ORDINANCE

of

POST GRADUATE DEGREE PROGRAMME : M.A./M.Sc. (MATHEMATICS)

for the

DEPARTMENT OF MATHEMATICS

PROF. RAJENDRA SINGH (RAJJU BHAIYA) INSTITUTE OF PHYSICAL SCIENCES FOR STUDY AND RESEARCH

VEER BAHADUR SINGH PURVANCHAL UNIVERSITY
JAUNPUR, 222003, (U.P.)

Proposed by
BoS COMMITTEE
July 15, 2024

[As per CBCS pattern recommended by UGC]
Effective from Academic Session: 2024-2025

The following ordinances have been framed governing the admission, course structure, examination and other allied matters relating to two years (four semesters namely: Semester VII, Semester VIII, Semester IX and Semester X) PG degree program (M.A./M.Sc. in Mathematics) being offered by Prof. Rajendra Singh (Rajju Bhaiya) Institute of Physical Sciences for Study and Research, V.B.S. Purvanchal University, Jaunpur.

The first year of the PG degree program (M.A./M.Sc. in Mathematics), also known as the fourth year of higher education as per NEP-2020, consists of two semesters, namely:
Odd Semester – Semester VII
Even Semester – Semester VIII.
Similarly, the second year of the PG degree program (M.A./M.Sc. in Mathematics) consists of two semesters, namely:
Odd Semester – Semester IX
Even Semester – Semester X.
*Department of Mathematics also offers two value added courses for all students.

All the guidelines regarding admission, exit, course structure, examination, evaluation, and other allied matters will be as per NEP-2020/UGC/UP State Government/V.B.S. Purvanchal University.

A. ADMISSION AND EXIT

❖ All matters relating to admission to the PG degree program (M.A./M.Sc. in Mathematics) shall be dealt with by the Admission Committee constituted for the purpose by the University.

❖ A candidate, who has passed B.A./B.Sc. (a three-year Bachelor's degree program) with Mathematics as a major subject from a recognized University is eligible for admission to the first year of the PG degree program (M.A./M.Sc. in Mathematics). This year will be called the fourth year of higher education. If a student wants to leave after passing the first year of the PG degree program (M.A./M.Sc. in Mathematics) by earning a minimum of 52 credits, the student will be awarded a 'Graduation with Research' degree. After earning a minimum of 52 + 48 credits in both the first year and second year of the PG degree program (M.A. / M.Sc. in Mathematics), the student will be awarded a master's degree (M.A. / M.Sc. in Mathematics).

❖ The intake of students in these Programmes shall be fixed by V.B.S. Purvanchal University. The ratio of number of students in M.A.(Mathematics) and M.Sc.(Mathematics) Programmes will be 3:1 respectively. For example, if intake of 60 students is fixed in M.A./M.Sc.(Mathematics) program by the University then 45 admissions will be taken in M.Sc.(Mathematics) program and 15 in M.A.(Mathematics) Program.

❖ The admission to M.A./M.Sc.(Mathematics) program shall be made through merit based on written test conducted by Purvanchal University Combined Admission Test (PUCAT). The written test will comprise of multiple-choice questions. The reservation norms/rules

for admission shall be governed by the U.P. State Government notification/order issued from time to time.

❖ PUCAT qualified candidates shall deposit the prescribed admission fee and other fee for the purpose to get his/her admission within the time period fixed by the Admission Committee of the Department/University. If a candidate fails to do so his/her admission shall be automatically cancelled and the seat falling vacant shall be offered to other candidates as per the merit/category. However, matter concerning fees of candidates under SC/ST category would be governed by Govt. Order; as such there is no provision of fee concession/exemption/refund.

❖ All candidates granted admission to the PG degree program (M.A./M.Sc. in Mathematics) will be admitted provisionally to semester VII of the PG degree program (M.A./M.Sc. in Mathematics) subject to the satisfactory verification of their testimonial's eligibility criteria for the concerned program by the Director/HOD/Coordinator of admission Committee of the Institute. Any discrepancy, if found, will render the candidate ineligible and the provisional admission shall stand canceled and the University /Institute shall not be liable to refund the fee deposited by the candidate.

