



**POSTGRADUATE INSTITUTE OF SCIENCE**

**UNIVERSITY OF PERADENIYA**

**PERADENIYA**

**SRI LANKA**

**ANNUAL REPORT**

**2005**

## **Postgraduate Institute of Science (PGIS)**

Postgraduate Institute of Science (PGIS) is a national institute established by the Ministry of Education & Higher Education in 1996. The Director is the principal executive, academic and accounting officer of the institute while the Board of Management is the principal authority of the institute. The PGIS is attached to the University of Peradeniya and depends on the university for formulation and implementation of its academic programmes and the award of postgraduate degrees.

The institute strives to achieve its principal objectives to provide postgraduate instruction and training and facilitate research in different disciplines of science by

- stimulating creative thought while making available existing knowledge in the chosen fields,
- providing an atmosphere where free intellectual activity can flourish,
- inculcating a responsibility and sensitivity about the scientific and technological needs of the society.

In the achievement of its objectives, the Board of Management of the PGIS is assisted by ten Boards of Study and a Coordinating Committee. The Boards of Study are: Biochemistry and Molecular Biology; Chemical Sciences; Earth Sciences; Environmental Science; Mathematics; Physics; Plant Sciences; Science Education; Statistics and Computer Science and Zoological Sciences. At its inception, the postgraduate research programmes (M.Phil. and Ph.D.) which were traditionally conducted by the Faculty of Science of the University of Peradeniya were transferred to the PGIS in 1996. The PGIS commenced its activities by initiating several more M.Sc. programmes and continues to expand these programmes in different disciplines of science. Sandwich and collaborative programmes were also launched by interacting with local and overseas institutions and the industry. Currently, the M.Sc., M.Phil. and Ph.D. programmes as well as post-graduate certificate courses, in-service training programmes, workshops etc. are being routinely conducted. The Institute also offers consultancy services to the local industry, public and private sector institutions. The Institute recommends to the University of Peradeniya the award of degrees, diplomas, certificates and other academic distinctions. Through its programmes, the PGIS currently caters to the growing demand for trained S and T manpower needs of private and public sector organizations in Sri Lanka. Due to the shortage of foreign scholarships, more and more graduates employed in private and public sector institutions are turning to the PGIS to follow their postgraduate studies. The PGIS has thus embarked on a mission to fill the gap created during the last few years due to the paucity of opportunities for Sri Lankan scientific personnel to obtain overseas postgraduate training. It is accomplishing its mission by regularly training a significant number of scientific personnel needed for the country's development effort through M.Sc., M.Phil., Ph.D. degree programmes and through specialized, tailor-made and Diploma Programmes, Certificate Courses, Conferences, Workshops and Training Programmes.

## **Important PGIS Events (1996 – 2005)**

January 18, 1996	Establishment of the PGIS
March 01, 1996	Appointment of Prof. R P Gunawardane, Dean, Faculty of Science, University of Peradeniya as Acting Director
April 20, 1996	Inaugural Meeting of the Board of Management
July 01, 1997	Appointment of Prof. K. Dahanayake as Director
December 30, 1997	Award of Degrees to the first batch of M.Sc. students by the University of Peradeniya
June 18, 1998	Laying of the foundation stone for the new building
October 20, 1999	Completion and occupation of the new building
May 06, 2000	Opening of the Computer Laboratory
July 01, 2000	Re-appointment of Prof. K Dahanayake for a second period of three years as Director
Sept. 07-08, 2002	First Research Sessions of the PGIS
July 01, 2003	Appointment of Prof. M A K L Dissanayake as full time Director
December 28 – 30, 2004	International Statistical Conference attended by 60 foreign and 56 local participants. Conference proceedings with 44 research papers were published by the PGIS.
January 02, 2005	Opening of the dedicated GIS & RS Laboratory
May 12, 2005	Formation of the PGIS Young Researchers Forum
2004 – 2005	Launching of several unique M.Sc. Programmes in :  a) M.Sc. in GIS & Remote Sensing b) M.Sc. in Disaster Management c) M.Sc. in Medical Microbiology

## **Progress During- 2005**

Prof. M A K L Dissanayake continued his services as the Director of the Postgraduate Institute of Science during 2005.

Prof. Dissanayake participated and presented research papers at the China Nano Conference in Beijing, China (9 – 11 June), International Conference on Physics Education (ICPE) in New Delhi, India (21 – 26 August), and the World Year of Physics in Durban, S. Africa (30 October – 3 November). He also spent two weeks as a Visiting Scientist at the ICTP, Trieste, Italy (16 - 28 October).

Prof. Dissanayake continued to function as the Chairman of the Asian Physics Education Network (ASPEN) and an Associate Member of the International Commission on Physics Education (ICPE). He was also a member of the UGC Standing Committees on Postgraduate Education and Science, member of the NSF Task Force on Nano-Science and Technology, member of the NSF Steering Committee on Fundamental Research. In December, he was appointed as a member of the new Board of Management of the NSF.

The new members for all Boards of Study were appointed at the PGIS with effect from 20.04.2005.

M.Sc. Programmes in Analytical Chemistry, Applied Statistics, Clinical Biochemistry, Environmental Science, Experimental Biotechnology, Industrial Chemistry, Industrial Mathematics, Physics of Materials, Postharvest Technology of Fruits and Vegetables, Science Education, GIS & RS, and two new M.Sc. programmes of Disaster Management and Medical Microbiology commenced during 2005. The total number of new M.Sc. students enrolled during the year was 158. 10 new students were registered for the M.Phil. degree and 3 students were registered for the Ph.D. degree during 2005. Memorandum of understanding were signed between the PGIS and ITC, Netherlands and between the PGIS and ADPC Bangkok for staff/student exchange for Disaster Management and GIS programmes.

The Occasional students scheme progressed well during 2005. There were two foreign students from Sweden and one from Scotland benefited from this scheme.

03 Ph.D. candidates, 10 M.Phil. candidates and 96 M.Sc. candidates graduated at the Peradeniya Annual Convocation held on 21<sup>st</sup> December 2005. The increased number of candidates graduated during 2005, in comparison to the number (95) graduated in 2004 was a significant achievement for the PGIS.

Development of the PGIS Materials Research Laboratory continued during 2005 and Mr. D M M Krishantha was appointed as Scientific Assistant (Contract Basis) and was entrusted in this work. GIS & RS Laboratory, equipped with 35 Computers were ceremonially inaugurated by the Vice Chancellor on 30<sup>th</sup> November 2005. A new standby Diesel Generator was purchased and an extensions for internal telephone system installed during 2005.

Workshops on Active Teaching Learning Approaches in Science for Junior secondary Teachers (ATLAS 4 & 5) (21 – 24<sup>th</sup> March, 46 participants), Scientific Writing (29<sup>th</sup> March, 109 participants), Natural Disaster Management and Mitigation (24<sup>th</sup> June, 44 participants), Postharvest Handling of Fruits & Vegetables (20 – 21<sup>st</sup> October, 19 participants), Pre- &

Postharvest Management of Vegetables & Cut Flowers ( 24 - 25 October, 35 participants), Short Course on Health and Anesthesia in Captive Elephants (Dec. 19 – 20, 24 participants), Dendrochronology (Dec. 22, 24 participants) were held during 2005.

Short Courses on Conservation and Management of Reservoirs in Sri Lanka (6 – 9<sup>th</sup> June, 24 participants), “Water Resources Planning – Groundwater Hydrology (29<sup>th</sup> 30 Sept. & 01 Oct., 7 participants), Postgraduate Certificate Course in Advanced Biochemistry (23<sup>rd</sup> October – Dec., 10 participants), GIS and its Applications (Nov. 30 – Dec. 5, Dec. 15 – 18, 68 participants) Identification of Common Bees of Sri Lanka (Dec. 19 – 20, 15 participants) were held during 2005.

Seminars on Challenges and Opportunities in Scientific Research for Young Researchers (12<sup>th</sup> May, 124 participants), PGIS – Young Research Forum (14<sup>th</sup> September, 40 participants), National Symposium on Mosquito Control (15 – 16<sup>th</sup> September, 48 participants) were held during 2005. The formation of the PGIS Young Researcher’s Forum was an important event during 2005.

The PGIS joined the Faculty of Science, at the Peradeniya University Annual Research Sessions (PURSE 2005) where PGIS students presented their research papers.

