

Department of Mathematics
Govt. Digvijay P.G College, Rajnandgaon
DEPARTMENTAL ANNUAL REPORT

Session 2020-21

1. Year of Establishment-

U.G. - 1959

P.G. - 1970

2. Thrust Area - The teachers of the department are working in the field of Fixed Point Theory, Reliability Modeling and Approximation Methods.

3. Courses Offered - In U.G level courses offered are given below-

1. Mathematics, Physics, Chemistry
2. Mathematics, Physics, Computer Science
3. Mathematics, Physics, Industrial Chemistry
4. Mathematics, Physics, Geology

Note:-With these groups the student can have option of Add-On course as certificate, diploma, advanced – diploma-**Information Technology (I.T.) and Electronic Equipment Maintenance (EEM)**

4. No. of Students (in each course)- Session 2020-21

B. Sc. I	-	292
B.Sc. II	-	317
B.Sc. III	-	237
M. Sc. Previous	-	58
M.Sc. Final	-	55

5. No. of sanctioned posts	-	05
Professor	-	01
Assistant Professor	-	04

6. No. of Teachers-

a.	Dr. Shabnam Khan	- Prof. & Head
b.	Dr. K.K. Dewangan	- Asstt. Professor
c.	Dr. Hemant Kumar Sao	- Asstt. Professor
d.	Prof. Kavita Sakure	- Asstt. Professor

Curricular Aspects

A. Curriculum Planning and implementation

Every month, the Head of Department organizes the meeting with faculties where discussions regarding department and their implementations are done. We prepare month-wise teaching plan for which separate registers are maintained.

Implementation and Innovation

i. Month Wise teaching plan

- The syllabus is divided into units. Every teacher plans the syllabus for the whole session at the beginning of the session. Teaching diary is prepared by each teacher. It is checked by Dean of Faculty and signed by the principal every month. Thus implementation of teaching curriculum is ensured.
- In July, we analyzed the results of all the B.Sc. (Maths) classes and plan for improvement of results.

ii. For improvement of result

- After completion of each unit, class test were taken by subject teachers of each classes. Evaluated answer script shown to students and given feedback of students.
- After completion of syllabus a Model Test were taken by covering all syllabuses.
- A Model Question bank provided as per new pattern of examination.
- For UG students, a revision and doubt classes were arranged and notes were provided to them.
- Model answers were provided to them.
- In P.G, before practical exams we took classes where we discussed viva questions.

iii. Innovative methods used for implementation of curriculum-

- Teaching is not only done by chalk-duster method but also ICT.
- We motivated students to attend Spoken English free coaching which is organized by the English department of the college.
- Paper presentation by P.G. students is made through power point.
- For teaching and learning practices students go to nearby school and taken classes at secondary and higher secondary level students.

B. Academic Flexibility

As per UGC norms, academic flexibility is used when needed. We provide academic flexibility to choose different combination of subjects in the admission of 1st Year of U.G. level. In B.Sc. III year, there is optional choice in paper III. We have opted Numerical Analysis with Computer Programming looking for its vast application in the various field such as computer science, engineering etc and in research work related to different field.

In order to update the existing curriculum, three optional papers in B.Sc. III are introduced. These papers have wide application in day to day life.

- i) Applications of Mathematics in finance and insurance
- ii) Mathematical Modeling
- iii) Discrete Mathematics
- iv) Programming in C and Numerical Analysis

In P.G. level out of the long list prescribed in U.G.C. curriculum we have preferred to opt optional paper as per their importance in NET/SET and applications science, engineering and other field.

We have one optional paper **Advanced Discrete Mathematics** in M.Sc. I and II semester which includes recent topics on algebra (Boolean / finite state machine and graph theory). These are very important tools for solving specific problems of science, engineering research.

Three optional papers in M.Sc. III and IV semester.

