1. **INTRODUCTION**

The postgraduate programmes in Environmental & Water Engineering conducted by the Department of Civil Engineering, University of Peradeniya are intended for graduates with engineering or science background and practicing civil engineers in the fields of Water Supply & Drainage, Irrigation, Water Resources Engineering, Hydraulics, Coastal Engineering, Sanitary Engineering and Environmental Engineering.

The objectives of the postgraduate courses are to provide the students with

a) an advanced knowledge in the aspects of Water & Environmental Engineering applied to the industry.

b) an exposure and hands-on experience in the use of information technology tools and various application oriented computer software packages in Water and Environmental Engineering.

Thus, the courses have been designed to enhance the capabilities of the students in analyzing, planning, construction, operation and management of water & sanitary engineering works with a particular reference to preserving the quality of the environment.

Facilities in the Laboratories: Computing Centre and the Library of the Faculty of Engineering are available for research and study. Staff of the Civil Engineering Department and Faculty of Engineering associated with the postgraduate programme is:

- Prof. S. B. Weerakoon BScEng, MEng, DEng, FIE(SL), CEng, Int.PE
- Prof. K. D. W. Nandalal BScEng, MEng, PhD, FIE(SL), CEng
- Prof. K.P.P. Pathirana BScEng, MSc, PhD, CEng, FIE(SL), MICE, Int.PE
- Prof. J. J Wijetunga BScEng, PhD, MICE
- Prof. G.B.B. Herath BScEng, MEng, PhD
- Dr. P.B.G.Dissanayake BScEng, PhD
- Dr. K.B.S.N. Jinadasa BScEng, M Eng., PhD.
- Dr. (Mrs.) H. K. Nandalal BScEng, MSc, PhD, CEng
- Dr. (Mrs.) K.G.N.Nanayakkara BScEng, MSc
- Dr. (Ms.) W.C.T.K.Gunawardana BScEng, PhD
- Dr. L. Rathnayake BScEng, MEng, PhD
- Dr. D.G.P. Karunaratne BScEng, PhD
- Dr. C.S Kalpage BScEng, PhD
- Dr. S. B. Wijekoon, BScEng, MEng, MBA, PhD, CEng, FIE(SL), MICE, Int.PE
- Dr. Mrs. G. M. P. R. Weerakoon BScEng, MSc, PhD
- Dr. N G P B Neluwala BScEng, MEng, PhD
- Mr. D.D. Dias BScEng, MSc

In addition, visiting experts from the industry and from foreign and local universities will also be involved in the conduct of lectures, seminars, case studies and discussions.
2. PROGRAMME STRUCTURE AND COURSES

In order to obtain 12 credits per Term, it is required to conduct classes for at least 4 sessions. Accordingly, the proposed time table for the program is as follows;

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Description of work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday</td>
<td>8.00 AM to 11.00 AM</td>
<td>Core Course or Elective</td>
</tr>
<tr>
<td></td>
<td>12.00 PM to 3.00 PM</td>
<td>Core Course or Elective</td>
</tr>
<tr>
<td></td>
<td>3.00 PM to 5.00 PM</td>
<td>Core Course or Elective</td>
</tr>
<tr>
<td>Sunday</td>
<td>8.00 AM to 11.00 AM</td>
<td>Core Course or Elective</td>
</tr>
<tr>
<td></td>
<td>12.00 PM to 4.00 PM</td>
<td>Core Course or Elective</td>
</tr>
</tbody>
</table>

Note. In addition to above sessions, all students will complete an Independent Study of his/her choice related to the course. The discussions and meetings of this Independent Study will be scheduled from time to time on Friday, Saturday or Sunday.

Accordingly, the proposed time schedule for the course is as follows;

<table>
<thead>
<tr>
<th>Semester</th>
<th>Period of the year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term I</td>
<td>January to May (5 months)</td>
</tr>
<tr>
<td>Term II</td>
<td>June to October (5 months)</td>
</tr>
<tr>
<td>Term III</td>
<td>November to June of next year (8 months) - Research Project</td>
</tr>
</tbody>
</table>

Examinations in respect of the subjects taught in a term will be held within the term, and the progress of the research/design projects are continuously evaluated during and at the end of each term. At the end of 2 semesters the student will complete all taught courses and will have earned 24 credits as follows;

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Number of credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>From 4 core course (4 x 3 credits)</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>From elective courses and/or Independent study</td>
<td>12</td>
</tr>
</tbody>
</table>

