

POSTGRADUATE INSTITUTE OF SCIENCE (PGIS)
UNIVERSITY OF PERADENIYA



Postgraduate Diploma in Science Education
2010/2011

1. INTRODUCTION

Postgraduate Diploma in Science Education is designed for science graduates who are seeking credentials to become teachers. Science helps children to see the future with an open mind. Children are the treasures of future and, it is the responsibility of the teachers to make young lives prepared to meet the challenges in future. Science teachers have a bigger responsibility than the other teachers in shaping the lives of future generation because of the advances in science and technology. This programme is designed to have significant impact on science teaching and learning in classrooms and raising science standards in schools. It helps teachers and prospective teachers in developing themselves to become effective science/mathematics teachers. By obtaining the Postgraduate Diploma in Science Education they will be eligible to apply for the M.Sc. in Science Education programme offered by the Postgraduate Institute of Science (PGIS.) The programme is offered only in English medium.

2. OBJECTIVES OF THE PROGRAMME

The programme will help the learners (science teachers & prospective teachers) to be able to:

- maximize their potential as teachers and learners in their classrooms
- develop skills in curriculum design in science and mathematics
- understand students and help them in learning science and mathematics
- assess students and provide them with constructive feedback
- undertake classroom-based action research
- work closely with other teachers
- build up a network with teachers and education officers
- accountable for what they do
- satisfy themselves in becoming science/mathematics teachers

3. PROGRAMME ELIGIBILITY

The candidates possessing a Bachelor's Degree (B.Sc.) from a recognised university are eligible to apply for the programme--Postgraduate Diploma in Science Education. The candidates who meet eligibility requirements and successful at the aptitude test and interview will be admitted to the programme.

4. PROGRAMME FEE

	Programme fee
Local candidates	Rs. 50,000.00
SAARC Countries	US \$ 1,600.00
Other countries	US \$ 3,200.00

Programme fee shall be paid in two instalments (*50% at the registration and the other 50% within six months of registration.*) Other payments including registration fee, medical fee, examination fee and deposits (science and library) should be paid according to the procedure stipulated by the PGIS.

5. PROGRAMME STRUCTURE AND DURATION

The programme will be of twelve month duration and, consists of coursework and an independent study on an area of student's interest in science education. Coursework will be conducted over a period of two semesters of 15 weeks (during week days and weekends.) **Continuous attendance is compulsory throughout the programme of study.** The programme of study consists of six compulsory courses and four optional courses. Satisfactory completion of a minimum of 24 credits of coursework, teaching practice, independent study with a GPA of not less than 2.75 is required to obtain the Postgraduate Diploma in Science Education. Based on overall performance of students, PGIS may upgrade the registration of such students to the programme-- M. Sc. in Science Education.

6. PROGRAMME SUMMARY

The programme of study consists of 360 lecture hours (24 credits) and three month teaching practice component (3 credits) in schools and an independent study (3 credits). To earn the required number of credits students should take the six compulsory courses including independent study and the teaching practice component to develop capability of teaching. Four optional courses could be selected from the courses offered. (In a given academic year all the courses listed may not be offered.)

Course code	Course Title	No. of Hours	No. of Credits
* SED 501	World View of Science	30	2
* SED 502	Science Education: A Comparative Perspective	30	2
* SED 503	Teaching Science & Mathematics for Understanding	45	3
* SED 504	Teachers as Researchers	45	3
SED 505	Philosophical Inquiry and Contemporary Issues in Education	30	2
SED 506	Learners and Learning in Context	30	2
SED 507	Psychological Approaches to Learning	30	2
SED 508	Use of Computers in Teaching Science/Mathematics	30	2
SED 509	Classroom Management	30	2
SED 510	Psychology of Special Education	30	2
SED 511	Guidance and Counselling in Science Education	30	2
SED 512	Assessment Practices in Classrooms	30	2
* SED 513	Teaching Practice	80	3
* SED 514	Independent Study	80	3

* *Compulsory courses*

7. CONTENTS OF THE PROGRAMME

* SED 501: World View of Science (2 credits)

Nature of science, scientific inquiry, images of science, scientists and contributions

* SED 502: Science Education: A Comparative Perspective (2 credits)

Trends in science education in the SAARC countries and the world. Science education in developing man power.

*** SED 503: Teaching Science and Mathematics for Understanding (3 credits)**

Methods of teaching, Use of audio visual aids in teaching, Paradigm shift from traditional teacher-centred teaching to student-centred teaching

*** SED 504: Teachers as Researchers (Action Research) (3 credits)**

Participants will explore how action research could be used to gain a fuller understanding of individual and group managerial behaviours and problems in their classrooms. Each participant has to undertake a study during the teaching practice period and submit the report.

SED 505: Philosophical Inquiry and Contemporary Issues in Education (2 credits)

Philosophies of education. Analytical tools used for evaluating current educational goals. An overview of ideas of Popper, Kuhn and Lakatos with emphasis on falsification, paradigm shifts and tacit knowledge.

SED 506: Learners and Learning in Context (2 credits)

Social identities and role relationships in the classroom. Role of social context and socio-cultural background in learning. Natural and socially constructed differences among learners. Role of education in social mobility.

SED 504: Psychological Approaches to Learning (2 credits)

Psychological research approaches to learning, cognition and motivation, behaviourism and constructivism.

SED 508: Use of computers in Teaching Science/Mathematics (Interactive Teaching) (2 credits)

Computer Assisted Learning (CAL) Possibilities, ideas, and issues associated with teaching science using computers. Use of internet to facilitate science learning.

