Postgraduate Diploma in Education (PGDE) (Specialization – Mathematics Education)

School of Education

Kathmandu University

Hattiban, Lalitpur

1. Need

Teacher preparation in the modern era has been a challenging task. Due to the rapid development on various dimensions (such as content knowledge, pedagogical aspect, technological integrations) of teacher professional development, it has been difficult to cover several important areas while preparing teachers in general, and in school mathematics particularly. The quantitative growth, in terms of several teacher development institutions, has not been able to bring qualitative development in the areas of teacher development in Nepal. In the pursuit of education, the public sector, as well as the private one, has made substantial investments in school education in general and Mathematics Education in particular, without much satisfying result. There are several issues in mathematics education such as negative public image, students' decreasing interest, unsatisfactory national achievement, very limited resources and so on. There could be various reasons behind such scenarios. One of the major causes of low mathematics attainment of school students is the lack of quality mathematics teacher development programs and appropriate mathematics teaching materials due to the lack of skilled, informed, creative and motivated teacher educators and material developers.

Considering these issues into account, Kathmandu University, School of Education, launched a two-year M. Ed. in Mathematics Education in February 2006 and has been offering courses on mathematics education to produce quality teachers, teacher educators, material developers and researchers. The program has been running smoothly and our graduates have been absorbed in reputed positions in their respective fields both within Nepal and abroad. The illumination of knowledge in school education in general and in mathematics education, in particular, has been mounting day by day. From the experiences of the last few years, KSUOED has developed the courses for Post Graduate Diploma in Education (specialization in Mathematics Education) intending to produce skillful mathematics teachers from the perspectives of STEAM and ICT education.

2. Key Features of the Program

The proposed program will have the following key features.
- Need-based: One of the major features of the program is to address the need of the basic and secondary schools and other education-related institutes. Formal and informal interaction with teachers, teacher educators, school leaders, teacher education experts, teacher development organizers and materials developers have demonstrated a need for a mathematics education development program to produce quality human resources.
- Pedagogical Content Knowledge (PCK): People normally believe that a person who knows mathematics well is the best person to teach mathematics. The principle of "knowing to teach mathematics" is neglected. For this reason, the proposed revised program aims at developing mathematics teachers who know mathematics and its pedagogy in an integrated way.

- <u>ICT-integrated Learning</u>: ICT has been a cross-cutting issue in the educational field since the last decade in the Nepali education system. This program aims at producing mathematics teachers who can use ICT tools and techniques for better understanding. It also aims at producing teachers who can support students to learn ICT at the school level.

- <u>Modeling of pedagogy</u>: Pedagogy of each course will be based on the latest principles of teaching and learning mathematics. Specifically, students will be benefited through their instructors' facilitation, assessment, and overall teaching strategies. Specific facilitation techniques such as instructor-learner conferences, presentations, investigative tasks, and collaborative projects, problem-solving and group learning methods will be employed.

- <u>Practice-based and skills-oriented</u>: The students will undergo practical experience by literally undertaking tasks of teaching mathematics, facilitating teacher development workshops, undertaking small-scale research projects and developing materials. The use of ICT in teaching and learning mathematics is highly valued. When they come out from the University, they are expected to be independent practitioners in the field.

- <u>School-based Action Research</u>: The students are involved in the action research projects in school addressing a real problem and implementing a plan to solve it. In doing so, they develop skills of research, reflection, and a better understanding of the pedagogical issue as well as issues related to their content areas.

3. **Attributes**
   - Mathematics teachers
   - Teacher educator
   - Reflective practitioner
   - Resource materials developer

4. **Job Prospects**
   - Schools
   - Colleges
   - NGOs and INGOs
   - Research institutions
   - Educational enterprises

5. **Course Structure**
   - The course is offered in two semesters.
   - The course takes one year to complete for full-time students and provision has also been made for part-time students who can finish it in two years.
   - The course covers 27 credit hours. One credit hour is 15 hours contact sessions.

6. **Method of Instruction**

The methods of teaching will be a combination of varieties of instructional techniques. Workshops, group discussions, demonstrations, sessions by guest speakers, seminars, colloquium, report writing, report presentation, case analysis, problem-solving, practical

experiences and fieldwork activities will be used. Participatory teaching and learning are emphasized.

