteristics of CB & CE transistor. **CO:2** Design circuit & study characteristics of FET & FET as voltmeter. **CO:3** Design circuit & study p-n diode as a rectifier. **CO:4** Design circuit & study characteristics of p-n junction. **CO:5** Study of OP AMP as an inverting amplifier, non-inverting amplifier, adder & subtractor. **CO:6** To determine characteristics of Phototransistor. **CO:7** Design circuit & study Zener regulated power supply.

	Course Outcomes B. Sc. Physics Semester – IV
Course/Unit	**Outcomes** After completion of these courses students should be able to;
Geometrical Optics and Interference	**CO1:** Understand optical lens system. **CO2:** Learn interference in thin films due to reflected and transmitted light, interference in wedge shaped thin film, **CO3:** Understand formation Newton's ring, measurement of wavelength of monochromatic light & refractive index of liquid by Newton's.
Diffraction	**CO1:**Understand diffraction phenomenon such as Fresnel diffraction, Fraunhofer diffraction, single & double slit diffraction **CO2:** Understand construction and theory zone plate & plane transmission grating **CO3:** Know resolution of images, Rayleigh's criteria for resolution and R. P. of grating.
Polarization	**CO1:** Know about the basic concepts of polarization & phase retardation plates. **CO2:** Study of production of elliptically and circularly polarized light. **CO3:** Study Half shade polarimeter
Laser	**CO1:** Know the history of LASERS and its basic concepts. **CO2:** Understand the basic principle and working of different types of lasers such as Ruby laser He-Ne laser, Semiconductor laser etc. **CO3:** Know the applications of lasers in various fields.
Fiber optics	**CO1:** Study basic concept of fiber optics, structure and classification of optical fiber. **CO2:** Understand propagation of light wave in an optical fiber, **CO3:** Know acceptance angle and numerical aperture, dispersion, fiber losses, fiber optic communication. **CO4:** Gain information of advantages and disadvantages of optic fibers, application of fiber optics.
Renewable Energy Sources	**CO1:** Know various renewable energy sources **CO2:** Know Solar energy & To gain knowledge of Solar Energy Storage**.** **CO3:** Study Solar Photovoltaic systems-Operating principle, photovoltaic cell concepts & solar PV panel its applications.
Physics Practicals	**CO:1** Design circuit & study (a) half wave rectifier (b) full wave bridge rectifier & investigate the effect if C, L & π filter. **CO:2** Learn how to determine refractive index & dispersive power of prism. **CO:3** Learn how to determine resolving power of plane transmission grating & telescope. **CO:4** Learn how to determine wavelength of monochromatic light by Newton's rings & plane transmission grating. **CO:5 To** study & plot characteristics of solar cell. **CO:6** To determine frequency & phase by CRO. **CO:7** Learn how to determine number of lines per centimeter of given grating & resolving power.

	Course Outcomes B. Sc. Physics Semester – V
Origin of Quantum Mechanics	**CO1:**To Understand origin of quantum mechanics. Describe concept of wave packet. **CO2:** Know Davisson Germer experiment **CO:3** To understand Heisenberg's Uncertainty principle& its verification using Thought experiment and Gamma ray microscope.
The Schrodinger Equation and Its Applications	**CO1:** To understand concept of wave function & its significance. **CO2:** Know the Schrodinger equations and its applications. **CO3:** To understand Eigen functions and Eigen values and qualitative analysis of zero point energy.
Atomic and Molecular Spectroscopy	**CO1:** Understand vector atom model & study Stern-Gerlach experiment and different types of coupling. **CO2:** Know the properties and types of X-ray **CO:3** To study for Raman Effect & its basic principal
Nuclear Physics	**CO:1** Know about detection of charge particles by using G. M. counter. **CO:2** Understand concept of nuclear physics like, Alpha decay, Beta decay, Concept of nuclear fission and fusion. **CO:3** Study construction & working of nuclear reactors.
Hybrid parameters & Amplifier	**CO:1** Understand hybrid parameter, CE amplifier, Bias stability & Thermal runaway **CO2:** Study RC coupled amplifier & its variation in gain with frequency **CO:3** Study noise & distortion in electronic circuits.
Feedback in amplifiers & Oscillators	**CO:1** Know properties, advantage and applications of negative feedback. **CO:2 CO:2** Describe the construction and working of various types of oscillators and multivibrators.
Physics Practical's	**CO1:** Construct regulated power supply using Zener diode and draw the regulation curve. **CO:2** Determine hybrid parameters& its practical applications **CO:3** Design circuits for RC coupled amplifier and study the frequency response. **CO:4** Construct Hartley, Colpitt, Wein's Bridge Oscillator and measure the frequency of oscillations. **CO:5** Identify elements in optical line spectrum. **CO:6** Design the circuit to study characteristics of LED & to determine plank constant using LED **CO:7** Determine 'e' by Thomson's method.