❖ Admission to M.A./M.Sc.(Mathematics) program cannot be claimed by any candidate as a matter of right. The Admission Committee shall have right to refuse, reject or cancel any admission if it has sufficient reasons to do so.

B. COURSE STRUCTURE OF PG DEGREE PROGRAM (M.A./M.SC. IN MATHEMATICS)

❖ PG degree program (M.A./M.Sc. in Mathematics) will be conducted in CBCS and semester system as per NEP-2020.

❖ To conduct the PG degree program (M.A./M.Sc. in Mathematics) systematically and within a time-bound frame, the concerned Department shall draw up an "Academic Calendar" at the beginning of the academic session and shall get it approved by the Vice-Chancellor of the University or by the Director of the Institute/Head of the Department for its Strict Implementation.

❖ The courses of each odd semester including the entire examination of the respective semester will run from the month of July to December while the courses of each even semester including the entire examination of the respective semester will run from the month of January to May unless otherwise, the University/U.P. State Government has prescribed some time period in case of some pandemic/ impassable condition.

❖ Each odd semester (Semester VII and Semester IX) of PG degree program (M.A./M.Sc. in Mathematics) will consist of 4 theory courses/papers (each course/paper of 4 credits) of Mathematics and one practical course/paper(of 4 credits) of Mathematics. There will be 4 theory courses/papers (each course/paper of 5 credits) of Mathematics in each even semester (Sem VIII and Sem X) of PG degree program (M.A./M.Sc. in Mathematics).

❖ In any one semester of the first year of the PG degree program (M.A./M.Sc. in Mathematics), it will be mandatory for the student to take only one minor elective course/paper in any subject of any other faculty (other than the faculty of the major subject, i.e, other than own faculty). This minor elective paper will be of 4/5/6 credits.

❖ Students of any other Faculty (Faculty other than the Faculty of Science) can choose the 'Minor Elective Paper' provided by the Department of Mathematics. They can choose any course/paper from the PG degree program (M.A./M.Sc. in Mathematics) as a 'Minor Elective Paper' as per NEP-2020.

❖ The student will choose the minor elective paper from the subject of whichever faculty (except his/her own faculty) the student's classes will be conducted in the same faculty along with the classes of the same course and the examination will also be with the same. Here Faculty means a group of subjects such as Faculty of Arts, Faculty of Science, Faculty of Commerce, etc.

Research Project :-

❖ In the fourth and fifth year of higher education [the first and second year, respectively, of the PG degree program (M.A./M.Sc. in Mathematics)], the student will have to undertake major research project related to the major subject (Mathematics). This research project can also be Interdisciplinary / Multi-disciplinary. This research project can also be in the form of Industrial Training/Internship/Survey Work, etc.

❖ Candidates admitted to the PG degree program (M.A./M.Sc. in Mathematics) will be required to undertake a research project of 4 credits in each semester of the fourth year and fifth year of higher education. Thus, each year there will be a total of eight credits for this course/paper (research project).

❖ The research project assigned to the student in semester VII(semester IX) may be continued until semester VIII(semester X), if the research project actually requires another semester, otherwise the student will be assigned a new research project in semester VIII(semester X).

❖ The research project will be done under the direction of a supervisor (a teacher from the Mathematics Department) and a co-supervisor(if required) can be taken from any Industry/Company / Technical Institute/Research Institute.

❖ The Departmental committee constituted by Head of Department/Director of Institute will appoint a supervisor to carry out the research project for each student at the beginning of the semester and the supervisor will allocate a topic for the research project to the student.

❖ The supervisor will decide whether the student needs a co-supervisor for the research project and, if necessary, the supervisor will appoint a co-supervisor.

❖ Students in the fourth year of higher education shall submit a joint dissertation (project report/dissertation) of the research project undertaken in both semesters at the end of the year, which will be assessed jointly out of 100 marks by the supervisor and the external examiner at the end of the year. Similarly, Students in the fifth year of higher education shall submit a joint dissertation (project report/dissertation) of the research project undertaken in both semesters at the end of the year, which will be assessed jointly out of 100 marks by the supervisor and the external examiner at the end of the year.

❖ The progress and submission of the research project allotted to the student will be assessed by presentation/viva-voce.

