

**Govt. Dr. Shyama Prasad Mukherjee Science  
& Commerce College, Bhopal, MP**



**Couse Learning Outcomes**  
**2017-18**

## **Department of Chemistry**

### **Programme Outcomes B. Sc.**

Students will demonstrate an understanding of major concepts in all disciplines of chemistry. Students will employ critical thinking and the scientific method to design, carry out, record and analyze the results of chemical experiments and get an awareness of the impact of chemistry on the environment, society, and other cultures outside the scientific community.

- Demonstrate, solve and an understanding of major concepts in all disciplines of chemistry.
- Solve the problem and also think methodically, independently and draw a logical conclusion.
- Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of chemical reactions.
- Create an awareness of the impact of chemistry on the environment, society, and development outside the scientific community.
- Find out the green route for chemical reaction for sustainable development.
- To inculcate the scientific temperament in the students and outside the scientific community.
- Use modern techniques, decent equipments and Chemistry software's.

#### **Specific Programme Outcomes of B.Sc.**

- B.Sc. Chemistry provides backbone in all the traditional branches of Physical, Inorganic, organic and Analytical chemistry.
- The experimental work will be continues throughout the session to develop the theoretical knowledge and practical as well.
- Graduates from this course will be better prepared to understand the new environment friendly systems and can understand the processes that the chemical industry is adopting.

- The course has been designed to have insight in almost all the aspects of chemistry and to build a solid foundation in the subject to choose a career in industry or academics or research.
- The syllabus very well designed and it covers the areas like water chemistry, consumer products-soaps, detergents, shampoos, skin preparations, polymer chemistry, drugs, industrially important chemicals used in Industry.
- The employment areas for the B. Sc. Chemistry graduates include pharmaceutical industries, chemical manufactures, forensic science department, plastic industries, agro industries etc. apart from these they are also recruited in the field such as oil, gas and power sectors, defence services.

### **Programme Outcomes of M. Sc**

After successful completion of two year degree program in chemistry a student should be able to:

- Determine molecular structure by using UV, IR and NMR.
- Study of medicinal chemistry for lead compound.
- Improve the Skill of student in organic research area.
- Synthesis of Natural products and drugs by using proper mechanisms.
- Study of Asymmetric synthesis.
- Determine the aromaticity of different compounds.
- Solve the reaction mechanisms and assign the final product.

### **Specific Programme Outcomes of M. Sc.**

- Know the structure and bonding in molecules/ ions and predict the structure of molecule/ions.
- Understand the various type of aliphatic, aromatic, nucleophilic substitution reaction.
- Understand and apply principles of Organic Chemistry for understanding the scientific phenomenon in Reaction mechanisms.

- Learn the Familiar name reactions and their reaction mechanisms.
- Understand good laboratory practices and safety.
- Study of organo metallic reactions.
- Study of free radical, bicyclic compound, conjugate addition of enolates and pericyclic reactions.
- Study of biological mechanisms using amino acids.
- There are various higher study options for candidates who have completed their PG in Chemistry. They can join for the various other PG and research courses related to the topic of interest. Such Master of Philosophy in applied chemistry or basic chemistry. They can opt for Ph.D. in different fields of chemistry.

- **Course Outcomes**

- Understand the principles of various fields of chemistry (organic, inorganic, physical, analytical, and biochemistry)
- Develop as independent thinkers who are responsible for their own learning
- Develop transferrable quantitative skills
- Be able to work with others demonstrating leadership and collaborative skills
- Demonstrate a comprehensive understanding of the theory and practice of modern instrumentation and apply it to appropriate chemical problems
- Recognize potential laboratory safety concerns and address them using appropriate techniques
- Produce scientific reports formatted for peer-reviewed publication, using the primary literature
- Present the results, conclusions, and relevance of scientific experiments to a specific audience.

## ➤ **Department of Commerce**

### **Programme Outcome**

- This programme provide well trained professionals for Industries, Insurance Companies, Transport Agencies, Banking sectors, Financial companies, Warehousing etc. to meet the well trained manpower requirements.
- The graduates will get hands on experience in various aspects acquiring skills for Marketing Manager, Selling Manager, over all Administration abilities of the company. • It provides students with the knowledge and technical skills in the accounting and financial fields.

### **• Programme Specific Outcome**

- The students should possess the knowledge, skills and attitudes during the end of the B.com degree course.
- By virtue of the training they can become an Manager, Accountant, Management Accountant, Bank Manager, Company Secretary, Professor etc.