A large number of foreign scientists visited the PGIS during 2005 and delivered lectures and participated as resource persons in Conferences, Workshops and Short Courses. Among them were, Dr. Mark Windale, Centre for Science Education, Sheffield Hallam University, UK; Dr. Allen Clark, Executive Director, Pacific Disaster Center, Hawaii, USA; Prof. Jon Pearce, The San Jose State University, California, USA; Dr. Cees van Westen, Associate Professor, GIS for Natural Hazard Assessment, International Institute for Geoinformation Science and Earth Observation (ITC), The Netherlands; Dr. Dinand Alkema, Assistant Professor, Natural Hazard Assessment, International Institute for Geoinformation Science and Earth Observation (ITC), The Netherlands; Prof. A Prasanna de Silva, Professor of Chemistry, Queen’s University of Belfast, UK; Prof. Bill Harrison, Centre for Science Education, Sheffield Hallam University, UK; Prof. Lytton John Musselman, Old Dominion University, Virginia, USA; Dr. Dilantha Fernando, Department of Plant Science, University of Manitoba, Canada; Dr. M A Nihal Dharmasiri, Department of Biology, Indiana University, USA; Prof. Indra de Silva, Department of Communication Arts, Xavier University, USA; Prof. Ewert Bengtsson, Centre for Image Analysis, Uppsala University, Sweden; Dr. Simon Langan, Macaulay Institute Aberdeen, Scotland, UK; Prof. Aki Moriyama, Dean, Graduate School of Natural Sciences, Nagoya City University, Japan; Dr. Nishantha Rajakaruna, Altantic College, Maine, USA; Prof. Jon Pearce, San Hose State University, California, USA; Prof. Werner Ens, University of Manitoba, Winnipeg, Canada; Dr. Sujeevan Ratnasingham, University of Guelph, Ontario, Canada Prof. Katarina Svanberg, Lund University Hospital, Sweden, Prof. Sune Svanberg, Lund University, Sweden; Dr. Stuart Davies, Smithsonian Tropical Research Institute, Republic of Panama; Prof. Vanamamalai Seshadri, McGill University, Montreal, P.Q., Canada; Dr. R Ranatunga, Procter & Gamble, USA; Dr. Brendan Buckley, , Director, Laboratory of Troical Dendrochronooy, Kasetsart University, and Associate Research Scientist, Laboratory of Tropical Dendrochronology, Bangkok, Thailand, Dr. Rashmin Gunasekera, University of Coventry, UK.

Among distinguished guests visited the PGIS during 2005 were Diyawadana Nilame of Sri Dalada Maligawa, Hon Pradeep Nilanga Dela Bandara, His Excellency Dr. Greg French, High Commissioner for Australia in Sri Lanka.

Several major research grants/consultancy projects were administered by the PGIS during 2005. Major donor agencies were; National Geographic Society, CARP, NSF, US- AEP, BIO, PAM & WCP.

Prof. M A K L Dissanayake  
Director/PGIS  
26.02.2006

# Board of Management of the PGIS (as of 31<sup>st</sup> December 2005)

ind

**MEMBER OF THE BOARD (NOMINEE):**

## **Director, Postgraduate Institute of Science:**

*Prof. M A K L Dissanayake (Chairman)*

## **Secretary to the Ministry of Education & Higher Education (Nominee)**

*Ms. Malini Peiris*

## **Secretary to the Ministry of Finance (Nominee)**

*Ms. Chrishanthi Hapugoda (from June 2005)*

## **Secretary to the Ministry of Science & Technology:**

*Ms. P G P Abeyratne (nominee)*

## **Director, Institute of Fundamental Studies (IFS):**

*Prof. K Tennekone*

## **Director, Industrial Technology Institute (ITI):**

*Dr. A M Mubarak*

## **Director, National Science Foundation (NSF):**

*Mr. M Watson*  
*Dr. M C N Jayasuriya (from February 2005)*

## **Director, Geological Survey and Mines Bureau (GSMB)**

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## **Director-General, Central Environmental Authority (CEA):**

*Ms. Manel Jayamanne*

## **Director-General, National Aquatic Resources Research and Development Agency (NARA):**

*Dr. S C Jayamanne*  
*Dr. K D P Hemalal (from August 2005)*

## **Director-General, National Institute of Education (NIE):**

*Prof. Jagath Wickramasinghe*

## **Director-General of Agriculture:**

*Dr. Sarath Weerasena*  
*Dr. C Kudagamage (from May 2005)*

*Mr. Samantha Abeywickrama*

## **Deans of Faculties of Science of the Universities:**

*Prof. R L C Wijesundera (Colombo)*

*Dr. N Pathmanathan (Eastern)*

*Dean/Science (Jaffna)*

*Prof. K A K D D D Jayasuriya (Kelaniya)*

*Dean/Faculty of Natural Sciences (OUSL)*

*Prof. V Kumar (Peradeniya)*

*Prof. R N Pathirana (Ruhuna)*

*Dean/Faculty of Natural Sciences (Sri J'pura)*

*Dean/Faculty of Applied Sciences (Wayamba)*

*Dr. J L Ratnasekera (Rajarata)*

*Dr. M M Goonasekera – from September 2005*

*Dean/Faculty of Applied Sciences (South Eastern)*

*Dr. D B M Wickramaratne (Sabaragamuwa)*

## **Members elected by Boards of Study:**

*Prof. R Sivakanesan (Biochem. & Mol. Biology)*

*Prof. O A Ileperuma (Chemical Sciences)*

*Mr. L R K Perera (Earth Sciences)*

*Prof. Mangala de Silva (Environmental Science)*

*Dr. U N B Dissanayake (Mathematics)*

*Dr. A A I Perera (from April 2005)*

*Prof. B S B Karunaratne (Physics)*

*Prof. N K B Adikaram (Plant Sciences)*

*Prof. M A K L Dissanayake (Sc. Education)*

*Dr. S Karunaratne (from April 2005)*

*Dr. K M Liyanage (Stat. & Computer Science)*

*Prof. S H P P Karunaratne (from November 2004)*

## **Members appointed by the University Grants Commission (UGC):**

*Prof. R P Gunawardane (up to August 2005)*

*Mr. N Pathmanathan*

*Prof. R O Thattil (up to May 2005)*

*Mr. D L C Welikala*

*Prof. K G A Dahayanayake (from May 2005)*

*Mr. B Abeygunawardane (from June 2005)*

## Boards of Study (as of 31<sup>st</sup> December 2005)

**Note: The Director (PGIS) is a member (ex-officio) of all the Boards of Study**

### *Board of Study in Biochemistry & Molecular Biology*

Prof. R Sivakanesan (Chairman)  
Dr. J G S Ranasinghe (Secretary)  
Dr. P Samaraweera  
Dr. S B P Athauda  
Dr. Deepthi Yakandawala  
Dr. H R W Dharmaratne  
Dr. Tilak Attanayake  
Dr. K K S Fernando

### *Board of Study in Physics*

Prof. B S B Karunaratne (Chairman)  
Dr. P W S K Bandaranayake (Secretary)  
Prof. K Premaratne  
Dr. U Karunasiri  
Dr. P Ekanayake  
Prof. W P Siripala  
Dr. J K D S Jayanetti  
Mr. K R Abeysinghe Bandara

### *Board of Study in Chemical Sciences*

Prof. O A Ileperuma (Chairperson)  
Dr. Anura Wickramasinghe (Secretary)  
Prof. H M N Bandara  
Prof. Namal Priyantha  
Prof. R M G Rajapakse  
Dr. P Karunaratne  
Mr. H S M Peiris  
Prof. S V R Weerasinghe

### *Board of Study in Plant Sciences*

Prof. N K B Adikaram (Chairman)  
Dr. Deepthi Yakandawala (Secretary)  
Prof. I A U N Gunatilleke  
Prof. M D Dassanayake  
Prof. S A Kulasooriya  
Dr. S M Weerasinghe  
Dr. A Nugawela  
Dr. D S A Wijesundara

### *Board of Study in Earth Sciences*

Mr. L R K Perera (Chairman)  
Dr. A Pitawala (Secretary)  
Dr. H A Dharmagunawardena  
Dr. Athula Senaratne  
Dr. Uditha Ratnayake  
Dr. W K B N Prame  
Dr. T Arulananthan  
Dr. N P Ratnayake

### *Board of Study in Science Education*

Prof. M A K L Dissanayale (Chairman)  
Dr. S Karunaratne (Secretary)  
Prof. J P Edirisinghe  
Dr. A A S Perera  
Dr. G L S Nanayakkara  
Mr. Upali Gunasekera  
Ms. Chandra Atapattu

### *Board of Study in Environmental Science*

Prof. M de Silva (Chairman)  
Dr. Rohan Fernando (Secretary)  
Prof. O A Ileperuma  
Prof. B S B Karunaratne  
Prof. Namal Priyantha  
Prof. P K de Silva  
Mr. W A D D Wijesooriya  
Dr. A Kapila N Zoysa

### *Board of Study in Statistics & Computer Science*

Dr. K M Liyanage (Chairman)  
Dr. S R Kodituwakku (Secretary)  
Dr. A A I Perera  
Dr. S Samitha  
Dr. P Wijekoon  
Dr. M Alahakoon  
Dr. Kanthi Perera  
Dr. Janaka Wijekulasooriya

### *Board of Study in Mathematics*

Dr. U N B Dissanayake (Chairman)  
Dr. H M Nasir (Secretary)  
Mr. J P D Dharmadasa  
Dr. W B Daundasekera  
Dr. A A I Perera  
Dr. D J C Sooriyarachchi  
Dr. S Kanaganathan

### *Board of Study in Zoological Sciences*

Prof. S H P P Karunaratne (Chairman)  
Dr. S Yatigammana (Secretary)  
Prof. M de Silva  
Prof. P K de Silva  
Dr. A Dangolla  
Prof. E I L Silva  
Dr. A Wijesekera  
Dr. R S Rajakaruna