	Course Outcomes B. Sc. Physics **Semester – VI**
Statistical Mechanics	**CO:1** Understand the concept of Phase space, unit cell, microstates, and macro state. **CO:2** Study concept of probability, principle of equal priori probabilities & most probable distribution **CO:3** Maxwell Boltzmann statistics, and its applications.
Statistical Mechanics	**CO:1** Study Distinguishable & indistinguishable particles & understand concepts of boson & fermions. **CO:2** Compare Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac Statistics and derive it's outcomes **CO:3** Understand Fermi function, Fermi energy & Fermi temperature.
Crystallography	**CO:1** Distinguish between crystalline and amorphous solids. **CO:2** Study how to calculate atomic packing factor for Cubic structure. **CO:3** Explain symmetry elements and Bravis lattice. **CO:4** Distinguish between various types of crystal imperfection.
Electrical Properties of Materials	**CO:1** Analyze the success and failure of free electron theory. **CO:2** Study origin of band gap & classification of materials on the basis of bans structure **CO:3** Understand Hall effect & its applications.
Magnetic Properties of Materials	**CO:1** Understand different types of magnetic materials **CO:2** Study classical & quantum mechanical treatment of paramagnetism; **CO:3** Study Curie's law, Weiss's law, Hysteresis and Energy Loss.
Superconductivity & Nano Technology	**CO:1** Understand superconductors and its type, Meissner effect & Applications of superconductors. **CO:2** Understand nanomaterials, is physical properties & applications of nanomaterials in different fields.
Physics Practical's	**CO:1** Understand basic laws, theory, characteristics of photocell and can be determine Plank's constant using photocell. **CO:2** Design the circuit to study characteristics of Photo diode. **CO: 3Determine** activation energy of thermistor and energy gap of semiconductor. **CO: 4Understand** basic laws, theory and determine Hysteresis losses in transformer core & plot B-H curve. **CO:5** Determine lattice parameter by using X-ray diffraction pattern. **CO:6** Understand various crystal structure using crystal models & identify of crystal planes. **CO:7** Design the circuit to study characteristics of Zener Diode **CO:8** To study thermo e.m.f. using thermocouple.

Programme: B.Sc. (Mathematics)

POs: At the end of the programme, graduates would be able to

1. Enhance the knowledge of student in all basic sciences.

2. Identify, formulate and develop solutions to computational challenges.

3. Develop scientific temper and think in a critical manner.

4. Build up progressive and successful career in academics, industry and society.

5. Develop students abilities and aptitudes to apply the mathematical ideas.

PSOs : Upon completion of the programme successfully, students would be able to

1. Understand major concepts in all disciplines of Mathematics

2. Formulate and develop Mathematical arguments in a logical manner

3. Gain good knowledge and understanding in advanced Mathematics

4. Create an awareness of the impact of Mathematics on the environment, society and development outside the scientific community.

5. Create sensitivity towards environmental concerns and contribute in the development of nation

Programme : B.Sc.-I (Mathematics) Semester- I

DSC-I Algebra and Trigonometry

Cos: After completing this course, students would be able to

1. Find inverse and normal form of matrices.

2. Evaluate the characteristic equation, eigenvalue and corresponding eigenvector of a given matrix

3. Evaluate relation between the roots and coefficients of equations .

4. To study application of De Moivre's theorem .

5. Compute summation of trigonometric series.

DSC-II / Mathematics Differential and Integral Calculus

Cos: After completing this course, students would be able to

1. Define limit and study the basic properties.

2. Classify continuity and discontinuity of the functions.

3. Solve the differentiability and l'hospital rule with their applications.

4. Describe the geometrical applications of mean value theorems.

5. Evaluate the reduction formulae for integration.

DSC-III / Mathematics Ordinary Differential Equations

COs: After completing this course, students would be able to

1. Solve first order differential equations using different techniques.

2. Solve higher order differential equations and orthogonal trajectories.

3. Calculate complementary function and particular integral of the second order differential Equation

4. Describe the different methods to solve second order differential equations.

5. Illustrate applications of differential equations.

DSC –IV/ Mathematics Vector Analysis and Geometry

COs: After completing this course, students would be able to

1. Interpret the vectors, their products, differentiation and integration.

2. Determine curvature and torsion.

3. Apply the concepts of divergence, curls which are useful in physics.

4. Describe the different forms of sphere and properties.

5. Discuss the equations of cone and cylinder.

Faculty: Science &

Technology

Programme:- B.Sc.