- i) **Operations Research:** - Operation Research has got wide scope. It is used in many organizations including business, industries, management, finance, production, defense etc. Thus OR has got great scope in various fields.
- ii) **Programming in C (with ANSI feature)** theory and practical has been included in the syllabus in M.Sc. III and IV semester looking for its wide applications in Mathematical analysis.
- iii) **Fuzzy Sets and its applications** has been opted. This paper has a great extent and is career oriented. It is useful in research purpose .
These subjects are flexible in reference to mobility. They may join any job in research centers. They can pursue M.Phil. /Ph.D. in applied Mathematics.

C. Curriculum Enrichment

- To develop I.T. and electronic skills we have introduced Add-On Course in “I.T.” and EEM”, along with B.Sc. course.
- To develop communication skills we have introduced Add-On Course Spoken English and Creative writing along with B.Sc. course.
- For innovative teaching and learning ICT based teaching methods are adopted.
- **Credit Based Grade system (CBGS)** was implemented for **PG classes**.

D. Feedback System_–

- Open House feedback system has been adopted and as per feedback we sort-out the students, parents views and problems try to overcome them.
- We have taken feedback from stakeholder and as per their requirement and demand we modify our curriculum.

E. Documentation- Curriculum (Board of Studies)

On 27.08.2020, Board of Studies meeting was held for approving the syllabi of U.G. and P.G. for academic session 2019-20.

List of BOS Nominee and members

Dr. Padmavati	- V.C. Nominee
Dr. B.S. Thakur	- Principal Nominee
Dr. Madhu Shrivastava	- Principal Nominee
Shri Iqbal Singh Chhabada	- Nominated member from Industry
Dr. Shabnam Khan	- Head of Department
Dr. K.K Dewangan	- Member
Dr. Hemant Kumar Sao	- Member
Prof. Kavita Sakure	- Member

The syllabus of B.Sc. I, II, III year and M.Sc. I, II, III and IV semester was approved according to Hemchand Yadav University, Durg.

F. Enrichment Programme

- Organize special lecture by subject experts and teachers.
- Organize classes for NET /SET /JRF(CSIR) Examination.
- Organize carrier and job oriented classes.
- Organize Madhav Mathematics Competitions.

G. Parent-Teacher Association

Every session we arrange the Parents-Teacher meeting. In this meeting we invite guardians of the students and they give feed backs. After this we analyze them and try to make improvement. The department has been arranged the Alumni meeting on 10.07.2021.



Parent-Teacher Meeting

H. Teaching Learning and Evaluation

i) Student Enrolment Profile

The Enrolment Profile is preserved in the departmental records.

S. No.	Name of Course	Applications Received	No. of Enrolled students
1.	B. Sc. I	1473	292
2.	B. Sc. II	317	317
3.	B. Sc. III	237	237
4.	M. Sc. Previous	392	58
5.	M. Sc. Final	55	55

ii) Admission-

Admission is done on Merit basis keeping in view the Reservation policy. Preference is given to the students who have achievements in sports, cultural, NCC, NSS, Scout/Guide and other fields.

- In P.G. and U.G. classes internal test is compulsory.
- For continuous evaluation at the end of each unit we take unit test.
- PPT presentation and Assignment is compulsory for P.G. Students in the topic decided by the department.
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iii) Catering to Students' Diversity-

- Special attentions are given to the weaker students of B.Sc. by organizing remedial classes.

- Special classes are arranged for NET/SET preparations and for competitive exams.
- Special guidance is given to advanced learners.

iv) Teaching Learning methods

- Traditional methods of teaching as well as multimedia teaching methods are used.
- Ms PowerPoint, Graphics and Flash Slide Show Software are used for teaching and learning.
- The department has a very rich library with more than 800 text books as well as reference books.
- The department is equipped with internet facility, LCD, computers, scanner, printer, photocopier etc.
- Various journals are in the main library. P.G. students are encouraged to deliver weakly seminars through power point presentation.
- Apart from class room teaching question-answer session and tutorial classes are also held for U.G. and P.G. students. Faculty members are available beyond class hours for students.
- Guest lectures are also organized for students by subject experts to improve their knowledge in various topics.