## **Coordinating Committee (as of 31<sup>st</sup> December 2005)**

Prof. M A K L Dissanayake, Director/PGIS (Chairman)  
Prof. V Kumar, Dean, Faculty of Science, University of Peradeniya  
Prof. R Sivakanesan, Chairman, Board of Study in Biochemistry & Molecular Biology  
Dr. J G S Ranasinghe, Secretary, Board of Study in Biochemistry & Molecular Biology  
Prof. O A Ileperuma, Chairman, Board of Study in Chemical Sciences  
Dr. Anura Wickramasinghe, Secretary, Board of Study in Chemical Sciences  
Mr. L R K Perera, Chairman, Board of Study in Earth Sciences  
Dr. A Pitawala, Secretary, Board of Study in Earth Sciences  
Prof. M de Silva, Chairman, Board of Study in Environmental Sciences  
Dr. Rohan Fernando, Secretary, Board of Study in Environmental Sciences  
Dr. U N B Dissanayake, Chairman, Board of Study in Mathematics  
Dr. H M Nasir, Secretary, Board of Study in Mathematics  
Prof. B S B Karunaratne, Chairman, Board of Study in Physics  
Dr. P W S K Bandaranayake, Secretary, Board of Study in Physics  
Prof. N K B Adikaram, Chairman, Board of Study in Plant Sciences  
Dr. Deepthi Yakandawala, Secretary, Board of Study in Plant Sciences  
Prof. M A K L Dissanayake, Chairman, Board of Study in Science Education  
Dr. S Karunaratne, Secretary, Board of Study in Science Education  
Dr. K M Liyanage, Chairman, Board of Study in Statistics & Computer Sciences  
Dr. S R Kodituwakku, Secretary, Board of Study in Statistics & Computer Sciences  
Prof. S H P P Karunaratne, Chairman, Board of Study in Zoological Sciences  
Dr. S Yatigammana, Secretary, Board of Study in Zoological Sciences  
Mrs. S Ileperuma, Senior Assistant Librarian, Science Library

## **Administrative and Support Staff of the PGIS (as of 31<sup>st</sup> December 2005)**

### **Director**

Prof. M A K L Dissanayake -B.Sc. (Cey.),M.S., Ph.D (Indiana, USA)

Tel: 081 – 2387218

081 – 2388693/2389151-2 (ext. 4781)

E-mail: director@pgis.lk

### **Programme Co-ordinator**

Dr. (Mrs.) N C Bandara - B.Sc. Hons. (Perad.), M.Sc. , Ph.D (New Orleans, USA)

Tel: 081 – 2387542

081 – 2388693/2389151-2 (ext. 4784)

E-mail: ncbandara@pgis.lk

### **Assistant Registrar**

Ms. M G P Damayanthi Menike –B.Com.Hons.(Perad)

Tel: 081 – 2387542 (ext. 4782)

Email : ar@pgis.lk

### **Senior Assistant Bursar**

Ms. P Molagoda -B.A. (SJP)

Tel: 081 – 2389027

081 – 2388693/2389151 – 2 (ext. 4783)

E-mail: molagoda@pgis.lk

### **Systems Engineer**

Mr. N A S Dissanayake -B.Sc. Eng. (Perad.)

Tel: 081 – 2385666 (ext. 4785)

E-mail: navoda@pgis.lk

### **Scientific Assistant**

Mr. D M M Krishantha – B.Sc.(Perad.)  
M.Sc. (Perad.)

### **Staff Assistant/Stenography Services**

Ms. A Kammanankada

Tel: 081 – 2388693/2389151 – 2 (ext. 4787)

### **Audio Visual Technical Officer Gr. II**

Mr. G N Priyalanka

### **Book-Keeper Grade II**

Mr. R Rajapakse

### **Data Entry Operator-cum-Clerk**

Mr. H S Y Gannile

### **Clerk Grade III**

Ms. M H M I W Jayawardena- B.A.(Perad.)

Ms. I Dissanayake (Gr I)

Ms. A H A M Athapattu-B.A.(Rajarata)

Ms. H N K Herath (on overseas leave)

Ms. E H Paranagama

### **Driver Grade I**

Mr. W V Abeyratne

### **Driver Grade II**

Mr. S L A Jeevananda

### **Labourer Grade I**

Mr. E V R Karunadasa

### **Labourer Grade III**

Mr. A M Wijeratne

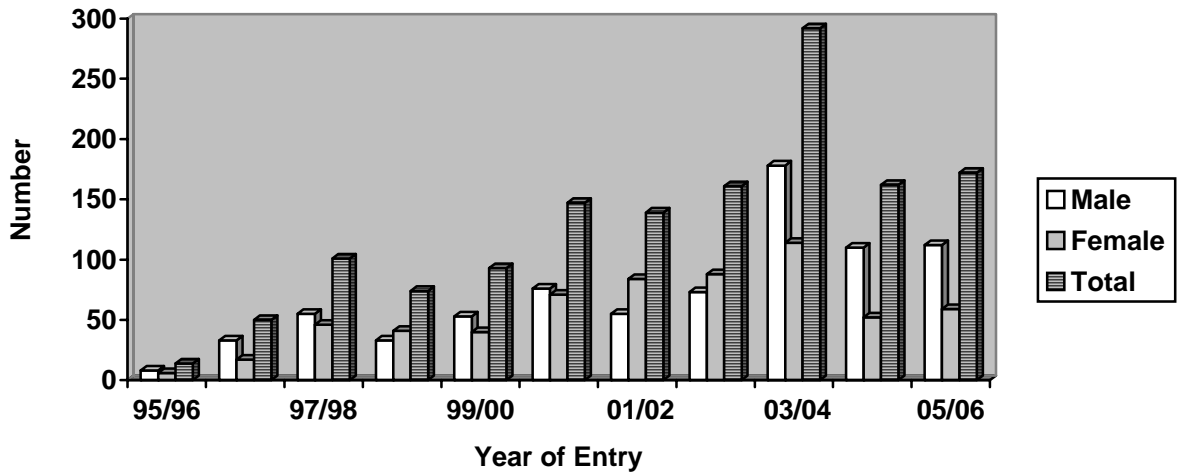
## M.Sc. Programmes Conducted by the PGIS During 2005

M.Sc PROGRAMME	COORDINATOR/S
1. Analytical Chemistry	Dr. W. M. A. T Bandara
2. Applied Statistics	Dr.(Mrs) P. Wijekoon
3. Clinical Biochemistry	Prof. P. A. J. Perera Dr. S. B. P. Athauda Dr. P. H. P. Fernando
4. Computer Science	Dr. A. A. I. Perera
5. Disaster Management	Prof. M A K L Dissanayake Prof. K Dahanayake Dr. A P N Somaratne Dr. Janaka Wijethunga
6. Environmental Science	Prof. K. H. G. M. de Silva Dr. R. Fernando
7. Experimental Biotechnology	Dr. S.Ranasinghe Dr. K. Fernando Dr. D. M. D. Yakandawala
8. Industrial Chemistry	Dr. A. Wickramasinghe Dr. P. Karunaratne
9. Industrial Mathematics	Dr. A. A. I. Perera
10. Plant Science	Dr. (Mrs.) H. M. S. P. M. Weerasinghe
11. Physics of Materials	Prof. B. S. B. Karunaratne
12. Post harvest Technology of Fruit and Vegetables	Dr. C Abeyasekera Prof. N. K. B. Adikaram
13. Science Education <i>General component</i>	Dr. S. Karunaratne
<i>Special Component-</i> Biology Education	Dr. R. S. Rajakaruna
Chemistry Education	Prof. J. S. H. Q. Perera
Mathematics Education	Dr. U. N. B. Dissanayake
Physics Education	Prof. K. Premaratne
14. GIS and Remote Sensing	Dr. Jagath Gunatillaka
15. Postgraduate Diploma in IT for Education	Dr. K Liyanage Dr. S R Kodituwakku

## Distribution of PGIS Students

Board of Study	Degree Programme	No. of registered students as at 01.01.2005	New students enrolled in 2005	Total no. of registered students as at 31.12.2005	Students graduated in 2005
Biochemistry & Molecular Biology	Ph.D.	02	-	02	-
	M.Phil.	06	01	07	-
	M.Sc.	29	-	29	05
Chemical Sciences	Ph.D.	05	01	06	01
	M.Phil.	37	07	44	06
	M.Sc.	71	-	71	17
Earth Sciences	Ph.D.	02	-	02	-
	M.Phil.	08	01	09	-
	M.Sc.	81	33	114	13
Environmental Science	Ph.D.	01	-	01	01
	M.Phil.	03	-	03	-
	M.Sc.	39	-	39	08
	PG Diploma	-	-	-	01
Mathematics	Ph.D.	-	-	-	-
	M.Phil.	-	-	-	-
	M.Sc.	26	10	36	01
	PG Diploma				03
Physics	Ph.D.	03	-	03	-
	M.Phil.	11	03	14	02
	M.Sc.	38	-	38	07
	PG Diploma	-	-	-	-
Plant Sciences	Ph.D.	03	02	04	01
	M.Phil.	26	05	31	02
	M.Sc.	30	17	47	-
Science Education	Ph.D.	03	-	03	-
	M.Phil.	03	01	04	-
	M.Sc.	83	37	120	23
Statistics & Computer Science	Ph.D.	-	-	-	-
	M.Phil.	03	01	04	-
	M.Sc.	126	63	189	20
	PG Diploma	79	-	79	-
Zoological Sciences	Ph.D.	04	01	05	-
	M.Phil.	06	01	07	-
	M.Sc.	02	-	02	02
<b>Total</b>	Ph.D.	23	04	27	03
	M.Phil.	103	20	129	10
	M.Sc.	525	160	685	96
	PG Diploma	79	-	79	-
		<b>651</b>	<b>184</b>	<b>914</b>	<b>109</b>