2.1 Core Courses Offered

**CE670 ENVIRONMENTAL HYDRAULICS**

**CE671 APPLIED HYDROLOGY & GROUNDWATER MANAGEMENT**
Hydrology: hydrologic processes, hydrologic statistics, hydrologic design, urban and small watershed hydrology, flood-frequency analysis
Groundwater: aquifers, well systems, agrowell development and management, groundwater recharge, groundwater contamination and remediation, groundwater management

**CE672 ENVIRONMENTAL TECHNOLOGY AND MANAGEMENT**
Overview of environmental problems, water & air quality analysis, air, water and noise pollution, noise control, water pollution assessment, laboratory and field studies Environmental regulation and environmental impact assessment, case studies

**CE673 WATER AND WASTEWATER ENGINEERING**
Collection systems, unit processes, design of treatment systems, operation and maintenance, low-cost and small scale systems, tertiary treatment, sludge and effluent disposal, industrial wastewater treatment, urban storm drainage, case studies, field visits
2.2 Special Courses Offered on Demand

**CE674 COMPUTER APPLICATIONS IN WATER & ENVIRONMENTAL ENGINEERING**
Introduction to numerical methods: finite difference, finite volume & finite element methods, numerical schemes, accuracy, iterative techniques
Environmental modelling systems and software packages: Applications of hydrological, surface water and ground water software modeling packages, water quality, air quality and contaminant transport models, reactor models in waste treatment
Individual and group project assignments

**CE675 WATER AND ENVIRONMENTAL RESOURCES MANAGEMENT (WERM)**
Resources availability, activities involved in WERM, harnessing of resources for sustainable development, irrecoverability, renewable energy, environmental auditing
Projection & management of water demand and water quality
System application to WERM: deterministic and stochastic models, optimization techniques, simulation techniques, multiobjective decision making
Coastal zone Management: user conflicts and sustainable development, integrated management of the coastal zone, case studies

**CE685 SOLID & HAZARDOUS WASTE MANAGEMENT**
Solid waste: collection & storage, treatment & disposal, recycling, waste minimization, landfill operations, natural and synthetic membranes, leachate control Toxic & hazardous waste: Storage, collection, treatment & disposal of clinical wastes, thermal treatment methods, risk analysis, legislation

**E687 IRRIGATION AND WATER MANAGEMENT**
Irrigation resources: Natural water sources, waste water re-use,
Irrigation water requirement: Cropping patterns, crop water demand, yield response, and crop soil water balance
Water distribution systems: Distribution methods, control, operation and maintenance
Environmental aspects in irrigation
Soil and water conservation: water erosion, catchment management, water conservation

**CE688 ECONOMICS OF WATER RESOURCES PROJECT PLANNING**
Economic and financial evaluation: Principles of economic planning, mathematics of finance, benefit cost analysis, discounting, risk and uncertainty, multipurpose development and cost allocations
Public projects and environment: Development objectives, project selection and feasibility studies, environmental evaluation, project monitoring and post project evaluation
Elements of hydropower planning: Cost of power, firm capacity, rule curves, renewable energy sources

**CE689 GIS AND REMOTE SENSING IN WATER RESOURCES**
Introduction to GIS, types of data, data acquisition, map projections, terrain analysis using digital elevation models, deriving geophysical properties, distributed hydrological modeling,
Introduction to remote sensing, active and passive remote sensing, Image enhancement, GPS data acquisition, processing of remotely sensed data, estimation of vegetation and land cover indices for water resources management

**CE676 HYDRAULIC STRUCTURES**
River engineering: River flow, river morphology, river training, dredging & bank protection, flood plains, use of physical and mathematical models, environmental aspects in river management, adverse effects of human intervention on river flows.
Water retaining structures, water conveyance structures, flow control and safety structures, drainage structures, environmental implications of hydraulic structures
Coastal engineering: Physical features of coasts, applications of linear wave theory, coastal sediment transport, near-shore processes, coastal structures, estuarine hydraulics, use of physical and mathematical models.
3. ADMISSION REQUIREMENTS FOR THE PROGRAMMES

3.1 Postgraduate Diploma Programme

The minimum qualifications required of a person for admission to a programme leading to the postgraduate Diploma are as follows:

(a) A Bachelor’s Degree or
(b) Such other qualification as may be approved by the Faculty Higher Degrees Committee as suitable for candidature for PG.Dip. in a field related to the programme of study.

3.2 Degree of Master of Science Programme

The minimum qualifications required of a person for direct admission to a programme leading to the Degree of Master of Science are as follows:

(a) A Bachelor’s Degree in Physical Sciences with First or Second Class Honours or
(b) A Bachelor’s Degree in Physical Sciences with acceptable postgraduate qualifications or
(c) A Degree or such other qualification as may be approved by the Faculty Higher Degrees Committee as suitable for candidature for the M.Sc. Degree with a minimum of one year’s experience, after obtaining the Degree or such qualification, in a field related to the programme of study.