List of Guest Lectures

Subject Expert	Designation	Date	Topic
Prof. Vinay Masiyare	Assistant Professor, Govt. College, Thelkadeeh	20.01.21	Complex Analysis
		28.01.21	
Shri Bharat Pesswani	Penguin Coder Institute, Bhilai	02.01.21	Programming in C
		04.02.21	

Madhava Mathematics Competition (A Mathematics competition for UG students)

11 UG students participated in this competition on 09.02.2021 conducted online by Department of Mathematics, S.P.College, Pune and Homi Bhabha Centre for Science Education, T.I.F.R., Mumbai which is funded by National Board for Higher Education.

Alumni Meeting

The department has been arranged the Alumni meeting on 15.07.2021.



Alumni Meeting

J. Qualifications and Achievements

S · N	Teacher's Name	Faculty Type	Qualification	Seminar/ Workshop/ FDP/ Webinar Att.	Paper Presented	Invited Talk/ Delivered Lecture	Published Paper	Total
1	Dr. Shabnam Khan	Professor & Head	M. Sc., Ph. D.	16	NIL	1	NIL	17
2	Dr. Kailash Kumar Dewangan	Assistant Professor	M. Sc., Ph. D.	1	1	1	1	4
3	Dr. Hemant Kumar Sao	Assistant Professor	M. Sc., Ph.D.	4	NIL	2	Nil	6
4	Prof. Kavita Sakure	Assistant Professor	M. Sc., M. Phil., Ph.D. (Pursuing)	5	1	1	2	9

K. Activities and Achievement of Faculty

Dr. Shabnam Khan

Different Committees Member

1. Member of Board of Studies of Hemchand Yadav University, Durg.
2. Member of Board of Studies of Govt. Nagarjun P.G. College, Raipur.
3. Member of Janbhagidari Samiti (Finance Committee) of Govt. Digvijay Auto. P.G. College, Rajnandgaon, Chhattisgarh.

Seminar/Workshop/Conference attended

1. International Webinar on “Emerging challenges and Opportunities of Higher Education due to COVID-19 Pandemic” held on 13 June 2020 organized by Govt. Digvijay Auto. P.G. College, Rajnandgaon.
2. National Webinar on “Intellectual Property Rights and Patent Filling” held on 20 June 2020 organized by Department of English and IQAC, Govt. Digvijay Auto. P.G. College, Rajnandgaon.
3. One week Lecture Series “E-lecture Series INDRADHANUSH” from 3-9 July 2020 organized by Hemchand Yadav University, Durg.
4. National Webinar on “Impact of Information Technology on Society in Corona Period ” held on 9 July 2020 organized by Govt. Dr. B.S.B.A. P.G. College, Dongargaon.
5. Online Quiz Competition on “General Computer Knowledge” on 14 July 2020 organized by Govt. Ghanshyam Singh Gupta P.G. College, Balod
6. National Webinar on “Impact of COVID-19 on Income of Employment in the informal Sector” on 14 July 2020 organized by Govt. Digvijay Auto. P.G. College, Rajnandgaon
7. International Webinar on “Impact of Novel Corona Virus around the Globe and Future of Higher Education” on 18 July 2020 organized by Govt. Digvijay Auto. P.G. College, Rajnandgaon
8. National Webinar on “Values and Value Education” held on 21 Jly 2020 organized by IQAC, Govt. V.Y.T. P.G. College, Durg
9. Workshop on “Stress Management under Pandemic of COVID 19 ” on 24 July 2020 organized by Govt. Digvijay Auto. P.G. College, Rajnandgaon
10. National Webinar on “Corona Kaal me Kavitaee” on 8 August 2020 organized by Govt. Digvijay Auto. P.G. College, Rajnandgaon
11. National Webinar on “COVID 19 : New Challenge for Human Society” on 19 July 2020 organized by Govt. Digvijay Auto. P.G. College, Rajnandgaon
12. Two Days National e-Workshop on “Challenge and Opportunities for Mathematics in the Present Global Scenario” on 31 August 2020 organized by Govt. Shyama Prasad Mukherjee College, Sitapur, Sarguja
13. National Webinar on “The Career opportunities in Decision Sciences and Mathematical Statics” on 25 September 2020 organized by Chandigarh University, Mohali, Punjab.