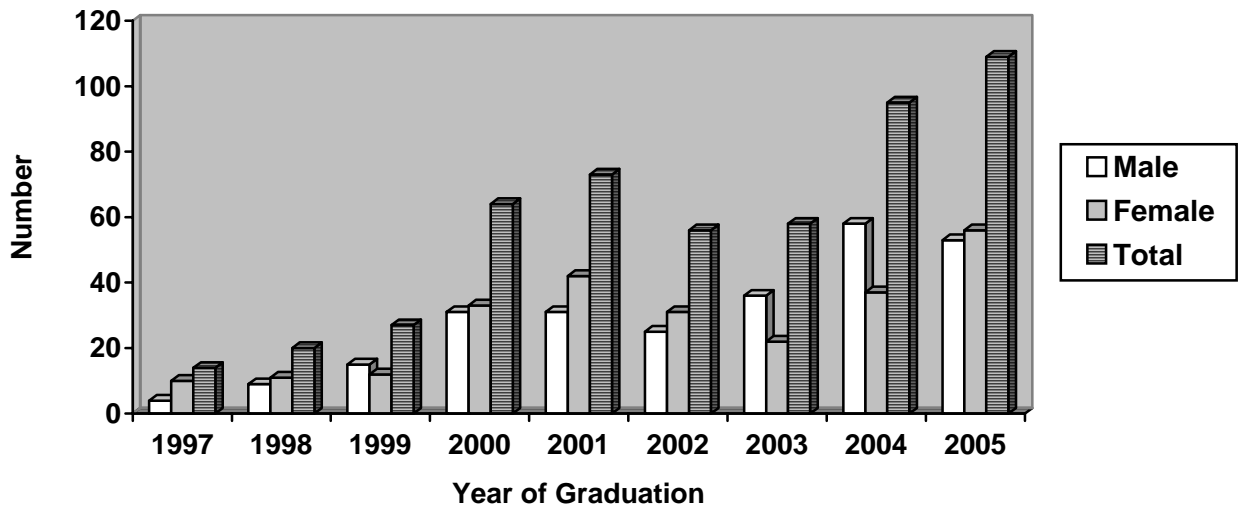
### Student Admissions by Year



Note :2003/2004 includes a special batch of IT Diploma students(79) from the Ministry of Education

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### Student Graduations by Year



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## ***Ph.D and M.Phil Degrees Awarded and Titles of Theses (2005)***

### ***PGIS Board of Study and Name of***

### ***Title of the Research Project***

#### ***Ph.D. – Chemical Sciences***

1. H M A M C Herath A Novel Approach to the Control of Aedes Aegypti, a vector of Dengue Fever and pollution abatement by the use of porphyrin derivatives.

#### ***Ph.D. – Plant Sciences***

1. H. S. Jayasinghe Arachchi Rhizobial-fungal-phenolic interactions in N<sub>2</sub> fixing symbiosis

#### ***Ph.D. – Environmental Science***

1. V D K Abeyratne Monitoring Air Quality using low cost techniques and assessing the impact of air pollution on vegetation crops.

#### ***M.Phil. – Chemical Sciences***

- 1 C H Manoratne Development of organic/inorganic composite electrolyte materials based on poly (ethylene oxide) and montmorillonite (PEO/MMT) for applications in electrochemical devices.
- 2 A G A J Weerasinghe Chemical Investigation of Goniiothalamus Gardineri
- 3 K S Kalhari Synthesis of Essential oil Derivatives for Development of Insecticidal Products against Mosquitoes and houseflies.
4. K G N P Piyasena Chemistry and Bio activity Studies of Garcinia Mangostana L.
5. N M J Nissanka Investigation of the extent of Acid Precipitation in Sri Lanka
6. R N Susantha Chemical and Biochemical Modifications of Electrode Surfaces for Sensor Applications.

#### ***M.Phil. – Physics***

1. S Kuhanesan Fracture Toughness and Crazeing behaviour of Virgin and Filler Polystyrene films
2. Y Velmurugu Electrochemical and Electromechanical Behaviour of Polypyrrole films

#### ***M.Phil. – Plant Sciences***

1. B K H C Munidasa The climate and flowering phenology of eight *Shorea* species in Sinharaja Rain Forest, Sri Lanka
2. M A A B Dilhan Vegetation structure and floristic composition in the irrigation extension area of the lower Walawe Basin, Sri Lanka

**M.Sc. PROGRAMMES COMMENCED**  
(January – December 2005)

<b>M.Sc. Programme</b>	<b>Board of Study</b>	<b>Coordinators</b>	<b>No. of Students</b>
<i>Applied Statistics</i>	<i>Statistics &amp; Computer Science</i>	<i>Dr. P. Wijekoon (Dept. of Statistics &amp; Computer Science), University of Peradeniya</i>	<i>17</i>
<i>Computer Science</i>	<i>Statistics &amp; Computer Science</i>	<i>Dr. A.A I Perera (Dept. of Mathematics), University of Peradeniya</i>	<i>46</i>
<i>Industrial Mathematics</i>	<i>Mathematics</i>	<i>Dr. W B Daundasekera, (Dept. of Mathematics), University of Peradeniya</i>	<i>10</i>
<i>Science Education</i> (with specialities in Biology, Chemistry, Mathematics & Physics)	<i>Science Education</i>	<i>Dr. S Karunaratne (Science Ed. Unit), Dr. R Rajakaruna (Dept. of Zoology), Dr. C Vithana (Dept. of Chemistry), Dr. U N B Dissanyake (Dept. of Mathematics) &amp; Dr. V Seneviratne (Dept. of Physics), University of Peradeniya</i>	<i>37</i>
<i>Plant Science</i>	<i>Plant Sciences</i>	<i>Dr. S Madawala Weerasinghe (Dept. of Botany), University of Peradeniya</i>	<i>06</i>
• <i>M.Sc. &amp; M.Sc. Eng. In Disaster Management</i>	<i>Earth Sciences &amp; Physics</i>	<i>Prof. K Dahanayake (Dept. of Geology), Prof. M A K L Dissanayake (Director/PGIS) Dr. A P N Somaratne (Head, Dept. of Civil Eng.) &amp; Dr. J Wijetunga (Dept. of Civil Eng.) University of Peradeniya</i>	<i>M.Sc. 33 M.Sc. Eng. 15</i>
• <i>Medical Microbiology</i>	<i>Plant Sciences</i>	<i>Dr. C L Abayasekera (Dept. of Botany), University of Peradeniya &amp; Prof. V Thevansesam (Dept. of Microbiology), University of Peradeniya</i>	<i>11</i>
• <i>New programmes started in 2005</i>			

**PUBLIC LECTURES AND SEMINARS PRESENTED AT THE PGIS  
(January – December 2005)**

	<i>Title of the Seminar</i>	<i>Presenter's Name &amp; Affiliation</i>	<i>Date</i>
1	<i>Luminescent Sensors &amp; Switches</i>	<i>Prof A Prassana de Silva Professor of Chemistry, Queen's University of Belfast, UK</i>	<i>January 3</i>
2	<b><i>"Earthquakes and Tsunamis – Geological Considerations"</i></b>		
	<i>Early Warning Systems for Earthquakes &amp; Tsunamis</i>	<i>Prof. K Dahanayake</i>	<i>January 20</i>
	<i>Basics of Tsunamis</i>	<i>Mr. H A H Jayasena</i>	
	<i>Neo-Tectonics, Seismicity and Deformatin of the Lithosphere</i>	<i>Dr. W Kehelpannale</i>	
	<i>A New Plate Boundary near Sri Lanka – some recent studies</i>	<i>Prof. C B Dissanayake</i>	
3	<i>'Developing Young People's Scientific Literacy and Capability'</i>	<i>Prof. Bill Harrison Centre for Science Education, Sheffield Hallam University, UK</i>	<i>February 22</i>
4	<i>'Pteridophyte Genus Isoetes'</i>	<i>Prof. Lytton John Musselman Mary Payne Hogan Professor of Botany &amp; Chair, Department of Biological Sciences, Old Dominion University, Virginia, USA</i>	<i>March 07</i>
5	<i>'Bacteria vs.Sclerotinia: A Model System to Study Mechanisms in Biological Warfare on the Plant Canopy</i>	<i>Dr. Dilantha Fernando Professor of Plant Pathology, Department of Plant Science, University of Manitoba, CANADA</i>	<i>May 06</i>
6	<i>'Auxin Signaling in Plants – the Quest for the Auxin Receptor'</i>	<i>Dr. M A Nihal Dharmasiri, Department of Biology, Indiana University, USA</i>	<i>May 26</i>
7	<i>'U.S. Higher Education and its Impact on International Scholars: Some Personal Observations'</i>	<i>Prof. Indra de Silva Chair, Department of Communication Arts, Xavier University, USA</i>	<i>June 23</i>
8	<i>"Methods and applications of image analysis in medicine"</i>	<i>Prof. Ewert Bengtsson Professor, Centre for Image Analysis, Uppsala Univeristy, SWEDEN</i>	<i>July 04</i>
9	<i>"Some examples of land use pressures on water resources in relation to catchment management issues"</i>	<i>Dr. Simon Langan Senior Research Scientist, Environmental Science Group, Macaulay Institute, Aberdeen, Scotland, UK</i>	<i>July 05</i>
10	<i>"Cysteine protease in urchin eggs</i>	<i>Prof. Aki Moriyama (B.Sc., M.Sc., Ph.D)</i>	<i>August 08</i>

