



DEPARTMENT OF MATHEMATICS GOVT. DEGREE COLLEGE (W) GOLCONDA

INTRODUCTION

The Department of Mathematics is one of the science departments of Government Degree College for Women, Golconda established in 2015, it had the rare privilege of becoming the first science department of the college. The college is now affiliated to the Osmania University, Hyderabad. Right from 2015, the department offered a 3-year undergraduate program in Mathematics with Physics and Chemistry as subsidiary subjects. The course was modeled on the annual evaluation system and the instruction was tailored to address the learning objectives defined in the syllabus. With the introduction of a choice based credit system, the department moved to a more flexible and innovative space in terms of the form and content of the program from 2016 onwards. The new program is structured on a semester basis which runs through 3 years from the entry-level. From the academic year, 2018-19 another Course with Mathematics, Physics and Chemistry has been started.

VISION

- ❖ To facilitate women's access to the domain of scientific knowledge to contribute significantly to the dissemination of new knowledge in the discipline of Mathematics by providing a strong foundation.
- ❖ To provide Problem-solving skills and knowledge which can pave for self-employment for women and in establishing their educational institutions.
- ❖ To inculcate critical thinking, group discussions, analytical skills to enable me to pursue higher studies and research in Physical sciences and Technology.
- ❖ To create human resources in the region properly equipped and trained strictly in adherence to the discipline of Mathematics.
- ❖ Inculcate high values through a liberal education
- ❖ Promote research and learning at the UG level and beyond.

MISSION

The goals of the mission are well defined and synchronized with its vision.

- ❖ To stimulate the propensity of the women in the region to imbibe the spirit of knowledge
To provide space for appropriate pedagogy to inculcate the knowledge of the discipline and the human values
- ❖ To offer academic programmes at undergraduate and postgraduate levels in the discipline of Mathematics.
- ❖ To strengthen the drive for moving towards the applications knowledge of the discipline of Mathematics.
- ❖ To move beyond academics to provide leadership for community-centered activities in the region.

ACADEMIC PROGRAMMES

BACHELOR OF SCIENCE IN MATHEMATICS

- ❖ The academic program at the undergraduate level with Mathematics as an optional and Physics and Chemistry as other optional leads to the bachelor of science. It is a 3 years program with (CBCS) choice based credit system.
- ❖ The academic program at the undergraduate level with Mathematics as one of the optional and Physics and Computer Science as the other two options. It is also a 3 years program with (CBCS) choice based credit system.

PROGRAMME AND MEDIUM OF INSTRUCTION.

- ❖ B.Sc (MPC)., E/M & U/M.
- ❖ BSc. (MPCs), E/M

The Core Papers (Old system)-2015-2018 (First batch students)- Annual exam pattern.

- ❖ Paper I- Differential Equations and Solid Geometry
- ❖ Paper II-Modern Algebra and Real Analysis
- ❖ Paper III-Abstract Algebra, Matrix theory, and Inner Product spaces.
- ❖ Paper IV-Numerical Analysis.

The Core Papers (New CBCS System)-2016-2018 (Semester system).

- ❖ Semester I – Differential Calculus.
- ❖ Semester II – Differential Equations.
- ❖ Semester III – Real Analysis
- ❖ Semester IV – Algebra.
- ❖ Semester V (DSC) – Abstract Algebra.
Semester V (DSE) – I(A)- Solid Geometry
I(B)- Integral Calculus
- ❖ Semester VI (DSC) – Numerical Analysis.
Semester V (DSE) – II(A)- Vector Calculus
II(B)- Complex Analysis

The Core Papers (New CBCS System)-2019-2020 (Semester system).

- ❖ Semester I – Differentiation and Integration.
- ❖ Semester II – Differential Equations
- ❖ Semester III – Real Analysis

- ❖ Semester IV – Algebra.
- ❖ Semester V – Abstract Algebra
- ❖ Semester VI—Numerical Analysis.

COURSE OUTCOMES OF MATHEMATICS

I-YEAR SEMESTER- I

TITLE: Differential and Integral Calculus

On completion of the courses, students will be able

- Learn the concept of partial differentiation
- Finding Maxima and Minima of Functions of two variables
- Finding the Curvature and Radius of Curvature and Centre of Curvature
- Finding Evolute and Involute
- Finding Length of a curve
- Finding Volume of Revolution of a curve

I –YEAR SEMESTER- II

TITLE: Differential Equations

On completion of the courses students will be able:

- To Form a Differential Equations
- Solving I order me degree differential Equations
- Solving I order and Higher degree differential equations
- Solving higher order linear differential equations

II YEAR SEMESTER-III

TITLE: Real Analysis

On completion of the courses students will be able:

- Give examples of a Real Sequence
- To find Lt of sequence
- To find Convergence of a sequence
- Form an Infinite Series and its convergence
- To know the Radius of convergence of Power series
- To know the Reiman integrability of real functions.

II- YEAR SEMESTER- IV

TITLE: Algebra

On completion of the courses students will be able:

- Form a Group
- Identify Identity and Inverse.
- Forming Subgroups and Cosets
- Form Cyclic Group
- to test whether a set is a Ring
- To test the Homomorphism of groups and Rings.