Faculty Development Programme attended

1. 10 Days FDP on “Online Education : Boom for Upliftment of Higher Education Institutes” from 22 July 2020 to 31 July 2020 jointly organized by Hemchand Yadav University, Durg and Govt. V.Y.T. P.G. College, Durg
2. One Week International e-Faculty Development Program on “Fixed Point Theory and Its Applications” on 15-19 September 2020 organized by Manipal University, Jaipur
3. Online 7 Days Faculty Development Program during 4-10 March 2021 organized by Govt. Digvijay Auto. P.G. College, Rajnandgaon

Dr. Kailash Kumar Dewangan**Different Committees Member**

1. Nodal Officer of College of All India Survey of Higher Education.
2. Coordinator of Madhava Mathematics Competition 2021.
3. Assistant Superintendent, invigilator of P.S.C. and CGVYAPAM examination.
4. Members in college committees- Income Tax Committee, Admission committee.
5. Member of Indian Mathematical Society.

Paper Published

1. Fixed Point Theorems for modified F-contraction Mappings, IJMA 12(5) (2021), 17-22.

Faculty Development Programme attended

1. Online 7 Days Faculty Development Program during 4-10 March 2021 organized by Govt. Digvijay Auto. P.G. College, Rajnandgaon

Dr. Hemant Kumar Sao**Different Committees Member**

1. Nominated by Principal of Digvijay College, Rajnandgaon as the Assistant Controller of Autonomous Examination Cell.
2. Assistant Superintendent, invigilator of P.S.C. and CGVYAPAM examination.
3. Assistant Superintendent of Semester Examination 2020 of Govt. Digvijay Auto. P.G. College, Rajnandgaon.

Seminar/Workshop/Conference attended

1. 7th International Webinar on Survival Strategies for Post COVID-19 Era: Perspectives from Sciences, Technology and Social Sciences by Department of Physics, Edwin Christian College

Mini Research Project

1. Reliability Analysis of Industrial System, sponsored by Autonomous Examination Cell, Govt. Digvijay P.G. Autonomous College, Rajnandgaon, C.G.

Keynote Speaker

1. “Real Number System” 2021 at Govt. College, Armarikala

Invited Talk

1. “Jordan Holder Theorem and its Applications” 2021 at Govt. P.G. College, Balod

Faculty Development Programme attended

1. Online 7 Days Faculty Development Program during 4-10 March 2021 organized by Govt. Digvijay Auto. P.G. College, Rajnandgaon
2. One week online Training Program on ICT Tools for Teaching and Administration organized by Department of Electronics and Communication, University of Allahabad

Prof. Kavita Sakure**Different Committees Member**

1. Member in College Committees- Feedback committee, Scholarship committee, Woman cell and Admission committee.

Paper Presented

1. “Inertial Picard Normal S-iteration Process” in International e-conference on Nonlinear Analysis and Its Applications during 27-29 July 2020 organized by Department of Mathematics, Dayanand Science College, Latur, Maharashtra.

Paper Published

2. Strong and Δ -convergence results for generalized nonexpansive mappings in hyperbolic spaces, Communications in Mathematics and Applications, 11(3) (2020), 389-401.
3. Convergence results for proximal point algorithm in complete CAT(0) space for multi-valued mappings, Journal of Indonesian Mathematical Society 27(1) (2021), 29-47.

Invited Talk

1. “Limit, Continuity and Differentiability” 2021 at Govt. College, Arjunda, Balod.