	<i>and embryos”</i>	<i>Dean, Graduate School of Natural Sciences, Nagoya City University, JAPAN</i>	
11	<i>“Ecology of metal hyperaccumulation and the emerging field of phytoremediation”</i>	<i>Dr. Nishantha Rajakaruna Professor of Botany, Altantic College, Maine, USA</i>	<i>August 10</i>
12	<i>“Agent – based modelling”</i>	<i>Prof. Jon Pearce Professor of Computer Science &amp; Mathematics, San Hose State University, California, USA</i>	<i>August 20</i>
13	<i>“Applying mass spectrometry in biological research”</i>	<i>Prof. Werner Ens Department of Physics &amp; Astronomy, University of Manitoba, Winnipeg, CANADA</i>	<i>September 05</i>
14	<i>“The barcode of life initiative: progress and available tools”</i>	<i>Dr. Sujeevan Ratnasingham Informatics Lead, Barcodes of Life Initiative Biodiversity Institute of Ontario, University of Guelph Ontario, CANADA</i>	<i>September 20</i>
15	<i>“Early cancer detection using laserinduced fluorescence”</i>  <i>Organized in collaboration with Department of Radiology, Peradeniya Teaching Hospital</i>	<i>Prof. Katarina Svanberg (MD, PhD) Overlakare, Docent, Associate Professor of Oncology, Lund University Medical Laser Centre Division of Oncology, Lund University Hospital, SWEDEN</i>	<i>October 10</i>  <i>Auditorium, Teaching Hospital, Peradeniya</i>
16	<i>“Laser spectroscopy applied to energy, environmental and medical research”</i>  <i>Organized in collaboration with the Department of Physics, University of Peradeniya</i>	<i>Prof. Sune Svanberg Chairman, Physics Nobel Prize Committee &amp; Professor, Department of Physics Lund Institute of Technology and Lund Laser Centre, Lund University, SWEDEN</i>	<i>October 10</i>  <i>Department of Physics, University of Peradeniya</i>
17	<i>“The selection of Nobel Prize winners in Physics”</i>  <i>Organized in collaboration with Institute of Fundamental Studies (IFS), Kandy</i>	<i>Prof. Sune Svanberg Chairman, Physics Nobel Prize Committee &amp; Professor, Department of Physics Lund Institute of Technology and Lund Laser Centre Lund University, SWEDEN</i>	<i>October 11</i>  <i>IFS Auditorium, Kandy</i>
18	<i>“World Year of Physics”</i>	<i>Prof. Sune Svanberg Chairman, Physics Nobel Prize Committee &amp; Professor, Department of Physics Lund Institute of Technology and Lund Laser Centre Lund University, SWEDEN</i>	<i>October 11</i>
19	<i>“Evolution of plants and ants in macaranga (euphorbiaceae)”</i>	<i>Dr. Stuart Davies Director, Centre for Tropical Forest Science Smithsonian Tropical Research Institutue Republic of Panama</i>	<i>October 31</i>
20	<i>“Some problems associated with the inverse Gaussian distribution”</i>	<i>Prof. Vanamamalai Seshadri Department of Maths and Statistics McGill University, Montreal., P.Q., CANADA</i>	<i>December 17</i>

21	<p>“Resume and interview tips”</p> <p>Organized by PGIS-YRF</p>	<p>Dr. R Ranatunga Procter &amp; Gamble USA</p>	<p>December 20</p>
22	<p>“Dating of past climatic events through the study of tree ring growth”</p>	<p>Dr. Brendan Buckley Associate Research Scientist, Tree Ring Laboratory Lamont Doherty Earth Observatory, The Earth Institute at Columbia University, New York, USA &amp; Director, Laboratory of Tropical Dendrochronology, Kasetsart University, Bangkok, Thailand</p>	<p>December 20</p>
23	<p>“Earthquakes: hazards, prediction and vulnerability”</p>	<p>Dr. Rashmin Gunasekera Postdoctoral Research Fellow School of Science and the Environment University of Coventry, UK</p>	<p>December 29</p>

### **FOREIGN VISITORS (January – December 2005)**

- **Dr. Mark Windale**, Centre for Science Education, Sheffield Hallam University, UK
- **Dr. Allen Clark**, Executive Director, Pacific Disaster Center, Hawaii, USA
- **Prof. Jon Pearce**, The San Jose State University, California, USA.
- **Dr. Cees Van Westen**, Associate Professor, GIS for Natural Hazard Assessment, International Institute for Geoinformation Science and Earth Observation (ITC), The Netherlands
- **Dr. Dinand Alkema**, Assistant Professor, Natural Hazard Assessment, International Institute for Geoinformation Science and Earth Observation (ITC), The Netherlands.
- **Prof. A Prasanna de Silva**, Professor of Chemistry, Queen’s University of Belfast, UK
- **Prof. Bill Harrison**, Centre for Science Education, Sheffield Hallam University, UK
- **Prof. Lytton John Musselman**, Mary Payne Hogan Professor of Botany & Chair, Department of Biological Sciences, Old Dominion University, Virginia, USA
- **Dr. Dilantha Fernando**, Professor of Plant Pathology, Department of Plant Science, University of Manitoba, Canada
- **Dr. M A Nihal Dharmasiri**, Department of Biology, Indiana University, USA
- **Prof. Indra de Silva**, Chair, Department of Communication Arts, Xavier University, USA
- **Prof. Ewert Bengtsson**, Centre for Image Analysis, Uppsala University, Sweden
- **Dr. Simon Langan**, Senior Research Scientist, Environmental Science Group, Macaulay Institute Aberdeen, Scotland, UK
- **Prof. Aki Moriyama**, Dean, Graduate School of Natural Sciences, Nagoya City University, Japan
- **Dr. Nishantha Rajakaruna**, Professor of Compute Science & Mathematics, San Hose State University California, USA
- **Prof. Werner Ens**, Department of Physics & Astronomy, University of Manitoba, Winnipeg, CANADA
- **Dr. Sujeevan Ratnasingham**, Informatics Lead, Barcodes of Life Initiative, Biodiversity Institute of Ontario, University of Guelph, Ontario, CANADA
- **Prof. Katarina Svanberg**, Overlakare, Docent, Associate Professor of Oncology, Lund University Medical Laser Centre, Division of Oncology, Lund University Hospital, SWEDEN
- **Prof. Sune Svanberg**, Chairman, Physics Nobel Prize Committee & Professor, Department of Physics, Lund Institute of Technology and Lund Laser Centre, Lund University, SWEDEN

- *Dr. Stuart Davies, Director, Centre for Tropical Forest Science, Smithsonian Tropical Research Institute, Republic of Panama*
- *Prof. Vanamamalai Seshadri, Department of Maths and Statistics, McGill University, Montreal, P.Q, CANADA*
- *Dr. R Ranatunga, Procter & Gamble, USA*
- *Dr. Brendan Buckley, Associate Research Scientist, Tree Ring Laboratory, Lamont Doherty Earth Observatory, The Earth Institute at Columbia University, New York, USA & Director, Laboratory of Tropical Dendrochronology, Kasetsart University, Bangkok, Thailand*
- *Dr. Rashmin Gunasekera, Postdoctoral Research Fellow, School of Science and the Environment, University of Coventry, UK*

## OCCASIONAL STUDENTS AT THE PGIS

The following students were enrolled as occasional students of the PGIS during 2005:

<i>Name/Country</i>	<i>Board of Study</i>	<i>Local Supervisor/Affiliation</i>
<i>Ms. N R Gunawardane Sri Lanka</i>	<i>Zoological Sciences</i>	<i>Prof. Jayanthi Edirisingh Department of Zoology</i>
<i>Mr. Bjorn Niklas Goransson Sweden</i>	<i>Earth Sciences</i>	<i>Dr. H A Dharamagunawardane Department of Geology</i>
<i>Mr. Marten D K Roslund Sweden</i>	<i>Earth Sciences</i>	<i>Dr. H A Dharmagunawardane Department of Geology</i>
<i>Mr. John Thorburn, Scotland</i>	<i>Plant Sciences</i>	<i>Prof. I A U N Gunatilleke Department of Botany</i>
<i>Ms. S H Galahitiyawa Sri Lanka</i>	<i>Biochemistry &amp; Molecular Biology</i>	-

## RESEARCH GRANTS

### Research grants as at 31.12.2005

	Cumulative as at 31.12.2005	New Research Grants awarded during the year 2005	Total No. of Research Grants in force in 2005
PGIS	20	-	20
NSF	19	16	35
Foreign	11	2	13