❖ An external examiner will be appointed on the recommendation of the BOS/Head of the Department to evaluate the joint dissertation (project report/dissertation) of the research project submitted by the student.

❖ If a student publishes a research paper from this research project in a UGC-CARE-listed journal during the PG degree program (M.A. / M.Sc. in Mathematics), he/she will be given additional marks up to 25 in the evaluation of the research project (out of 100). The maximum marks for the research project will be 100 only.

❖ Grades will be marked based on the marks obtained in the research project and they will also be included in the calculation of CGPA.

Credit and Credit Determination :-

❖ If the credit of a theory course/paper T of a semester S is one, then the theory course/paper T of that semester S will have one hour/per week of teaching work, i.e., 15-hours of teaching in theory course/paper T in 15 weeks of semester S.

❖ One credit course/paper of Practical / Internship / Fieldwork, etc. will be of 2 hours/per week teaching work, i.e., 30-hours of Practical / Internship / Fieldwork, etc. will be done in 15 weeks of a semester.

❖ In computing the workload of the teacher, the workload of 1 hour of theory course/paper will be equal to the workload of 2 hours of Practical / Internship/Fieldwork, etc.

❖ All credit-related work will be done through the state-level "Academic Bank of Credit".

❖ Once the credit is used, the student will not be able to use the credits of those papers again. For example, if a candidate takes admission in the fourth year of higher education [i.e., the first year of PG degree program (M.A./M.Sc. in Mathematics)] in which he/she earns minimum 52 credits and obtains a 'Graduation with Research' degree using these 52 credits, his credits will be treated as expenses. If he/she wants to obtain a PG degree (M.A./M.Sc. in Mathematics), he/she will be required to deposit his/her 'Graduation with

Research' degree in the University by re-crediting the 52 credits to the account or he/she will earn a minimum fresh 52 credits and on the basis of which in the fifth year of higher education [the second year of PG degree program(M.A./M.Sc. in Mathematics)] (actual sixth year) by earning a minimum of 52 + 48 credits, he/she can obtain the PG degree (M.A./M.Sc. in Mathematics).

❖ It is necessary to take the test for credit validation. Credits will be incomplete without the test.

C. EXAMINATION AND EVALUATION PATTERN/PROCESS

❖ Each course/paper(theory/practical course) of each semester shall be a credit course of marks 100 with a pass percentage of 36%. This arrangement of fixation of marks and pass percentage for each course/paper (theory/practical course) will be done for the courses of the major subject (Mathematics) as well as for the minor courses (Selected by students of other Faculties from Mathematics subject).
The course/paper of major research project will be a credit course of marks 100 with a pass percentage of 40%.

❖ There will be 500 marks for each semester. In this way, the total marks for all the semesters in the PG degree program (M.A./M.Sc. in Mathematics) will be 2000 marks.

❖ A maximum of 100 marks for each theory/practical course of major subject in a semester will be calculated by adding up the marks obtained as per the following pattern:

(a) Internal Examination -------------- Continuous Internal Assessment (CIA) /Mid-Term Examination of 25 marks.

(b) External Examination ------------- University Examination/End Semester Examination of 75 marks.

This arrangement for calculation of marks will also be used for each of the elective courses chosen from Mathematics subject (Chosen by students from Faculties other than the Faculty of Science).

❖ Evaluation of the 'Minor Elective Course/Paper' chosen by the students of PG degree program (M.A./M.Sc. in Mathematics) from the Faculty other than own Faculty will be done as follows.

1)Satisfactory ------- If the student obtains marks greater than or equal to 36% (After adding up the marks of internal and external examinations) in the minor elective course/paper.

2)Not Satisfactory-- If the student obtains marks less than 36% (After adding up the

marks of internal and external examinations) in the minor elective course/paper.

❖ The marks obtained by the student in the minor elective course/paper will not be taken into account for calculating Grade/SGPA/CGPA/Percentage, etc.

❖ If a student secures Not-Satisfactory in the minor elective course/paper, the student shall repeat the course/paper to pass the course whenever the University/respective Department offers it.

Continuous Internal Assessment (CIA) /Mid-Term Examination Pattern :-

❖ The maximum of 25% marks(25 Marks) of each course (Course other than 'Research Project') in each semester shall be evaluated by the Instructor/Teacher of the respective course based on the following table.

