



**TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE  
COLLEGE (GIRLS),  
DAMMAPETA**

**Bhadradi Kothagudem District, Telangana State – 507101**  
(Affiliated by Kakatiya University, Warangal, Telangana)



# **DEPARTMENT OF CHEMISTR**

## **HISTORY OF THE DEPARTMENT**

- Department of Chemistry was established in the academic year 2017-2018. Since its inception, the Department was recognized for teaching in the various areas of Chemistry. The Department offers an undergraduate program which is in affiliation with Kakatiya University, Warangal.
- The Department has also implemented the Choice-based Credit System for grading B. Sc students, which offers flexibility in the structuring and assessment of courses. The overall goal of Chemistry Department has been to impart quality education at under graduate level along with continuous efforts on basic and applied aspects of Chemical sciences.

## **Vision and Mission:-**

### **Vision:**

To stimulate the young minds to contribute to the chemically literate society through active participation in learning and research.

### **Mission:**

To produce skilled in Chemistry with highest professional standard, moral values and well-being to society.

To develop knowledge and skill towards industry as well as research and teaching professional.

### **SWOC:**

#### **Strength:**

- ✚ Dedicated, well experienced and qualified teaching faculty
- ✚ We are conducting PG coaching classes
- ✚ Lunch and study facility for day scholar students.

#### **Weakness:**

- ✚ Entry level knowledge of students in Chemistry is very low.
- ✚ Irregularity in attendance.
- ✚ Poor & illiterate family background.

#### **Opportunities:**

- ✚ Students are encouraged towards higher education and research, teaching, government jobs and pharmaceutical industries.

**Challenges:** Early marriages of girl students.

**Highlights of the Department:** Achieved 100% results from 2020 academic onwards.

- ✚ College toppers are from BSc MZc
- ✚ Many students pursuing M.Sc Chemistry into state prestigious Universities like OU, KU.
- ✚ Faculty using ICT, Google classroom, PPT's classes.

### BSc. Program under CBCS-Chemistry

Semester	Title of the paper	Credits (T+P)	Hours per week	total marks (T+In+P)
I	Chemistry-I	4+1=5	4+3=7	80+20+25=125
AECC	Environmental Science	2	2	40+10=50
II	Chemistry-II	4+1=5	4+3=7	80+20+25=125
III	Chemistry-III	4+1=5	4+3=7	80+20+25=125
IV	Chemistry-IV	4+1=5	4+3=7	80+20+25=125
SEC	RMP & Soil fertility	2	2	40+10=50
V	Spectroscopy & Chromatography	4+1=5	4+3=7	80+20+25=125
VI	Medicinal Chemistry	4+1=5	4+3=7	80+20+25=125

#### Curriculum Design and Development:

- ✚ Our college is affiliated to Kakatiya University Warangal. We strictly follow the curriculum designed by Kakatiya University Warangal.
- ✚ From the academic year 2017-2018 onwards CBCS has been introduced with combination of BZC (Botany, Zoology and Chemistry), MPC (Maths, Physics and Chemistry).
- ✚ From 2018-19 academic year onwards BSc MZC, a new combination was introduced.

#### Program/Courses Offered:

- ✚ BSc - Maths, Physics, **Chemistry**.
- ✚ BSc - Botany, Zoology, **Chemistry**.

### Work Load of the Department

Programme B.Sc.	Paper	Theory Hours/week	Practical Batches	Practical Hours	Total
1 <sup>st</sup> Year	I	8	4	8	16
	AECC	2	-	-	2
	II	8	4	8	16
2 <sup>nd</sup> Year	III	8	4	8	16
	I V	8	4	8	16
	SEC 4	2	-	-	2
3 <sup>rd</sup> Year	V	8	2	4	12
	VI	8	2	4	12
					92/week

## Department of Chemistry Programme Specific Outcomes

- ✚ Be versatile in classical laboratory techniques, use instrumental methods for analysis as well as synthesis and follow standardized procedures and regulations in handling and disposal of chemicals.
- ✚ 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.
- ✚ Be able to integrate knowledge gained in Chemistry to General education courses.
- ✚ Be able to access, scout and use the chemical literature and also able to work as a member of a team.