SED 509: Classroom Management (2 credits)

School as an organization, school culture, decision making, leadership and management roles. Approaches to staff development. The role of staff development in the management of change.

SED 510: Psychology of Special Education (2 credits)

The current status of special education in the country. Advances made during the last three decades. How to integrate children with special needs to normal classrooms.

SED 511: Guidance and Counselling in Science Education (2 credits)

Theory, principles and practice to identify student problems. Foundation for formal training in counselling

SED 512: Assessment Practices in Science and Mathematics (2 credits)

Functions of assessment and assessment issues. School-based assessment, continuous assessment, Norm-referenced and criterion –referenced assessment.

*** SED 513: Teaching Practice (3 credits)**

During the first semester of the programme participants will be placed in two schools to experience teaching at primary and secondary level. The participants will work with an experienced teacher at the beginning and then gradually be responsible to undertake teaching all science/mathematics periods for one month. The participants will be planning lessons and implement them in the classroom. They will be assessed continually based on their strengths and weaknesses in planning, teaching, assessing and managing the classroom.

*** SED 514: Independent Study (3 credits)**

Students will be doing an independent study based on their teaching practice and submit a written report (about 20 pages, 1.5 spaced, Times New Roman, 12 pts) and do an oral presentation of the same.

TEACHING PANEL

Mrs. C. Atapattu, The Principal, St. Joseph Balika M.V. Kegalle

B.Sc. (Perad.) Dip. in Ed. (Perad.)

Prof. H.M.N. Bandara, Dept. of Chemistry, University of Peradeniya

B.Sc. (Cey.) Ph.D. (Ast.)

Prof. M.A.K.L. Dissanayake, Director, PGIS

B.Sc. (Cey.) M.S., Ph.D (Indiana)

Dr. R. D. Gunaratne, Retired Professor & Former Head, Dept. of Philosophy & Psychology, University of

Peradeniya *B.A. (Cey.), M.A. (Calif.), Ph.D. (Camb.)*

Mr. U. Gunasekera, The Principal, Royal College, Colombo

B.Sc.(Perad.), Dip in Ed (Colombo)

Mr. Nihal Herath, Former Chief Commissioner, Teacher Education, Ministry of Education *B.Sc.*

(Cey.), Dip in Ed (Bristol), M.Sc. in Chemical Education (East Anglia)

Dr. A Jayasena, Retired Professor & Former Head, Dept. of Education, UP

B.A.(Cey.) Dip. In Ed. (Cey.), M.A. (Sri Lanka), M. A. (Columbia), Ph.D. (Monash)

Dr. S. Karunaratne, Secretary/Board of Study - Sc.Ed., Senior Lecturer, Science Education Unit,

University of Peradeniya *B.Sc. (Cey.), Dip. In Ed., M.Sc. Agric.(Perad.), M.Ed. in*

Sc.Ed. (Bristol), Ph.D. in Sc.Ed. (Michigan State)

Dr. L. Kobbekaduwa Retired Senior Lecturer, Dept. of Education, UP

B.A.(Cey.) Dip. In Ed. (Cey.),M.Ed. (Colombo), Ph.D. (Alberta)

Dr. G. Kodituwakku, Director/Research, NIE, Maharagama
B.Ed. (Colombo), M.Phil (Perad.), Ph.D. (Colombo)

Dr. N.G. Kularatna Retired Senior Lecturer, OUSL,
B.A., Dip.inEd.(Cey.), M.Ed., Ph.D. (Perad.)

Mrs. S.A. Leelaratne Former Director, Dept. of Science, NIE
B.Sc., Dip. In Ed. (Cey.) M.Ed. (Sussex) M.Phil. (Colombo.)

Dr. K.M. Liyanage, Director, IT Centre, University of Peradeniya
B. Sc.Eng. (Perad.), M.Eng., Ph.D. (Tokyo)

Mr. R.P. Liyanage, Retired Professor and Head, Dept. of Education, University of Peradeniya
B.A., Dip.in Ed., M.A. (Cey.)

Dr. D. D. Mallikarachchi, , Dept. of Philosophy & Psychology Faculty of Arts, University of Peradeniya
B.A., M.A. (Cey.), Ph.D.(Moscow)

Dr. G.L.S. Nanayakkara, Formerly Additional Secretary, Ministry of Education
B.Sc. (Cey.), M.Ed. (Sussex) Ph.D (Reading)

Mr. Wilfred Perera, Assistant Director General, NIE, Maharagama
B.A. (Perad.), M.Sc.(Edinburgh), PG Dip. in Ed. Management (Edinburgh), PG Dip. in Ed. Management (Maharagama)

Prof. Lal Perera, Formerly Professor & Head, Faculty of Education, University of Colombo
B.A.,, Dip.in Ed., M.A. (Cey), Ph.D. (Moscow)

Mr. K. S. K. Peiris Lecturer, Ruwanpura College of Education
B.Sc., M.Phil. (Colombo), M.Sc. in Science Education (Perad.)

Miss P.R.K.A. Vitharana, Lecturer, Ruwanpura College of Education
B.Sc.(OUSL),Dip. In Ed. (Perad.), M.Sc. in Science Education (Perad.)

Mr. G. W. Wijesuriya, MG Consultant, Formerly Director/Evaluation, NIE, Maharagama
B.Sc. (Cey.), Diploma in Sc.Ed. (IWATE, Japan), Dip.in Ed. (London)

PROGRAMME COORDINATOR

Dr. S. Karunaratne
Senior Lecturer, Science Education Unit, Faculty of Science, University of Peradeniya
Secretary, Board of Study in Science Education, PGIS
Programme coordinator, M.Sc. in Science Education