S. No.	Structure/Mode of CIA	Maximum Marks	Distribution of Marks	
1.	Attendance	5 Marks	If a student maintains the requisite attendance(given at the end of the ordinance) in the course, the student will be awarded a maximum of 05 marks as per the following:	
			Attendance Range	Marks Awarded
			From 85% to 100%	5 Marks
			From 75% to 84%	4 Marks
			From 60% to 74%, When a student fails to maintain the requisite attendance in the course.	maximum of 4 marks
2.	Sessional Test/Class Test	15 Marks	5 questions, each carrying 3 marks, will be asked from the content of the course that has been taught before the date of the test.	
3.	Assignment/Tutorial	5 Marks	One problem of 5 marks from the content of the course taught will be given to the student to solve within 02 days.	

❖ Internal Assessment/Mid-Term Examination Schedule must be prepared and notified by the Director of the Institute/Head of the Mathematics Department ten days before the commencement of the examination.

University Examination Question Paper Format for Theory Courses:-

❖ The question paper is divided into three sections, namely Section A, Section B and Section C. Section A will consist of one question consisting of 10 parts of very short answer type questions based on the entire syllabus out of which all parts have to be answered. Each part in section A carries 2 marks. Section B has eight questions. For Section B there will be 16 parts of questions from the entire syllabus (at least two questions/four parts from each unit of the syllabus). Each question in Section B consists of two parts of equal marks. Only five questions have to be answered from section B. Each question in Section B carries 7 marks. Section C consists of 4 questions from the entire syllabus out of which 2 questions have to be answered. Each question in Section C carries 10 marks. Thus, in all, the student will have to attempt 8 questions out of 13 questions unless otherwise stated. In this way the question paper of the University exam (external examination) will be of 75 marks.

University Examination Question Paper Format for Practical Courses :-

❖ The University Examination question paper for a practical course will consist of eight questions of equal marks from the entire syllabus of that practical course out of which any five will be answered by the student. Each question will carry 15 marks.

❖ (*)To pass in each course/paper of the major subject (or, to pass in each minor elective course for students of its own Faculty as well as for students of Faculty other than the own Faculty), it will be necessary to score a minimum of 27 marks (36 percent of 75) out of a maximum of 75 marks in the University examination (external examination) and also have to obtain minimum 36 marks out of 100 in aggregate in both internal and external examinations.

❖ (**)There is no minimum pass percentage in the internal assessment of any course/paper in the major subject of any semester. If a student gets zero marks in the internal examination of any course/paper of a semester, then in that case the student will be required to obtain a minimum of 36 marks out of 75 in the external examination to pass that course/paper (if the course is of main subject / minor course).

❖ The criterion (*) and (**) for internal assessment will be followed for minor elective courses (of all Faculties) also.

❖ No grace marks will be given in any course/paper of any semester, i.e., no grace marks will be given in a semester.

Page **8** of 14

❖ To obtain a 'Graduation with Research' degree or 'Post Graduation' degree in Mathematics, it will be necessary to obtain a minimum of 4.5 CGPA.

❖ Matters pertaining to the syllabi (Courses) and conduct of examinations shall be dealt with

by the Board of Studies (BOS) constituted by the Vice-Chancellor.

❖ The BOS shall recommend the panel of paper setters/examiners for the University examination to the Vice-Chancellor. After getting approval from the Vice-Chancellor, the invitation letters shall be issued to the concerned paper setters/examiners by the Registrar/Controller of Examination of Purvanchal University.

❖ Papers for theory course University Examination in sealed covers shall be handed over/sent through the registered post to the Registrar/Controller of Examination by the Examiners. Controller of Examination will ensure the printing of papers and fair conduct of the examinations.

❖ Practical Courses University Examination papers will be prepared by the respective course teacher/instructor and will be evaluated on the basis of practical and Viva-Voce on the day of that practical course University examination.

❖ Practical Course University Examination will be conducted by the teacher/instructor of the concerned paper and an external examiner appointed by the BOS.

❖ The question papers of the University Examination will be moderated by a committee consisting of the Head of the Department, two senior teachers, and the teachers of the respective paper.