## COURSE OUTCOMES

### **Chemistry-I**

CO-1: Students learn chemical bonding and related theories like Fagan's rule, polarity, VSEPR theory, Molecular orbital theory and molecular orbital energy diagrams etc.

CO-2: To learn about the p-block elements emphasizing on structures of Diborane and higher boranes, Carbides and nitrites and properties.

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CO-3: To make an understanding of structural theory in organic chemistry like bond polarization, applications of inductive effect, basicity of amines and carboxylic acids.

CO-4: Acyclic hydrocarbons of alkanes, alkenes and alkynes preparation and chemical properties and aromatic hydrocarbon observations.

CO-5: To know about basic concepts of physical chemistry of atomic structure and elementary quantum mechanics, gaseous state and liquid state.

## **Chemistry-II**

CO-1 To learn about inorganic chemistry concepts like p-block elements of oxides, oxyacids inter halogens and pseudo halogens.

CO-2: Zero group elements and d-block elements properties and applications.

CO-3: Obtain knowledge about halogen compounds, alcohols, phenols, ethers and carbonyl compounds

CO-4: To gain knowledge about theory of quantitative analysis, stereochemistry and Colligative properties.

## **Chemistry-III**

CO-1: Students learn inorganic chemistry of f block elements and co-ordination compounds.

CO-2: In organic chemistry students able to learn carboxylic acids and derivatives, nitro hydrocarbons and amines, cyanides and isocyanides.

CO-3: In physical chemistry students acquire the subject of thermodynamics and its laws, applications CO-4: General chemistry gives knowledge about evaluation of analytical data, carbon ions and phase rule.

## **Chemistry-IV**

CO-1: In inorganic chemistry students learn CFT, HSAB and applications of coordination compounds and bioinorganic chemistry.

CO-2: In organic chemistry carbohydrates, amino acids, proteins and heterocyclic compounds knowledge is obtained.

CO-3: In Physical chemistry knowledge is obtained about photochemical laws, applications.

CO-4: In General chemistry theories of bonding in metals, Carbene ion -II, colloids and surface chemistry and its applications.

### **Chemistry-V**

CO-1: The students to able gain the subject of coordination compounds and its applications.

CO-2: Boranes and Carboranes properties and applications.

CO-3: In organic chemistry amines, cyanides and isocyanides, heterocyclic compounds properties and its applications study.

CO-4: In Physical chemistry chemical kinetics, its laws and various applications are studied.

CO-5: Molecular spectroscopy techniques and Photochemistry tools handling, results observation and analysis is learnt by the students.

### **Chemistry-VI**

CO-1: Students able to gain the knowledge about Chromatography techniques and methodology.

CO-2: To know about applications of various chromatographic techniques.

CO-3: Understand the Colorimetry, Spectro photometry, IR spectrophotometer and other techniques

CO-4: In inorganic chemistry inorganic reaction mechanism, bio inorganic chemistry, HSAB analysis learnt by the students.

CO-5: In organic chemistry carbohydrates, amino acids and proteins awareness is obtained.

CO-6: In thermodynamics the laws and applications awareness is created among the students.

CO-7: In general chemistry students able to learn Mass spectrometry and entropy.

CO-8: To acquire knowledge of introduction and basic concepts of medicinal chemistry.

CO-9: To know about enzymes properties, mechanism of action and types of inhibition.

CO-10: Importance of drugs, its synthesis, mechanism of action and applications in treatment of diseases CO-11:  
To know about molecular messengers and health promoting drugs and vitamins.

## **CRITERIA-I CURRICULAR ASPECTS**

- We follow the syllabus framed by the Kakatiya University, Warangal. From the academic year 2017-18 Choice based Credit System (CBCS) has been introduced in the curriculum by university. As per the almanac of the university every semester has 15 weeks of instruction period and 60 to 90 instruction hours per semester including 30 hours of practical classes. A revised CBCS syllabus has been implemented from 2019-20 academic year and we follow the same.
- At the beginning of even and odd semester's departmental semester plan is prepared by the department and individual semester plans are prepared by the faculty members. Apart from the regular curriculum department of chemistry organized awareness programmes on the importance of protecting environment. As part of green initiative and beautification of the campus, the department of chemistry has been actively involved in making of detergent powder.