Other	08	04	12
Total	58	22	80

### NSF GRANTS AWARDED IN 2005

	Grantee/s	Project Title
1	Dr. Jagath Gunatilleke	Consultancy for the site investigation of the proposed complex at Digana
2	Prof. I A U N Gunatilleke	Monitoring the effect of invasion of <i>Clidemia hirta</i> to native species in the 25 ha plot in Sinharaja World Heritage site.
3	Ms. W M G C K Mannapperuma	Sensitivity of different bacteriological analytical methods for detecting <i>Escherichia Coli</i> and Coliform bacteria for water quality assessment in Sri Lanka
4	Prof. Namal Priyantha	Investigation of environmental fate of some selected pesticides using electrochemical methods
5	Dr. Rupika Rajakaruna	Effect of pesticide exposure and trematode infection on the development of limb deformities in frogs
6	Prof. K Premaratne	Fabrication and characterization of polymer based device structures for solar energy applicaitons
7	Prof. B S B Karunaratne	Fabrication of low cost phosphate bonded clay bricks for building industry
8	Prof. M A K L Dissanayake	Optical and electrical studies in novel solid polymer electrolytes
9	Prof. J P Edirisinghe	Identification, diversity and host plant relations of thrips
10	Dr. H M T G A Pitawala	An assessment of the potential threat to the geochemical quality of surface and ground water – A case study from Kala Oya Basin, Sri Lanka
11	Prof. B M R Bandara	Tea Polyphenols for clinical Applications: Activity against Antibiotic – Resistant Bacteria and Human Fungal Pathogens
12	Prof. K Dahanayake	Disaster Mitigation and Management: A case study

		with emphasis on the tsunami affected village of Peraliya and the Southern Coastal belt.
13	Prof. R M G Rajapakse Prof. B S B Karunaratne Prof. D T B Tennakoon Prof. H M N Bandara Prof. B M R Bandara	Clay-polymer nanocomposites: Investigation of their electrical, mechanical, thermal and green catalytic properties for industrial and technological applications.
14	Dr. G W A R Fernando Dr. H M T G A Pitawala	Study of mineralization in and around Matale District aiming at discovery of new occurrences and value addition possibilities
15	Dr. S Karunaratne Mrs. K H N Damayanthi	Developing educational tools for learning science
16	Dr. D Yakandawala	Phylogenetic relationships of the gines cinnamon and the characterization of deference cinnamon accessions in cultivation.
16	Dr. S Karunaratne	Capacity building of teacher to teach Science at primary level
17	Prof. B M R Bandara	Tea polyphenols for Clinical Applications: Activity against Antibiotic – Resistant Banteria and Human Fungal Pathogens

### FOREIGN GRANTS AWARDED IN 2005

	Grantee/s	Project Title
1	Prof. O A Ileperuma	Determining the effects of outdoor air pollution on the respiratory health of children in a rural and an urban area in the Kandy district
2	Prof. J P Edirisinghe Ms. N R Gunawardane	Ant Communities of mixed Dipterocarp rain forest in Southeast Sri Lanka (WL/3/2/1/7)

## OTHER GRANTS AWARDED IN 2005

	<b>Grantee/s</b>	<b>Project Title</b>
1	Prof. S A Kulasooriya	Bio-fuel from Jatropha Curcas
2	Mr. H A H Jayasena Dr. R L R Chandrajith	Protected area management & wildlife conservation project
3	Dr. Jagath Gunatilleke	Consultancy for the site investigation of the proposed complex at Digana
4	Mr. M B Ranawana	Follow up studies of forest dieback in Horton Plains National Park

## OTHER PGIS ACTIVITIES

*Workshops (WS), Short Courses (SC) and Seminars (S)*  
(January – June 2005)

<i>Event</i>	<i>Coordinator/s (Board of Study)</i>	<i>Period</i>	<i>No. of Participants</i>
Active Teaching Learning Approaches in Science' for Junior secondary Teachers (ATLAS 4 & 5) (WS)	Dr. S Karunaratne (Science Education)	March 21 - 24	46
Scientific Writing (WS)	Dr. N C Bandara (PGIS)	March 29	109
Challenges and Opportunities in Scientific Research for Yong Researchers (S)	Prof. M A K L Dissanayake (PGIS)	May 12	124
Conservation and Management of Reservoirs in Sri Lanka (SC)	Dr. S K Yatigammana (Zoological Sciences)	June 6 - 9	24
Natural Disaster Management and	Dr. H A Dharmagunawardane	June 24	44

Mitigation (WS)	(Earth Sciences) Mr. K R Abhyasinghe (Physics)		
PGIS- Young Research Forum (YRF) (S)		Sep. 14	40
National Symposium on Mosquito Control	Prof. S H P P Karunaratne Dr. R Rajakaruna (Zoological Sciences)	Sep . 15 - 16	50
Short Course on “Water Resources Planning – Groundwater Hydrology	Dr. J Gunatilleke	Sep. 29, 30 & Octo. 01	7
Workshop on “Postharvest Handling of Fruits & Vegetables”	Dr. C Abayasekara Dr. M Daundasekara (Plant Sciences)	Oct. 20 - 21	19
Postgraduate Certificate Course in “Advanced Biochemistry”	Dr. S B P Athauda (Biochemistry & Mol. Biology)	Oct. 23 – Dec.	10
Workshop on “Pre - & Postharvest Management of Vegetables & Cut Flowers”	Dr. C Abayasekara Dr. M Daundasekara (Plant Sciences)	Oct. 24 - 25	35
Peradeniya University Research Sessions (PURSE)		Nov. 10	
Earth Sciences	Short Course on ‘GIS and its Applications’	Nov. 30 – Dec. 5  Dec. 15 – 18	65
Zoological Sciences	Workshop on ‘Short Course on Health and Anesthesia in Captive Elephants’	Dec. 3	24
Zoological Sciences	Short Course on ‘Identification of Common Bees of Sri Lanka’	Dec. 19 – 20	15
Plant Sciences	Workshop on Dendrochronology	Dec. 22	24

## **REPORTS FROM THE COORDINATORS OF WORKSHOPS & SHORT COURSES**

### ***4<sup>th</sup> & 5<sup>th</sup> WORKSHOPS ON 'ACTIVE TEACHING & LEARNING APPROACHES IN SCIENCE' FOR JUNIOR SECONDARY TEACHERS (ATLAS 4 & 5)***

The 4<sup>th</sup> and 5<sup>th</sup> workshops on Active Teaching and Learning Approaches in Science (ATLAS) were held at the PGIS from March 21 – 24, 2005 and 46 science teachers and education officers participated. The principal resource person of the workshops was Dr. Mark Windale from Sheffield Hallam University, UK.

ATLAS workshops were organized through the Higher Education Link (HEL) programme between Centre for Science Education of Sheffield Hallam University (SHU) and Board of Study in Science Education of the PGIS. Aims of these workshops were to introduce science teachers and education officers to a range of effective, active & student-centered teaching and learning approaches to encourage collaborative learning and raise motivation and achievements of students.

ATLAS model consists of five workshops:

- (1) Introduction to ATLAS*
- (2) Experimental and Investigation Science*
- (3) Writing*
- (4) Using ICT effectively in the Science Classroom*
- (5) Train the Trainees*

For the 4<sup>th</sup> ATLAS workshop, Dr. Mark Windale introduced participants to search information from the internet. He introduced Multi Media School Science package to do simulation for visualizing science, modeling processes for scientific investigations, processing and analyzing data using spread sheets and to see science across the opportunity to copy some of the lessons into compact diskettes. This exposure was new to most of the participants and they were very enthused and were interested in knowing more about such web sites. They wanted to tryout all lessons and evaluating materials in the given package.

5<sup>th</sup> ATLAS workshop was aimed at training the participants to serve as trainees so that they can conduct sessions to other teachers. In the workshop the participants had to implement the approaches that they have learnt in developing and using curriculum materials in the training sessions. The participants were highly impressed by the workshop proceedings. They showed outstanding understanding and capability in using the approaches. They have gone through the paradigm shift exemplifying best practices in active student-centered teaching and learning. As the British Council HEL support terminates from March 31, 2005, new sources of funding would be necessary, if these training workshops are to be continued.

*Coordinator: Dr. S. Karunaratne*

## **WORKSHOP ON SCIENTIFIC WRITING**

A one-day workshop on Scientific Writing was held on 29<sup>th</sup> March 2005 at the PGIS auditorium in order to help postgraduate students to write theses, papers and reports. Workshop participants (109) were PGIS students registered for M.Sc., M.Phil. & Ph.D. degree programmes. The breakdown was as follows: *M.Sc. in Analytical Chemistry (8); M.Sc. in Applied Statistics (6); M.Sc. in Computer Science (8); M.Sc. in Industrial Chemistry (6); M.Sc. in Industrial Mathematics (1); M.Sc. in Medical Physics (7); M.Sc. in Plant Sciences (18); M.Sc. in Science Education (37); M.Phil./Ph.D. programmes (16); Occasional Students (2).*

The workshop consisted of lectures/discussions on various aspects of postgraduate thesis/project report writing. The topics covered at the workshop were: *Structure and layout of a thesis/project report; Ethics; Title & Abstract; Computer Aided Literature Survey; Introduction & Bibliography; Experimental/Materials and Methods; Results, Interpretation & Conclusion.* Resource persons were Professors B. M. R. Bandara, M. A. Careem, K. Dahanayake, M. A. K. L. Dissanayake, J. P. Edirisinghe, C. V. S. Gunatillake (all from the Faculty of Science), J. S. Edirisinghe (from the Faculty of Medicine), and Dr. P. M. K. Alahakoon (from the Faculty of Agriculture), University of Peradeniya.

*Coordinator: Dr. N C Bandara*

## **SEMINAR ON CHALLENGES AND OPPORTUNITIES IN SCIENTIFIC RESEARCH FOR YOUNG RESEARCHERS; Formation of the PGIS - Young Researchers' Forum (YRF)**

A seminar on 'Challenges and Opportunities in Scientific Research for Young Researchers' was held at the PGIS on May 12, 2005. There were 124 participants attending this seminar. The objective of the seminar was to expose young researchers, mainly the M.Phil./Ph.D. students of the PGIS and young academic staff active in research to the importance of engaging in research and the challenges and opportunities encountered by them.