❖ After the examinations, the Controller of the Examination will ensure the evaluation of answer sheets and declaration of semester examination results within a reasonable time as per the academic calendar.

Maximum Duration of Examination :-

(1) For Internal Assessment Test -- **Maximum one hour**
(2) For University Examination -- **Maximum three hours**

D. PROMOTION

❖ The student will always be promoted from the current Odd semester to the next Even semester, irrespective of the result of the current odd semester.

❖ The student will be promoted from the current Even semester to the next Odd semester, i.e., from the current first year of PG degree program to the next second year with the following conditions :-
(a) The student must have passed at least 50% of the credit papers (theory paper, practical paper, major research project inclusive) of the total required credits for the

current first year (both semesters inclusive).

(b) The digits after the decimal point will not be counted in computing the 50% credit. For example, 25.6 and 25.3 will be treated as 25.

❖ There shall be no minimum CGPA for class promotion

❖ The first year of the PG degree program will be called the fourth year of higher education. If a student wants to leave after completing it (the first year of the PG degree program: M.A./M.Sc. in Mathematics) with a minimum 4.5 CGPA, then he/she will be given a 'Graduation with Research' degree. This facility will be available only to those students who have completed(passed) three-year Bachelor's degree under the National Education Policy-2020 implemented in Uttar Pradesh.

E. BACK PAPER OR IMPROVEMENT EXAMINATION

❖ There will be no back paper or examination for improvement in the internal examination of any semester. More precisely, there will be no back paper or examination for improvement in internal examination of any course/paper in any semester. Internal assessment may be done along with the University Examination only in case of re-appearing the completed semester as back examination. But a student will not be able to give the complete examinations of two full semesters simultaneously.

❖ The facility of back paper or improvement to the student will be available for the papers of any even (odd) semesters only in the same even (odd) semesters of the upcoming academic sessions.

❖ The course / paper and syllabus of the back paper or examination for improvement to the student will be the same as will be available in the current semester in which he is giving the exam.

❖ As long as the University Examination (external examination) period is not interrupted, the student may give the back paper (If the student fails in the University Examination of any course/paper in any semester) for any course/paper or the examination for improvement of any course / paper as many times as he wishes.

Time Period [University Examination/External Examination Time Period] :-

❖ The maximum time period to complete any 1 year of PG degree program(M.A./M.Sc. in Mathematics) will be 3 years, i.e., the student will be given maximum of three years to pass the complete examination of a year (complete examination of both required semesters).
Explanation:- If the student studies both the years in continuity, then he will get maximum 6 years to pass the complete examination of both the years (Complete

examination of all required four semesters). But if the student leaves after the first year with a 'Graduation with Research' degree, he can come back anytime to resume the remaining one year of studies and he will get three years to complete the further one year studies.

F. GRADING SYSTEM

❖ According to the National Education Policy-2020, the details of the marks of the examination given by the students at the PG level will be according to the 10-point grading system. This grading system is based on the guidelines of U.G.C.

Description Of 10 Point Grading System :-

Letter Grade	Details	Marks Range	Grade Point
O	Outstanding	91-100	10
A+	Excellent	81-90	9
A	Very Good	71-80	8
B+	Good	61-70	7
B	Above Average	51-60	6
C	Average	41-50	5
P	Pass	36-40	4
F	Fail	0-35	0
AB	Absent	Absent	0
Q	Qualified		
NQ	Not Qualified		

G. CALCULATION OF CGPA and EQUIVALENT PERCENTAGE

❖ The SGPA and CGPA for the jth semester will be calculated from the following formulas:

FOR JTH SEMESTER	
$SGPA(Sj) = [\sum(C_i \times G_i)] / \sum C_i$	Where C_i stands for the number of credits of the ith course in j^{th} semester and G_i denotes the grade point scored by the student in the ith course of jth semester.
$CGPA = [\sum(C_j \times S_j)] / \sum C_j$	Where S_j stands for SGPA of the jth semester and C_j denotes the total number of credits in the jth semester.