Subject: Compulsory English

Preamble: English language plays an essential role in our lives as it helps in better communication on personal, social, literary, interdisciplinary topics and also in business world. It is the main language for studying any subject all over the world. It shall help to build up general language proficiency through listening, speaking, reading and writing, and provide the more opportunity to acquire broader information and specialized knowledge of particular subject through the English language. It is important for science students to learn English as it broadens their minds, develops communication skills and improves the quality of life by providing better job opportunities. It will perfect their communicative credentials, gain confidence, lead to achieve the goal early, make their personality effective, make them the part of global community, and enhance the opportunity of multiple career prospects. Since English is a global language used in many spheres of human life today, it has gained significance in every field. Skills and expertise acquired in usage of the languagemakes the students present themselves effectively and skilfully for jobs/ employment/ profession in various fields.

Course Outcome :

1. To facilitate the learners in acquiring listening and speaking competence

2. To assist the learners in independent language comprehension and production

3. To make the students aware about the different communicative functions of English.

4. To improve skills and proficiency for being employed as teachers, state government employees,civil aviation, engineering and medico-related industry, defence, commerce and taxation sector.

5. To be able to speak, write, read and listen flawlessly in person and through the electronic modein English.

6. To understand views of others, mediate contradictory views/ disagreements, reachingconclusion in groups / group discussions.

7. To understand and use basic skills of the English language for applying it in the job assigned /employment accepted / profession undertaken.

Course Specific Outcome : After completion of this course successfully, students would be able to

1. Understand nature and nuances of English Language used in prose lessons and poetic passages.

2. Apply the knowledge of English to communicate with others on personal, social, literary andinterdisciplinary topics.

3. Compare the structure of English language to use LSRW.

4. Formulate the sentences as per situational requirement.

5. Differentiate between acceptable and unacceptable sentences in English.

6. Create appropriate, grammatically correct and acceptable sentences in English.

7. Develop general language proficiency through listening, speaking, reading and writingSyllabus Prescribed for B.Sc. I Sem I Year

UG Programme Programme: B.Sc

Semester 1Course Learning Outcome

/CO

At the end of the Course, student would be able to:

CO1 understand the paragraph, prose, poetry and communicative skills.

CO2. apply the four skills of language in his daily inter-personal communications.CO3. formulate/ compose his own sentences and able to speak English Language.CO4. converse with other students in English.

CO5. communicate their ideas, thoughts and concepts properly in English.

B. Sc. I Semester II Compulsory

EnglishCos:

At end of the course students would be able to

CO1 understand the paragraph, prose, poetry and communication skillsCO2. apply the four skills of language in his daily routine.

CO3. formulate/ compose his own sentences and able to speak English Language.CO4. collaborate with others students in English.

CO5. communicate properly their ideas, thoughts and concepts in English

Principal

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Late. Ku. Durga K. Bannerji Science College
LONAR, Dist.Buldhana

Student Performance and Learning Outcomes

Programme Outcomes (POs) and Course Outcomes (COs) for all Programmes offered by the institution are stated and displayed on website and attainment of POs and COs are evaluated

Faculty of Science and Technology Programme:

M Sc Computer Science

PROGRAMME OUTCOMES (POs)

Upon completion of the programme successfully, students would be able to

PO1: Problem Analysis Identify, formulate, review research literature and analyze complex engineering problems in Computer Science and Engineering reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

PO2: Design / Development of Solutions Design solutions for complex engineering problems and design system components or processes of Computer Science and Engineering that meet the specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations.

PO3: Conduct Investigations of Complex Problems Use research-based knowledge and research methods including design of experiments in Computer Science and Engineering, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO4: Modern tool usage Create, select and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex activities related to Computer Science with an understanding of the limitations.

PO5: The services to the society Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice in Computer Science and Engineering.

PO6: Project Management Demonstrate knowledge and understanding of the computer science and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

Upon completion of the programme successfully, students would be able to

PSO 1: deliver efficient solutions for emerging challenges in the computation domain through continuous learning

PSO2 design, develop, implement computer programs and use knowledge in various domains to identify research gaps and hence to provide solution to new ideas and innovations.

Semester-I

Core Subjects

Course Code 1MCS1

Course Name 1 Computer System Design

Total Credits 4

Course Outcomes:

Upon completion of this course successfully, students would be able to

1. Understand the theory and architecture of central processing unit.

2. Analyze some of the design issues in terms of speed, technology, cost, performance.

3. Design a simple CPU with applying the theory concepts.

4. Use appropriate tools to design verify and test the CPU architecture.

5. Understand the theory of memory system design

6. Understand the architecture and functionality of central processing unit.

7. Exemplify in a better way the I/O and memory organization

Course Code 1MCS2

Course Name 2 Data Structure with OOP

Total Credits 4

Course Outcomes

Upon completion of this course successfully, students would be able to

1. Learn the concepts of linear data structures such as arrays, linked lists, stacks and queues.

2. Learn the concepts of non-linear data structures such as trees& Graph.

3. Learn and understand various data searching and sorting methods with its complexity.

4. Demonstrate operations such as insertion, deletion, searching and traversing on data structures.

5. analyse and apply specific sorting and searching methodsdepending upon factors like type of data, volume of data.