Seminar/Workshop/Conference attended

1. Indian Woman and Mathematics: Regional Conference on Research and Opportunities on 21.02.2021 organized by Department of Mathematics, Indian Institute of Technology, Bhilai
2. Online International Conference on Advances in Physical, Mathematical and Computational Sciences during 12-13 June 2020 organized by St. Aloysius's Autonomous College, Jabalpur, M.P., India
3. Ph. D. Course Work related Workshop during 15-24 June 2020 organized by Hemchand Yadav University, Durg

Faculty Development Programme

1. One Week International e-Faculty Development Program on “Fixed Point Theory and Its Applications” on 15-19 September 2020 organized by Manipal University, Jaipur
2. Online 7 Days Faculty Development Program during 4-10 March 2021 organized by Govt. Digvijay Auto. P.G. College, Rajnandgaon

L. Evaluation Process and Reforms

Admission is given as per government rules on merit basis in both U.G and P.G level. It includes reservation to students are mostly from rural areas belonging to low and middle income group. The medium of study is English. But at U.G. level Hindi is frequently used. The subject is equally popular for both genders. Students from SC, SC, ST, and OBC also opted for this subject with great interest.

- In P.G. and U.G. classes internal test is compulsory
- For continuous evaluation at the end of each unit we take unit test. Half yearly test and After completion of syllabus there is provision of Model test.
- PPT presentation and Assignment is compulsory for P.G students in the topic decided by the department

M. Students' Performance and Learning Outcome

Result Analysis

B.Sc. (Mathematics)

S.No.	Class	Passing Percentage			Total Pass %
		Paper I	Paper II	Paper III	
1	B.Sc. I	98.28%	98.28%	98.28%	98.28%
2	B.Sc. II	99.57%	99.57%	99.57%	99.57%
3	B.Sc. III	98.62%	98.62%	98.62%	98.62%

M.Sc. (Mathematics)

S.No.	Class	Passing Percentage					Total Pass %
		Paper I	Paper II	Paper III	Paper IV	Paper V	
1	M.Sc. I Sem.	100%	100%	100%	100%	100%	100%
2	M.Sc. II Sem.	100%	100%	100%	100%	100%	100%
3	M.Sc. III Sem.	100%	100%	100%	100%	100%	100%
4	M.Sc. IV Sem.	100%	100%	100%	100%	100%	100%

Overall Result

S. No.	Class	U.G/P.G Total No. Students Appeared	Total Passed	Pass %
1.	B.Sc. I	277	275	99.28%
2.	B.Sc. II	230	229	99.56%
3.	B.Sc. III	218	215	98.62%
4.	M.Sc. I Semester	56	56	100%
5.	M.Sc. II Semester	56	56	100%
6.	M.Sc. III Semester	52	52	100%
7.	M.Sc. IV Semester	52	52	100%

On analyzing we found that in B.Sc. I students performance in paper I was not satisfactory .To improvement of result senior teachers will take special classes, Tutorial classes and provided model question papers and made answers.

Steps taken to improve the Students' Performance-

1. Senior teachers engage classes for B.Sc. I students and there is provision of special classes for the supplementary students.
2. Tutorial and Remedial classes have been arranged for weaker students.
3. Efforts were made for poor and brilliant students in which poor students were given personal counseling about study. Brilliant students were encouraged to use of English for broadening their communication skills.

N. RESEARCH, CONSULTANCY AND EXTENSION

1. Promotion Of Research - The department is contributing a lot in research of different field of Mathematics especially in the Fixed Point Theory and Reliability Modeling. We also promote the students for research and extension activities and assist them to do project in mathematical science. The department provides internet facility to all students

and faculties for their research work. The faculties and student are encouraged to participate actively and present paper, talk in different workshop, seminar, conferences (colloquiums), etc.