During the seminar several key resource persons delivered lectures on important issues: Prof. Kirthi Tennakone (Director, Institute of Fundamental Studies) on '*Fundamental vs. Applied Research*'; Prof. Lakshman Dissanayake (Director, Postgraduate Institute of Science) on '*Idea Generation for Research*'; Prof. Sirimali Fernando (Chairperson, National Science Foundation) on '*Opportunities for Research - The Role of the NSF*'; Dr. Trishantha Nanayakkara (University of Moratuwa) on '*Towards a new Research Culture in Sri Lankan Universities*'; Prof. Veranja Karunaratne (Dept. of Chemistry, University of Peradeniya) on '*Challenges for Young Researchers*'; Prof. H Abeygunawardane (Dean, Faculty of Vet. Medicine & Animal Sc.) on '*Writing a Good Research Proposal*'; Prof.



Sarath Edirisinghe (Dept. of Parasitology, University of Peradeniya) on 'Research Ethics'.

### ***PGIS - Young Researchers' Forum (YRF)***



**Prof. Sirimali Fernando (Chairperson, National Science Foundation - NSF) addressing the audience.**

The seminar concluded with the formation of the PGIS Young Researchers' Forum (PGIS-YRF). A committee was elected unanimously with Ms. Vinitha Thadani as the President and Mr. Dionysius Guanakkan as the Secretary. The committee received blessings from Prof. Kirthi Tennakoon, the Director of the Institute of Fundamental Studies (IFS) and a leading researcher in Sri Lanka.

***The main objective of the YRF is to provide an arena to***

- (a) interact and exchange information pertaining to scientific research in order to disseminate knowledge and extend collaboration among other groups (local and foreign) with similar interests.
- (b) realize the potential of young researchers as the next generation of scientists.
- (c) generate a research climate that allows for creativity, open communication and free flow of ideas and talents.



**Prof. Lakshman Dissanayake (Director, PGIS) introducing the newly elected YRF office bearers to Prof. Kirthi Tennakone (Director, IFS) and to the audience.**

(d) create a platform to bring to the attention of the authorities and the government, the problems faced by young researchers in carrying out scientific research in Sri Lanka.

(e) promote public awareness and the importance of scientific research.

***The membership of YRF is open to***

(a) all postgraduate students currently registered at the Postgraduate Institute of Science, and University of Peradeniya,

(b) young research scientists and university staff, who are active in scientific research at universities and other institutes.

***The activities of YRF include:***

- (a) organizing a regular series of seminars where members can present and discuss their research findings,
- (b) organize special seminars by invited guest scientists on various topics of scientific interest,
- (c) any other activity for the purpose of dissemination of scientific knowledge, especially among the younger generation of scientists, and
- (d) make recommendations to the authorities and to the government on issues affecting young researchers and for creating an environment conducive for productive scientific research in Sri Lanka.

*Coordinator: Prof. M A K L Dissanayake*

***SHORT COURSE ON CONSERVATION AND MANAGEMENT OF RESERVOIRS  
IN SRI LANKA***

Reservoirs in Sri Lanka have supported agriculture and domestic water requirements for thousands of years. Unfortunately, water quality of many reservoirs is thought to have deteriorated due to direct and indirect human influences. Direct human influences that could impact water quality include the dumping of untreated domestic and industrial effluents into reservoirs and the regulation of water levels, while indirect human influences mainly include the introduction of exotic fish and changes in climatic conditions. Some reservoirs have already become seriously polluted, especially in highly populated urban areas. Additionally, some reservoirs are menaced by salinization, which could severely affect rice cultivation, the main staple food of 19 million people in Sri Lanka. Large alterations in the chemical state of these reservoirs should result in changes of their aquatic communities. Already, diversions of rivers into reservoirs in the drier part of the country have resulted in major limnological changes.



**Prof. H P M Gunasena (Executive Director, CARP) addressing the Inaugural Session of the short course on ‘Conservation and Management of Reservoirs in Sri Lanka’ held at the PGIS on June 6, 2005.**

Therefore, in order to address these issues, the Board of Study in Zoological Sciences of Postgraduate Institute of Science conducted a 4-day short course on “*Conservation and Management of Reservoirs in Sri Lanka*” from 6<sup>th</sup> to 9<sup>th</sup> June, 2005 at the PGIS.

Prof. H P M Gunasena (Executive Director, CARP) was the chief guest at the inaugural session held on June 6, 2005 at the PGIS. Prof. S H P P Karunaratne (Acting Director of the PGIS & Chairman, PGIS Board of Study in Zoological Sciences), Prof. V Kumar (Dean, Faculty of Science, University of Peradeniya) and Dr. S K Yatigammana (Workshop Coordinator) also addressed the audience.

The course was designed to provide the participants with a knowledge to understand the existing problems of various reservoirs and to establish appropriate management strategies. The CARP provided partial sponsorship for the programme. Topics covered included: *Aquatic systems of Sri Lanka, Importance of water as a global resource, Human interference on water resources, Need for water management, Methods of water management, Pollution & Existing problems of reservoirs in Sri Lanka, and The use of bioindicators in effective reservoir management.*

All of the above issues were addressed in detail using the latest scientific techniques. For instance, indicator organisms have been used in limnological studies to infer limnological changes such as eutrophication, salinization and lake level fluctuations both qualitatively and quantitatively. In addition, some organisms have been used in order to understand complex changes in food webs such as competition and predation. Furthermore, zooplanktons have been used in order to infer changes in habitat, including changes in the abundance of macrophytes, temperature and oxygen. Habitat alteration can directly or indirectly be related to environmental changes such as climate and pollution. Therefore, changes in populations of aquatic organisms structure can be used to better understand environmental changes in lakes and reservoirs. Further, understanding of the current problems of our reservoirs, such as eutrophication and development of toxic algal blooms is an essential part in the field of agriculture especially because these problems eventually can cause health problems to both human and livestock. On the other hand understanding of the effect of agrochemicals on reservoir ecosystems is also necessary to sustain long-term better health of this resource.

There were lively discussions at the end of each lecture and therefore the participants had the opportunity to present any problems in the aforementioned problems especially relevant to their field of interests, such as fisheries, irrigation and domestic water supplies. Ultimately the course helped in understanding the environmental conditions and the existing problems of our reservoirs. In addition it also helped the participants to understand the sustainable exploitation of this precious resource as the country is heading towards an intense agricultural development. Finally the short course provided the opportunity for the participants of the different disciplines of utilization and management of reservoirs of Sri Lanka to meet and share their knowledge and establish links among themselves.

The response received from the participants in the evaluation of the workshop was very positive and they expressed the view that continuation of this type of workshops in the future would be greatly beneficial.

*Coordinator: Dr. S. K. Yatigammana*

## NATIONAL WORKSHOP ON NATURAL DISASTER MANAGEMENT & MITIGATION



**Prof. Kapila Goonasekera (Vice-Chancellor, University of Peradeniya) addressing the Inaugural Session of the workshop held at the PGIS on June 24, 2005. Seated L to R are Dr. H A Dharmagunawardhane, Prof. C B Dissanayake, Prof. Lakshman Dissanayake (Director, PGIS), Dr. Allen Clark, Prof. K Dahanayake, Prof. B S B Karunaratne, Mr. L R K Perera and Mr. K R Abhayasinghe.**

A one-day workshop on Natural Disaster Management and Mitigation organized by the Boards of Study in Earth Sciences and Physics of the Postgraduate Institute of Science (PGIS) was held at the PGIS on Friday 24<sup>th</sup> June 2005. Dr. H A Dharmagunawardhana (Dept. of Geology, Univ. of Peradeniya) and Mr. K R Abhayasinghe (Director, Dept. of Meteorology, Colombo) coordinated the workshop.

Prof. Lakshman Dissanayake (Director, PGIS) delivered the welcome address at the inaugural session and Prof. Kapila Goonasekera (Vice Chancellor, Univ. of Peradeniya) was the Chief Guest. Dr. Allen Clark, Executive Director, Pacific Disaster Center, Hawaii, USA was the Guest of Honor and his Keynote Address was focused on hazards and precautions in Tsunami events. Prof. C B Dissanayake

(Dept. of Geology, Univ. of Peradeniya) gave an overview of Natural Disasters in a Global Perspective.

The main objective of the workshop was to draw the attention of the responsible officers towards different types of natural hazards such as earth tremors, tsunamis, cyclones, lightning and landslides. Workshop was also an awareness programme on causes of natural disasters and methods and techniques used in their mitigation. There were three technical sessions chaired by Prof. Kapila Dahanayake (Dept. of Geology, Univ. of Peradeniya), Prof. B S B Karunaratne (Chairman, Board of Study in Physics) and Mr. L R K Perera (Chairman, Board of Study in Earth Sciences).

The resource persons of the workshop were: Prof. C B Dissanayake, Prof. K Dahanayake, Mr. N de Silva (Geophysicist, DEOCOM, NARA), Mr. S Weerawarnakula (Director, GSMB), Dr. K D W Nandalal (Department of Civil Engineering, University of Peradeniya), Mr. K R Abhayasinghe & Eng. Nuwan Kumarasinghe (Department of Meteorology), Mr. L Rupasinghe (CEL Lanka Pvt. Ltd., Colombo) and Mr. G H P Dharmaratne (Director-General, Department of Meteorology).