6. Learn &Understand B-tree indexing, hashing, collisionsprocessing and its applications.

7. Learn the fundamental concepts of data structures.

8. Identify and Apply the fundamental concepts of data structures 9. Apply Academic Skills & Critical Thinking Skills

Course Code 1MCS3

Course Name 3 Data Base Management Technologies

Total Credits 4

Course Outcomes: On completion of this course, students would be able to:

CO1:Analyze Database Management System & its Architecture and design ER model.

CO2: Implement database queries using database languages and normalize the database design using normal forms.

CO3: Write queries and PL/SQL Code blocks for given requirements, using different SQL and PL/SQL concepts.

CO4: Apply different query processing, optimizing, indexing and hashing techniques in real-time database.

CO5: Apply Transaction Management concepts, concurrency control concepts and deadlock handling concepts in real-time situations CO6: Use advanced database Programming concepts like Parallel databases, Distributed database & Object-based database for processing data.

Course Code 1MCS4

Course Name 4 Computer Network & Wireless Communications

Total Credits 4

Course Outcomes

: Upon completion of this course successfully, students would be able to

1. Apply cellular concepts to evaluate the signal reception performance in a cellular network and traffic analysis to design cellular network with given quality of service constraints.

2. Determine the type and appropriate model of wireless fading channel based on the system parameters and the property of the wireless medium.

3. Analyse and design receiver and transmitter diversity techniques.

4. Determine the appropriate transceiver design of multi-antenna systems and evaluate the data rate performance.

5. Design wireless communication systems with key 3G (e.g., CDMA) and 4G (OFDM) technologies.

6. Describe and differentiate four generations of wireless standard for cellular networks.

Course Code 1MCS5

Course Name 4-Advanced Java/ Ns2/ Tools

Credits Course Outcomes

1. Advanced Java: Upon completion of this course successfully, students would be able to

1. become familiar with the advanced features of Java Language

2. Design a desktop application which can used for many kind of clients.

3. Gain the knowledge of J2EE architecture, MVC Architecture.

4. Design a web application which can work as a dynamic web with the help of JDBC.

5. Develop an application which can also be connected with the database.

6. To understand Java Servlets and their life cycle

7. To understand Java server Pages (JSP) technology

8. To develop JSP Custom tags and use them in JSP pages

2. NS-2 Tool: Upon completion of this course successfully, students would be able to

1. demonstrate operation of network

2. simulate and demonstrate the performance of GSM and CDMA

3. implement data link layer and transport layer protocols.

4. Demonstrate Installation procedure of the required software in groups and document the same in the journal.

Course Code 1MCS8

Course Name Lab-II 3-SQL/ DBMS tools, MS-SQL, My Sql

Course Outcomes

Course Outcomes: Upon completion of this course successfully, students would be able to

1. Demonstrate the Basics Concepts and SQL Queries of Database Management System.

2. Apply the Conceptual Design Model and Database Hierarchical Structure to construct the real-world requirement.

3. Analyze the various constraints to populate the database through SQL Queries.

4. Implement different working concepts of DBMS using SQL Queries.

5. Present the result of database creation and querying process, document it.

Course Code 2MCS2

Course Name 2 Graphics Application programming

Total Credits 4

Course Outcomes

Course Outcome: Upon completion of this course successfully, students would be able to

1. Learn the fundamental concepts of Computer Graphics.

2. Identify and Apply the fundamental concepts of Computer Graphics in Animation, Virtual Reality.

3. Apply Academic Skills & Critical Thinking Skills

4. understand the mathematical modelling of graphical objects to be drawn/used in different kind of applications.

5. Learn and understand the concepts of computer graphics, including viewing, projection, perspective, modelling and transformation in 2D & 3D.

6. Learn and understand the algorithms to generate line segments, polygon and its transformations, windowing and clipping.

7. Demonstrate operations such as various Transformation and Projection.

8. Demonstrate various algorithms for scan conversion and filling of basic objects and their comparative analysis.

9. Implement display control, 3D geometry, primitives and conversions, algorithms for hidden surfaces and lines, concepts of shading and curves

Course Code 2MCS3

Course Name 3 Software Engineering Total Credits

Course Outcomes

Course Outcome: Upon completion of this course successfully, students would be able to

1. identify the need for engineering approach to software development and various processes of requirements analysis for software engineering problems.

2. Analyse various software engineering models and apply methods for design and development of software projects.

3. Work with various techniques, metrics and strategies for Testing software projects.

4. Identify and apply the principles, processes and main knowledge areas for Software Project Management

5. Proficiently apply standards, CASE tools and techniques for engineering software projects

15/3/23

Principal

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