### **• Course Outcomes**

- The student should have a thorough knowledge on the accounting practice prevailing in partnership forms and other allied aspects.
- On the successful completion of this subject the students acquires the knowledge about the various types of business organizations and office management.
- To enable the students to learn principles and concepts of Accountancy.
- The students are enabled with the knowledge in the practical applications of accounting.
- This course aims to provide an in-depth knowledge on the provisions of Income Tax and to familiarize with recent amendments in Income-Tax.
- To keep the students conversant with the ever-enlarging frontiers of Cost Accounting knowledge.

- The student should be able to work efficiently in MS-PowerPoint and Tally.

### ➤ **Department of Physics**

#### **Programme Outcome**

- Physics is a branch of science that studies matter and its motion through space and time, along with related concepts such as energy and force. Physics is one of the fundamental sciences because the other natural science deal with systems that seems to obey the law of Physics. According to Physics, the physical laws of matter, energy and the fundamental forces of nature govern the interactions between particles and physical entities (such as plants, molecules, atoms or the subatomic particles).
- Physics deals with a wide variety of systems, certain theories are used by all physicists. Each of these theories were experimentally tested numerous times and found to be an adequate approximation of nature.
- Physics uses mathematics to organize and formulate experimental results and from which new predictions can be made.
- The results from physics experiments are numerical measurements. Technologies based on mathematics, made computational physics as active area of research.

#### **• Course Outcomes**

- The students will demonstrate a scientific knowledge of the core physics principles in Mechanics, Electromagnetism, Modern Physics and Optics
- The student will determine the appropriate level of technology for use in experimental design and implementation, analysis of experimental data and numerical and mathematical methods in problem solutions
- The students will demonstrate a purposeful knowledge of scientific literature and ethical issues related to physics
- The students will effectively communicate their knowledge of physics from basic concepts to specific detailed presentations through a variety of oral, written and computational modalities
- To acquire the basic knowledge of

mechanics, properties of matter and gravitation • Learn motion of bodies and sound waves • To inspire interest for the knowledge of concepts in physical and geometrical physics.

➤ **Department of Mathematics**

**Programme Outcomes of B.Sc. (Mathematics)**

- Understand the basic concepts, fundamental principles, and the scientific theories related.  
to scientific phenomena and their relevancies in the day-to-day life.
- Being able to think creatively to propose novel ideas in explaining facts and figures or providing new solution to the problems.
- Recognize real-world problem that are related to mathematical analysis, and formulate mathematical models of such problems.
- Use Mathematical and statistical techniques to solve well-defined problems and present their mathematical work, both in oral and written format, to various audiences.
- Formulate the analysis of mathematical and statistical problem, precisely define the key terms, and draw clear and reasonable conclusions.
- Read, understand and construct correct mathematical statistical proofs and Use the library and electronic data-bases to locate information on Mathematical problems.

**Specific outcomes of B.Sc (Mathematics)**

- In banking sector students can get in to with mathematics.
- They can prepare for MPPSC and UPSC exam.
- .Mathematics graduate can work as finance and investment analyst and advisor and chartered or certified accountant.
- A career in teaching offers unparalleled job satisfaction.

**Programme Outcomes of M.Sc. (Mathematics)**

- The main outcome of these courses is to give first-hand knowledge in advanced mathematics and forefront research experience.
- Mathematicians seek out pattern and formulate new conjectures which resolve Truth or falsity of conjectures by mathematical proof.

- Able to apply the knowledge of mathematical science to solve real life Problems.

### **Specific outcomes of M.Sc. (Mathematics)**

- Student can choose to pursue research in your area of interest in maths.
- Student can go in to the teaching sector also.
- Student can work as a statistician, research analytic , Business analyst, Economic analytic, Operations analyst , Data analyst, Financial analyst, Numerical analyst, Mathematician, Researcher , Computer system analyst, and statistical quality control.
- There are various defence departments who recruit mathematician for various posts especially naval academy.
- PSUs and Banking also look for post graduates.

### **Course Outcomes**

- Knowledge of differential equations is useful in space research, Medical research and applied mathematics. Further it is a foundation for higher studies in Mathematics.
- Study of solid geometry enhances visualization of real geometrical structures to study their nature and properties
- As Abstract Algebra interlaces all branches of mathematics, the study of Abstract Algebra is imperative to develop mathematical skills and their applications. Further it is a foundation for higher studies in Mathematics.
- The study of Real Analysis enhances the analyzing capacity of the student and helps to solve real life problems which are very complex logically. Further it shapes the thought process of the student.
- As Abstract Algebra interlaces all branches of mathematics, the study of Abstract Algebra is imperative to develop mathematical skills and their applications. Further it is a foundation for higher studies in Mathematics.
- The study of Numerical Analysis develops the capacity of the student to solve numerical problems, reasoning and provides skills to solve problems in the Allied areas of Mathematics
- The study of Advanced topics of Numerical Analysis provides exposure to the students to know about the latest developments and to keep abreast of new findings in Numerical Analysis.