3.3 Degree of Master of the Science in Engineering Programme

The minimum qualifications required of a person to be considered for direct admission to a programme leading to the Degree of Master of the Science of Engineering are as follows:

(a) A Bachelor’s Degree in Engineering with First or Second Class Honours or
(b) A Bachelor’s Degree in Engineering with acceptable postgraduate qualifications, or
(c) A degree or such other qualification as may be approved by the Faculty Higher Degrees Committee as suitable for candidature for the M.Sc.Eng. Degree with a minimum of one year’s experience, after obtaining the Degree of such qualification, in a field related to the programme of study.

4. COURSE FEES AND SCHOLARSHIPS

Course fee is Rs. 300,000/- for the MScEng/MSc degrees and Rs. 225,000/- for the PG Dip.

Number of scholarships/fellowships for deserving students are available under a Norad grant, female students are specially encouraged to apply. Application forms for scholarships will be posted on the Civil Engineering Department web page at the end of August. You may also obtain scholarship information and application forms from Prof. S.B. Weerakoon, Norad Project Coordinator (sbweera@pdn.ac.lk).

5. COURSE REQUIREMENTS AND DURATIONS FOR THE AWARD OF THE DIPLOMA AND DEGREES

5.1 Postgraduate Diploma

5.1.1 Course Requirements

In order to be eligible for the award of the Diploma in Environmental and Water Engineering, a student shall have satisfied the following requirements.
A total of 20 credits earned from prescribed courses and successful completion of an advanced study or research.

5.1.2 Minimum and Maximum Duration

The minimum period required for the completion of the PGDip. programme shall be eight (8) months on a full-time basis and twelve (12) months on a part-time basis.
To be eligible for the award of the postgraduate Diploma, a student shall fulfill all stipulated requirements within two academic years on a full-time basis and three academic years on a part-time basis from the date of registration.
5.2 Degree of Master of Science / Degree of Master of the Science in Engineering

5.2.1 Course Requirements and Eligibility

In order to be eligible for the award of MSc/ MScEng Degree a student shall have

(a) A total of 24 credits earned from prescribed courses with a grade point average of at least 3.0, and
(b) Successfully completed a research study of at least four (4) months of full-time research or its equivalent on part-time basis.

5.2.2 Minimum and Maximum Duration

The minimum period required for the completion of the MSc/MScEng. programme of twelve (12) months on a full-time basis or eighteen (18) months on a part-time basis. In order to be eligible for the award of the MSc/MScEng Degree, a student shall fulfill all stipulated requirements within three academic years on a full-time basis and four and a half academic years on a part-time basis from the date of registration.

6. APPLICATION PROCEDURE

Applications for enrolment must be made in the prescribed forms obtained from the Assistant Registrar, Faculty of Engineering or the Department web “http://www.pdn.ac.lk/eng/civil/academics/post.php?academic”, or University of Peradeniya, Peradeniya. Perfected applications should reach the Assistant Registrar, Faculty of Engineering, University of Peradeniya, Peradeniya on or before 31st October 2018.

The following should be submitted along with the duly completed application:

a) Two confidential letters of recommendation. At least one should be from the applicant's academic tutor
b) Degree/Diploma/Professional membership certificates (Photostat copies)
c) Birth certificate (Photostat copy)
d) Letter of consent from the employer (where applicable)
e) 3 self addressed stamped envelopes (22x10cm)

Originals of documents of which Photostat copies are submitted should be produced before admission, on request. Also, applicant should arrange to send the official transcripts directly by the educational institutions concerned to the Assistant Registrar, Faculty of Engineering, University of Peradeniya, Peradeniya.

In the event of any discrepancy between the name appearing in the applicant's academic/professional/birth certificates and the name given by the applicant in the application, an affidavit to the effect that the applicant is the one and the same person known by all such names should be sent together with the application form.

Documents submitted in support of an application shall become the property of the University. The applicants will be informed of their acceptance/non-acceptance to the particular programme for which admission has been sought.

Applications which are received late/or are incomplete in any respect are liable to be rejected. The University may at its discretion refuse admission to any applicant.

For inquiries please contact the Coordinator of the programme Prof. K P P Pathirana, Dept. of Civil Eng., Univ. of Peradeniya, Tel: 081-2393501, Fax:081-2393500/2388158, e-mail: kpp@pdn.ac.lk