2. **Resource Mobilization For Research** - In this session, for resource Mobilization for research, we got fund Rs. Five thousands from Autonomous Cell of the college towards Research Project by the students. The students of M.Sc. Previous completed one research project in topic in Complex Analysis.
3. **Research Facilities** - Our department is trying to become a center for research .Internet Facility with UGC INFLIBNET is available for research. The Departmental Library consists of 900 books most of which are good reference books that help students and teachers to pursue the research work. Moreover the Internet facility is in the department that gives them access to the material, which is not available in books.
4. **Consultancy** - The department give their consultancy to other departments like Commerce, Sociology, Computer Science etc.
5. **Environment Audit** – The department is very much concerned about the environmental maintenance in the institute. We celebrate the Green Day every year in which students are motivated to campus green. The plantation is done by them and these planted trees are taken care by them. They contribute physically for maintenance of greenery in the campus.
6. **Swachchhata Abhiyan** - The students of M.Sc. (Mathematics) clean the classrooms and corridor once a week.



O. STUDENT SUPPORT AND PROGRESSION

1. Student Mentoring And Support

- We motivate the students to visit the Placement Cell frequently to get information regarding job opportunities.
- The faculty members of the department help the students get prepared for various competitive examinations and interviews.

2. Progression

- From B.Sc. III 60 % students were taken admission M.Sc. I Semester.

3. Students' Participation and Activities

- **MTTS Programme-** Ved Prakash Nirmalkar (B.Sc. II) is selected for Mathematics Training and Talent Search Programme.
- **Devendra Sahu** qualified CSIR-NET June 2020.
- Two students of M.Sc. Previous, Sonam and Chandan Sahu qualified **JAM 2021**.
- **Job Profile of passed out students –**

S.No.	Name	Designation
1.	Shiv Kumar Soni	Vyakhyata
2.	Hrishikesh Jha	Vyakhyata
3.	Ku. Saraswati Jain	Guest Lecturer, Govt. College, Keshkal
4.	Shankar Baidya	Guest Lecturer, Govt. College, Bhanupratappur
5.	Ragini Dewangan	Teacher, NBIS, Rajnandgaon
6.	Bhanumati Sahu	Teacher, Suman Public School, Gunderdehi

P. Governance, Leadership and Management

- 1. Departmental Leadership** – Dr. Shabnam Khan of our department is Controller of Autonomous cell. Prof. Hemant Kumar is appointed Assistant controller of autonomous cell. Also Faculties of the department are involved in various committees like Anti-Ragging, Admission, Discipline, Purchasing, Cultural activities, Examination Conduction, etc
- 2. Student's Leadership-** The department nominates the meritorious students according to their marks as president, vice president, secretary, joint- secretary of mathematical council (Ganit- Parishad). To improve the leadership quality and personality development, we constitute a working committee comprising of every student. All responsibility lies with the students to organize every program of the department.

3. Strategy Development And Deployment – The department regularly monitor to the infrastructure and other activities of the department after that whenever needed we attract the attention of principal towards departmental infrastructure like as rooms, recruitment of contract teachers and maintenance of the department etc.

4. Faculty Empowerment Strategies

The staffs of the department are always available for helping the faculties and students of other department regarding any subject issues.

5. Financial Management and Resource Mobilization

Principal's office is responsible for every financial activity.

6. Internal Quality Assurance System: The Primary aim of the IQAC is to develop a system for conscious, consistent and catalytic action to improve the academic and administrative performance of the institution.

Q. Best Practices

- The MATH-LAB has been visited by student's of various schools and colleges.
- Our department with some other members of the college organizes many programs like capacity building program under the valuable guidance of Principal.
- Video lectures arranged by IIT professor through NPTEL.
- Madhava Mathematical competition conducted by the department to popularize mathematics.
- National Science day was celebrated between 26th to 29th February where different competitions were organized for students like Poster Competition, Debate Competition, Extempore Competition, Essay Competition and Model preparation as per make in India theme, Quiz, Seminar competition where students participated actively and won Prizes.