III YEAR - SEMESTER-V

TITLE: Abstract Algebra

On completion of the courses students will be able:

- To test a set of Vectors is a vector space over a field of scalars
- To form a subspace and see that the intersection of two subspaces is a subspace
- To find Direct sums
- To find Determinants, finding matrix associated with a linear transformation
- To find Rank and Nullity and Nullspace and Zero space
- To find the Basis of a Vector space Nullspace and row space
- To know an inner product space and orthogonality.

III-YEAR- SEMESTER-V - DSE I(B)-

TITLE: Integral Calculus

On completion of the courses students will be able:

- To find Line integrals.
- To find Surface integrals
- To find Volume integrals.
- To find integrals by changing variables
- To find integrals using polar, cylindrical and spherical coordinates.

III YEAR - SEMESTER-VI

TITLE: Numerical Analysis

On completion of the courses students will be able:

- To find an approximate solution to an equation.
- To find approximate the value in a table
- To approximately evaluate the definite integral
- To find derivatives of a function defined in a table
- To fit a curve for data by the method of least squares

III YEAR - SEMESTER-VI -DSE-II (A)

TITLE: Vector Calculus

On completion of the courses students will be able:

- To find Derivatives of Vectors
- To find Derivatives of functions
- To find Divergence Gradient and Curl of vector functions
- To find Integration of vector functions
- To find Line integrals
- To find Surface Integrals
- To find Volume integrals

PROGRAMMES AND MEDIUM OF INSTRUCTION.

- ❖ B.Sc MPC EM & UM
- ❖ B.Sc. MPCs EM

THE NUMBER OF TEACHING POSTS:

<i>Designation</i>	<i>Sanctioned</i>	<i>Filled</i>
Professors	Nil	Nil
Associate Professors	1	1
Assistant Professors	Nil	Nil

Faculty profile: DR. Md. Ameenuddin

<i>Name</i>	<i>Qualification</i>	<i>Designation</i>	<i>Specialization</i>	<i>No. of Years of Experience</i>	<i>No. of Ph.D. Students guided for the last 4 years.</i>
Dr. Md.Ameenuddin	M.Sc., M.Phil. Ph.D	Asso. Prof. in Mathematics	Fluid Dynamics	33	-

LIST OF PAPERS PUBLISHED:- 06(3: NATIONAL 3: INTERNATIONAL)

- (i) Steady flow of a Second order fluid in a porous medium between two horizontal parallel fixed porous plates

published in the International Journal of Mathematical Sciences, Technology and Humanities ISSN 2249-5460

- (ii) Steady flow of a second order slightly viscous fluid through a porous medium between two horizontal fixed permeable plates.

published in the Journal of Pure and Applied Physics Vol.23 no. 1, Jan-March, 2011, pp. 23-35. ISSN 0974-8970

- (iii) Low suction Reynold's number Steady flow of a Second order fluid through a porous medium between two fixed horizontal permeable plates

Published in the International Journal of Mathematical Sciences, Technology and Humanities 1 (2011) 1-18. ISSN 2249-5460

- (iv) Steady flow of a second order slightly viscous fluid through a porous medium between two horizontal permeable plates in relative motion.

published in the Journal of Pure and Applied Physics Vol.22 no. 1, Jan-March, 2010, pp. 85-100. ISSN 0974-8970

- (v) Second order Visco-elastic fluid flow through a porous medium with small suction Reynold's number between two horizontal permeable plates in relative motion

presented in the conference on 28th Feb'2011, and published in the International Journal of Mathematical Sciences, Technology and Humanities 13 (2011) 125-139. ISSN 2249-5460

- (vi) Steady flow of a second order fluid with small injection/suction Reynold's number in a porous medium between two horizontal parallel fixed permeable plates, one with a porous lining

published in the Journal of Pure and Applied Physics Vol.22 no. 3, July-Sept, 2010, pp. 551-561. ISSN 0974-8970

Orientation and Refresher Courses Attended:

1. Attended Orientation course of 4 weeks at Academic Staff College Osmania university, From 3-8-2000 to 31-8-2000
2. Attended Refresher Course in Mathematics of three weeks at Central University of Hyderabad
3. Attended Refresher Course in Computer Science of three weeks at Central University of Hyderabad
4. Attended Refresher Course in Mathematics of three weeks at Osmania University Hyderabad

Seminars Attended:

1. “ Numerical techniques in Science and Technology” conducted by VignanaJyothi College of Engineering and Technology on 27th and 28th April'07
2. “ National Seminar on Numerical Techniques “ Organized by Department of Mathematics, Osmania University College of engineering, on 3rd and 4th August 2007.
3. Attended a one-day orientation training programme on Contributor Personality Training at Vivekananda Institute of Human Excellence on 14-09-2018.

TEACHING METHODS ADOPTED TO IMPROVE STUDENT LEARNING

- Innovative Methods i.e., PowerPoint Presentation, etc.
- Some of the teaching methods that are adopted to enhance student learning by the Mathematics department are using 3D figures on the smartboard
- Students Seminar, Group discussions, Quiz programmes.
- Guest lectures by subject experts.
- Attending MANA TV topics delivered by subject experts and students.
- Remedial classes for weak students.

Learning Resources

- Departmental library

ICT Resources

- 1 Desktop with a Net connection

FUTURE PLAN

- Planning to establish a P.G. course in Mathematics.