- The study of special functions, which are very very complex provides the students to understand very very complex functions. This knowledge will develop a rare insight of the student.

### ➤ **Department of Zoology**

#### **Programme Outcome**

- Students are awarded with UG degree which helps them to get job.
- Students acquire knowledge of zoology; it broadens their outlook towards importance of study of science as a subject at undergraduate level.
- It provides students a launch-pad to enroll themselves for post graduate study in zoology.
- Practical work make the students skillful, this skill help them to solve common problem in their daily life.
- Various activities like field survey and photography project develop their hidden talent, make their mind face to think and act. Science exhibition, poster competition, short trip help in shaping their personality.

#### **Programme Specific Outcomes**

- Students become well versed regarding basic concepts of modern biology, field survey work and social extension program and their applications in real life.
- Students acquire knowledge of zoology; it broadens their outlook towards importance of field survey work in identifying and classifying and distribution of animals.
- It provides students a launch-pad to enroll themselves for post graduate study in systematic and taxonomy.
- Practical work make the students skilful, this skill will help them to design outdoor activities involving local citizens in conserving biodiversity in their daily life.
- Various activities like field survey and photography project develop their hidden talent, make their mind face to think and act. Science exhibition, poster competition, short trip help in shaping their personality and do innovations which will be beneficial for the country.

- Participation in various cultural programs builds their confidence which help them to interact with different individuals in the society and work for well fare of the community people.

#### **Course outcomes:**

- The student will be able to understand classify and identify the diversity of animals.
- The student will be able to understand the morphology, habit and habitat. Systematic position and various systems in Paramecium and frog.
- The learner will be able to link the intricacies of food chains, food webs and link it with human life for its betterment and for non-exploitation of the biotic and abiotic components.
- The Learner understands and appreciates the diversity of ecosystems and applies beyond the syllabi to understand the local lifestyle and problems of the community.
- The learner will understand the importance of cell as a structural and functional unit of life.
- : Gain knowledge to define the concepts of the applied subjects like Fisheries, Aquaculture and Pest Control.
- Gain knowledge to define the concepts of the applied subjects like Apiculture and Sericulture.
- The student will be able to label the organs and systems of Pila globosa. and Calotes versicolor •
- Knowledge of basic terms in histology, physiology. Explain the anatomy of various systems. •

#### **➤ Department of Botany**

#### **Programme Outcome**

- Job Opportunities by MPSC and UPSC exams, Railway Recruitments And Technical persons in Government Research labs, etc.
- After completing B.ed students can get job as a teacher in various school and junior colleges.
- B.Sc Botany student can do their Master's degree in Botany , Environmental Science , Biotechnology and other related fields.

- After Master's degree they can pursue their Ph.D in Indian universities or in Foreign universities.
- After completing GATE they can join IIT colleges for M.Sc + Ph.D integrated programs.
  - They can also opt for Professional courses like M.B.A

### **Specific Program Outcome**

- Student can join Botany related or life Science related private firms.
- Can join agriculture seed companies, tissue culture labs, pharma companies, etc.
- Can work as an environmental consultant in various agencies.
- Develop inclination towards Environmental consultants.
- Student can start their venture in Nursery for development of various plant variety plantlets.  
Can do production of bio- fertilizers and bio- pesticides.
- Can work as a consultant for garden development and landscape designing.
- Can start their food processing unit.
- Can do cultivation of medicinal plants for conservation and Harvesting.
- Raw material provider for medicinal industry.

### **• Course Outcomes**

- A student completing the course is able to understand different branches of Botany such as systematics, evolution, ecology, developmental biology, physiology, biochemistry, plant interactions with microbes and insects, morphology, anatomy, reproduction, genetics and molecular biology of various life-forms. The student completing the course is able to identify various life forms of plants, design and execute experiments related to basic studies on evolution, ecology, developmental biology, physiology, biochemistry, plant interactions with microbes and insects, morphology, anatomy, reproduction, genetics, microbiology, molecular biology, recombinant DNA technology, proteomics and transgenic technology.