❖ CGPA will be converted into percentage marks as per the following formula:

$$\text{Equivalent Percentage} = \text{CGPA} \times 9.5$$

H. DIVISION CLASSIFICATION

The students will be given a division according to the following table:

Division	Classification
First Division	6.50 CGPA or more and less than or equal to 10.00 CGPA
Second Division	5.00 CGPA or more and less than 6.5 CGPA
Third Division	4.5 CGPA or more and less than 5.00 CGPA

I. ATTENDANCE

❖ A candidate admitted to the M.A./M.Sc.(Mathematics) degree program shall pursue a regular course of study in each course of each semester and has to maintain at least 75% attendance in each course of each semester class to get eligibility for appearing in the respective semester examination.

❖ If a student fails to maintain the requisite attendance in a course of a semester, the student will not be awarded grades in that course.

❖ The percentage of attendance for a student in a course of a semester shall be computed on the basis of the total number of lectures, practicals, and tutorials attended by the student in that course that actually held in that semester.

❖ If a student fails to attend the requisite classes in any course of a semester due to illness / any genuine reason, the student may be given a relaxation of 10% in attendance in that course on the recommendation of the Vice-Chancellor / Dean / Director / Head and the student may be allowed to appear in the examination(University Examination) of that course with 65% attendance. In this case, the student will also have to produce medical certificate/proper justification. In a very exceptional case, if a student fails to obtain 65% attendance in a course of a semester, the case of the student will be referred to the Academic Council through the Dean/Director/Head for relaxation of up to 5% in attendance and after acceptance of relaxation of up to 5% in attendance, the student may be allowed to appear in the University Examination with an attendance of 60% or more.

❖ If a student qualifies for the University Examination of a course in a semester on the basis of attendance in that course but is unable to appear in the University Examination of the course due to some reason, the student can appear in the examination of that course as a back paper in the same semester in the upcoming academic session. The student will not need to take the classes again in that course.

❖ In the computation of the percentage of attendance, any number greater than 0 and less than 1 shall be counted as 1.

Program Outcomes (POs)

PO1	Knowledge	Capable of demonstrating comprehensive disciplinary knowledge gained during course of study.
PO2	Research Aptitude	Capability to ask relevant/appropriate questions for identifying, formulating, and analyzing the research problems and to draw conclusion from the analysis.
PO3	Communication	Ability to communicate effectively on general and scientific topics with the scientific community and with society at large.
PO4	Problem Solving	Capability of applying knowledge to solve scientific and other problems.
PO5	Individual and Team Work	Capable to learn and work effectively as an individual, and as a member or leader in diverse teams, in multidisciplinary settings.
PO6	Investigation of Problems	Ability of critical thinking, analytical reasoning and research-based knowledge including design of experiments, analysis, and interpretation of data to provide conclusions.
PO7	Modern Tool usage	Ability to use and learn techniques, skills, and modern tools for scientific practices.
PO8	Science and Society	Ability to apply reasoning to assess the different issues related to society and the consequent responsibilities relevant to the professional scientific practices.
PO9	Life-Long Learning	Aptitude to apply knowledge and skills that are necessary for participating in learning activities throughout life
PO10	Ethics	Capability to identify and apply ethical issues related to one's work, avoid unethical behaviour such as fabrication of data, committing plagiarism and unbiased truthful actions in all aspects of work
PO11	Project Management	Ability to demonstrate knowledge and understanding of the scientific principles and apply these to manage projects

Program Specific Outcomes (PSOs)

After successful completion of the programme, students will be able to:

PSO1	Have deep understanding and knowledge in the core areas of Mathematics and demonstrate understanding and application of the concepts/theories/principles/ methods/ techniques in different areas of pure and applied Mathematics.
PSO2	Have capability to read and understand mathematical texts, demonstrate, and communicate mathematical knowledge effectively and unambiguously through oral and/or written expressions and attain skills of computing/programming/using software tools/formulating models.
PSO3	Attain abilities of critical thinking, logical reasoning, investigating problems, analysis, problem solving, application of mathematical methods/techniques, disciplinary knowledge so as to develop skills to solve mathematical problems having applications in other disciplines and/or in the real world.
PSO4	Have strong foundation in basic and applied aspects of Mathematics so as to venture into research in different areas of mathematical sciences, jobs in scientific and various industrial sectors and/or teaching career in Mathematics.