Forty four participants attended the workshop. At the end of every lecture sufficient time was given for questions/answers, suggestions and comments by the participants. A number of practical problems in installing Lightning Protection Systems were discussed during the panel discussion.

Workshop was partly sponsored by WRB-Brandix Center for Disaster Management & Mitigation and C E L Lanka (Pvt) Ltd, Colombo.

*Coordinators: Dr. H. A. Dharmagunawardhan and Mr. K. R. Abhayasinghe*

### **WORKSHOP ON DENDROCHRONOLOGY**

A one-day workshop on Dendrochronology organized by the Board of Study in Plant Sciences of the PGIS was held on 22<sup>nd</sup> December 2005. Dendrochronology is the dating of past events such as climatic changes through the study of tree ring growth. The National Science Foundation of the USA has funded a five-year study to apply the science of tree-ring analysis in addressing key questions regarding the processes that drive development of Asian monsoons – one of the largest natural climatic variability systems affecting the globe. Tree-ring records provide quantitative estimates of past climate on a year-by-year time scale; this allows us to reconstruct more complete records of variations and interrelationships among the components of the Asian monsoon system.

Analysis of tree ring [data](#) throughout “Monsoon Asia” will enable scientists to reconstruct and analyze regional climate histories over timeframes of centuries to millennia. The data will also reveal information on three major [process](#) regions that collectively drive much of the variability of the Asian monsoon: Asian land-surface air [temperatures](#), sea-surface temperatures in the Indian Ocean, and tropical Pacific sea-surface temperatures associated with [El Niño](#). Identifying interrelationships among these regions, and how the Asian monsoon manifests itself in different regions across the globe, will lead to the development of improved [models](#) for better long-term forecasting. With approximately one half the world’s population impacted by the Asian monsoon, long-term forecasting will have profound social and economic impacts, such as improved agricultural planning and risk assessment (Ref: NSF,USA web site).

Due to its considerable importance to global climate and implications for the world’s population, there is an urgent need for greater understanding of this Asian monsoon system. The ultimate goal of this is improved prediction of its intensity on annual to decadal and longer time scales. The NSF grant has facilitated the establishment of the Laboratory of Tropical Dendrochronology at Kaesetsart University in Thailand. Its director, Dr. Brendan Buckley of Lamont Doherty Earth Observatory of the Earth Institute, Columbia University, New York, USA is developing a regional network to carry out tree-ring analysis research in several Asian countries including Sri Lanka.

Dr. Buckley, at the invitation of the Director, PGIS and Dr. Larif Subair of Columbia University, conducted this initial workshop during which the theoretical foundations of using tree ring data for climate variability analysis were elaborated through a lecture presentation in the morning. This was followed in the afternoon by a field practical demonstration of taking wood cores from trees using an increment corer and on storing them for microscopic examination. A brief laboratory demonstration session was held at the Botany Department where the participants were introduced to the microscopic variations associated with tree rings using wood sections that were available at the Department of Botany.

Twenty four participants representing a number of academic, research, governmental and private- sector institutions in Sri Lanka actively participated in this introductory training workshop and at the final session indicated their interest in establishing a network of participants through the PGIS for any follow up activities on dendrochronology.

*Coordinator: Prof. I.A.U.N. Gunatilleke*

### *SHORT COURSE ON HEALTH AND ANESTHESIA IN CAPTIVE ELEPHANTS*

Captive elephant is important from several aspects to all Sri Lankans. Elephant is involved and is important therefore, in cultural, religious and state functions and lately for tourism. Captive elephants bring lots of foreign currency and assist livelihood of many families through tourism.

Most often when captive elephant are sick, native treatments are administered. Elephant owners have a tendency to seek assistance of native doctors when their elephants are sick. Since recently, western veterinary practices have become popular among elephant owners for several reasons. The formation of the captive elephant owners association, 6 years ago, has contributed for this popularity partially. The new findings from research and other information on diseases are constantly being dispersed through this association. In addition, practical problems of keepers and owners are investigated and are researched into. Furthermore, whenever opportunities allow, trainers and other elephant experts from foreign countries are brought in and discussions, training programs and clinics are held.

Most important historical reason for elephant owners and keepers to be in contact with the veterinarian is to get their elephants anesthetized and /or sedated in an emergency. Kandy Esala Perehera, being the most important cultural pageant in the country, has annually obtained services of veterinarians who could anesthetize elephants. However, there had been no formal training for this purpose despite several requests made by the veterinarian. The recent appointment of the new Diyawadana Nilame of Sri Dalada Maligawa was a step forward in this respect since he is also the president of the Captive Elephant Owners Association. He took the initiative to further train veterinarians on aspects of health and anesthesia. The Diyawadana Nilame, subsequently, not only funded the training course on health and anesthesia in captive elephants, but also actively participated in the program as an elephant owner.

The glamorous procession with 5 elephants including tuskers, held on 3<sup>rd</sup> December 2005 at 9.00 am in receiving Diyawadana Nilame, the chief guest for the occasion, was the first of its kind within the university in the recent past. The training program, in which Prof. Indira Silva was the main resource person, was well received by the participating veterinarians and the rehearsing on the use of different types of “tranquilizing guns” held at the Rugger grounds of the University, was the most attractive event, since most veterinarians hardly get an opportunity to use a gun. In addition, 36 veterinary undergraduates participated in lectures conducted during the training program, and benefited immensely from the taught course contents. Lecture outlines in a 27 paged document, was distributed to both registered participants and participating undergraduates. All lectures were conducted with “Power Point” presentations.

At the end of the course, certificates were distributed by the Hon. Pradeep Nilanga Dela Bandara, Diyawadana Nilame, who insisted that this training has to be extended to rural veterinarians all over the country to serve the purpose of elephant tranquilization work in other parts of the country. This is in the view of those respective districts handling their functions

with elephants within the districts. This message will soon be conveyed to Director General, Department of Animal Production and Health, the employer of government veterinarians.  
*Coordinator: Dr. A. Dangolla*

#### *NATIONAL SYMPOSIUM ON MOSQUITO CONTROL*

The National Symposium on Mosquito Control organized by the Board of Study in Zoological Sciences of the PGIS was held on the 15<sup>th</sup> and 16<sup>th</sup> September 2005 at the PGIS. More than fifty participants representing universities, research institutes, Antimalaria Campaign, Antifilaria Campaign, National Dengue Control Unit, World Health Organization attended the symposium. The Deputy Vice Chancellor, Prof. E.R.N. Gunawardena was the chief guest at the inauguration ceremony. The main objective of the symposium was to provide an opportunity for researchers to present their research findings, to get exposed to new developments in mosquito control research and to interact with their peers from various institutes.

Sixteen eminent scientists who are working on mosquito control research in Sri Lanka were invited as resource persons. The Guest Speech on '*Progress, opportunities and need for operational mosquito control globally*' was delivered by Professor Janet Hemingway, (Director/ Liverpool School of Tropical medicine, UK) one of the leading researchers of the world in the field of mosquito control. Dr Pushpa R.J. Herath, a WHO retiree Scientist/Entomologist, World Health Organization, Geneva, Switzerland discussed '*Strategies for control of vectors of mosquito-borne diseases in Sri Lanka*'. Several high quality scientific work carried out on mosquito control were presented at the symposium covering a wide area including, use of insecticides and insecticide resistance, Sri Lankan larvivorous fish species in mosquito control, use of insect growth regulators in mosquito control, Anopheline species complexes, application of Farmer Field School Technology for integrated pest and vector management, bioinsecticides, use of impregnated bed nets, phototoxic effect of some porphyrin derivatives against the mosquito larvae and GIS in mosquito control. The symposium provided a great opportunity and a single forum to bring all the scientists/students in biological and medical sciences together for dissemination and sharing their expertise for an effective mosquito control in Sri Lanka.

The proceedings of the symposium were published jointly by the PGIS and the National Science Foundation Sri Lanka (NSF) with Prof. S.H.P.P. Karunaratne as the editor. The coordinators gratefully acknowledge the partial funding provided by the NSF.

*Coordinators: Prof. S.H.P.P. Karunaratne  
Dr. R.S. Rajakaruna*

#### *PGIS - YRF SEMINAR*

A half day seminar organized by the Young Researcher's Forum (YRF) of the PGIS was held on 14<sup>th</sup> September 2006 at the PGIS Auditorium. The seminar was intended to make presentations by young researchers including young Ph.D. holders active in research and M.Phil./Ph.D. research students of the PGIS. After the welcome address by Prof. Lakshman Dissanayake (Director, PGIS and Patron, YRF), a presentation on FTIR Study on Biosystems was made by Dr. V. Sivakumar of the Department of Physics, Peradeniya. This was followed by a presentation on Lichen Chemistry by Ms. V.M. Thadhani, a Ph.D. research student

attached to the Department of Chemistry, Peradeniya. Prof. Viranja Karunaratne of the Department of Chemistry gave a presentation on Making Sense of the Opportunities and Challenges of Postgraduate Studies. This was followed by a panel discussion (over snack lunch) by Prof. Lakshman Dissanayake, Prof. Gamini Rajapakse, Prof. Viranja Karunaratne and Dr. V. Sivakumar on Problems and Challenges by young researchers in Sri Lanka and also opportunities available for them.

*Prof. Lakshman Dissanayake*