7. **Mode of Delivery**
   This program will be delivered in face-to-face or online or blended mode.

8. **Eligibility for Enrollment**
   The entry requirement for the PGDE in Mathematics Education will be a 3 years or 4 years bachelor's degree in related disciplines (BA/BSC/BED in Mathematics or any bachelor's degree with 2 mathematics-related courses).

9. **Evaluation and Attendance**
   a. Evaluation will be conducted in the in-semester (formative) and end-semester (summative) mode.
   b. In-semester assessment covers 50% and end-semester covers 50% weightage.
   c. In-semester assessment calls for student participation in the classroom discussions, writing reports, presentation, group activities, project work, case studies, and written tests and the end-semester examination will be paper and pencil test/assessment at the end of the term.
   d. Students are evaluated in the letter grade system for each course and the grade is converted into a specific number of grade value associated with the grade. Grade point average (GPA) is calculated by multiplying the grade value of the earned grade by the number of credits for each course and dividing the total grade by the total number of semester/term credit earned.
   e. The GPA must be 2.0 or above at the end of every semester to pass the course. The CGPA is also calculated at the end of the program.
   f. A minimum of 80% attendance is mandatory.

10. **Award of Degree (Graduation)**

The students completing all the requirements will be awarded a "Postgraduate Diploma in Education" with specialization in Mathematics Education.

11. Courses

The 27 credit hours program includes (a) core courses (b) specialization courses, and (c) the practicum.

Core Courses (3)
EDUC 401 Educational Philosophies (3)
Specialization Courses (18)
EDME 404 ICT in Mathematics Education (3)
EDME 406 Teaching and Learning in Mathematics (3)
EDME 407 Resource Material Development in Mathematics (3)
EDME 408 Action Research in Mathematics Education (3)
EDME 411 Curriculum and Assessment in Mathematics Education (3)
EDME 412 Discrete Mathematics (3)
Elective Courses (3) (Any One)
EDME 409 Designing e-assessment in Mathematics Education (3)
EDMT 420 E-research in Mathematics Education (3)
EDMT 423 Guidance and Counselling in Mathematics Education (3)
EDMT 425 Ethnomathematics (3)
Practical Courses (3)
EDUC 405 Practicum (3)

Evaluation Mode

The faculty members who are teaching the courses are responsible for the internal evaluation. Continuous In-semester/Term assessment carries 50% weightage of total and End Semester /Term assessment carries 50%. Both assessments consist of various tools and techniques. The assessment will follow the following grading system.

Grade	A	A-	B+	B	B-	C+	C
Grade Point	4.0	3.7	3.3	3.0	2.7	2.3	2.0
Performance	Outstanding	Excellent	Very Good	Good	Fair	Fair	Fair

In order to pass the course, one has to achieve at least C.

Grade Point Average (GPA)

Each letter grade is converted into a specific number of grade values associated with the grade. Grade Point Average (GPA) is calculated by multiplying the grade value of the earned grade by

the number of credits for each course and dividing the total grade number of semester/term credits earned. The GPA must be 2.0 or above at the end of every term.

Cumulative Grade Point Average (CGPA)

CGPA is calculated at the end of the program.

The up-to-date over-all performance (CGPA) is a weighted average as below:

CGPA = $(c_1 g_1 + c_2 g_2 + c_3 g_3 \ldots) / (c_1 + c_2 + c_3 \ldots)$

Where $c_1, c_2 \ldots$ denote credits associated with the courses taken by the student and g_1, g_2 denote grade values of the letter grades earned in the respective courses.

No student can pass the examination with an "F" grade in a particular course.

Graduation Requirements

For Graduation, a student has to meet the following requirements:

1. Satisfactory completion of all courses prescribed for the area of the study in which the degree is granted.
2. A cumulative grade point average of at least 2.0
3. Regular students must complete all the course requirements and pass the level within two years, whereas part-time students must complete all the courses and pass the level within four years from the date of admission into the PGDE program, failing with all the grades and cumulative grades will get canceled automatically.

Further Contact

Binod Prasad Pant
Assistant Professor
Acting Head, Department of STEAM Education
Kathmandu University School of Education, Lalitpur, Nepal
www.kusoed.edu.np
Tel: +977 01 5250524 (Off.)
Cellphone: 9851176652