



GENERAL SIR JOHN KOTELAWALA DEFENCE UNIVERSITY



FACULTY OF GRADUATE STUDIES

**STUDENT'S HANDBOOK FOR MSc IN CIVIL &
STRUCTURAL ENGINEERING
DEGREE PROGRAMME**



GENERAL SIR JOHN KOTELAWALA DEFENCE UNIVERSITY
www.kdu.ac.lk

Key Appointments

a. **Chancellor**

General Gerard Hector de Silva (Retired) RWP VSV USP ndc

b. **Vice Chancellor**

Major General Milinda Peiris RWP RSP VSV USP ndc psc MPhil (Ind) PGDM

c. **Deputy Vice Chancellor (Defence & Administration)**

Brigadier W Chandrasiri RSP USP psc

d. **Deputy Vice Chancellor (Academic)**

Professor MHJ Ariyaratne

MBBS (Col), MS (Col), FRCS (Eng), FRCS (Ed), Senior Fellow PGIM (Col), FCS (SL)

e. **Dean, Faculty of Graduate Studies**

Brigadier RGU Rajapakshe, RSP, psc

BSc (DS) KDA, MSc (DS) Kelaniya, MASSS (NDU) Washington DC

f. **Dean Faculty of Engineering**

Eng Capt SU Dampage

BSc (Hons) (E E Eng), M Eng (E & T), C Eng, FIE

g. **Registrar**

Mr VD Kithsiri

Executive Master of Business Administration (USJP), BSc (USJP), Post Graduate Diploma in Management (USJP)

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Master of Science in Civil and Structural Engineering

Introduction

Faculty of Graduate Studies in collaboration with the Department of Civil Engineering offers MSc in Civil and Structural Engineering. The programme is conducted over four semesters on both Saturdays and Sundays every other weekend for duration of one / two years. Taught course modules are covered in the first two semesters and the research component commences from the third semester onwards. It is required to have minimum 50% attendance for taught course component in order to sit for the examination. The programme covers advanced topics in Civil Engineering with the specialization in Structural Engineering.

Programme has been designed in accordance with the Sri Lankan Qualification Framework, published by the Ministry of Higher Education and its academic standard is equivalent to Sri Lanka Qualifying level 10. It has been designed by a panel of senior academics and professionals from reputed universities/institutions in Sri Lanka ensuring a high academic standard to facilitate participants to complete MSc in Civil and Structural Engineering Degree in two years whilst being employed. The medium of instruction is English and all the lectures are webcast through the m-learning platform of KDU.

Objectives

To produce high quality professional Civil Engineers who are capable of;

- a. Applying advanced engineering knowledge in the real-world problems within their chosen area.
- b. Planning and utilizing resources in an efficient, economical and environment friendly manner leading to sustainable development.
- c. Formulating optimum solutions for complex civil engineering problems with use of mathematical models.
- d. Applying a broad range of multidisciplinary skills necessary to accomplish professional objectives in the dynamic technological world.
- e. Fostering the acquisition and implementation of a broad range of research and analytical skills related to Civil and Structural Engineering with the safety and the sustainability of the structures as primary concerns.
- f. Evaluating the outcomes and impacts of complex civil engineering projects in order to adhere to the national, economic, social and environmental requirements.

Intended Learning Outcomes

On successful completion of this degree programme, the students will be able to,

- a. Analyze and solve complex problems in Civil Engineering by applying engineering fundamentals, appropriate techniques and modern engineering tools.
- b. Formulate and investigate engineering problems using research based knowledge and methods.

- c. Design systems or components to solve complex engineering problems as an individual or a member / leader in diverse teams.
- d. Assess societal, health, safety, legal, economic and environmental impacts of civil engineering projects with the aim of achieving sustainable development.
- e. Engage in independent and lifelong learning in order to effectively perform as a professional in the dynamic environment of engineering and technology.

Programme Structure

The programme is designed with 40 credits for the PG diploma in the first two semesters which includes a design component. An additional 20 credits are allocated for research project leading to MSc in third and fourth semesters. The classes are conducted on every other weekend from 0830 hrs to 1730 hrs.

How to Apply

A commissioned officer / gazetted police officer shall make an application to respective service commander/ Inspector General of Police/ Head of Department who will submit these applications to the Registrar with their recommendations.

Any other person shall include a letter of recommendation from a University Professor in Civil Engineering or a Chartered Civil Engineer with the application.



By-Laws and Regulations

Nature of Degree

This degree is part time based and comes under the type of taught programmes.

Eligibility Criteria

Applicants satisfying ONE of the following requirements are eligible for admission:

- a. Degree of Bachelor of Science in Engineering of four-year duration of General Sir John Kotelawala Defence University (KDU) in a relevant field, OR
- b. Degree of Bachelor of Science (Defence Studies) in a relevant field with a minimum of three years of appropriate experience as an Engineer as approved by the Dean, Faculty of Engineering, KDU, OR
- c. A Bachelor of Science Degree (SLQF 6) in a relevant field from a recognized University; OR
- d. Associate Membership or above of Institution of Engineers Sri Lanka (IESL) AND a minimum of one year of appropriate experience after obtaining such membership as approved by the Dean, Faculty of Engineering, KDU, OR
- e. Associate Membership or above of a professional Engineering Institute recognized by Institution of Engineers Sri Lanka (IESL) AND a minimum of one year of appropriate experience after obtaining such membership as approved by the Dean, Faculty of Engineering, KDU.
- f. Any other Engineering Degree (SLQF 5) from a recognized university AND a minimum of one year of appropriate experience in relevant field after obtaining such a degree, as may be approved by the Senate.
- g. A Higher Diploma (SLQF 4) in a relevant field with a minimum of three years of appropriate experience in a relevant field after obtaining such a higher diploma, as may be approved by the Senate.

Registration

- a. All candidates, including internal candidates shall register annually by paying prescribed fees until they have completed the requirements for the award of the respective MSc/PG Diploma.
- b. The applicant shall register initially for the respective MSc/PG Diploma within the specified period after the BoS/Senate approval.
- c. An applicant may request a deferment of the registration to the next available intake for the approval of the BoS/Senate on the recommendation of the Faculty of Graduate Studies (FGS).
- d. The effective date of registration shall be the date of commencement of the programme, as announced by the FGS.

e. If the academic requirements for the award of PG Diploma are not fulfilled within the current registration period the student can opt to register for an extended year as far as the total period is within the maximum period for the PG Diploma stipulated in the Eligibility and Performance Criteria (EPC).

f. Only the student registered for MSc/PG Diploma who fulfils the academic requirements for the award of the PG Diploma and satisfies the requirement stipulated in EPC can register for the MSc.

g. If a student registered for MSc does not fulfil the academic requirements for the award of the MSc within the current year of registration he or she may apply for an extension of the registration by another year within the maximum period stipulated for MSc in the EPC.

Re-registration

Re-registration of a student may be permitted by the BOM/Senate on a written request by the student.

Termination

a. Registration of a student will terminate automatically if the student fails to renew his/her registration or the maximum duration of study stipulated in EPC has expired.

b. Registration of a student can be terminated by the senate on the recommendation of the FGS for reasons of poor performance, or any other valid reason acceptable to the Senate. In such instance, sufficient evidence must be presented to the Senate to justify the termination.

Course Delivery Plan

1. The PG Diploma consists of the following:

a. A regular taught course of lectures at the University, normally 40 credits, as envisaged in the curriculum approved by the Senate;

b. Assignments, such as course work, project work, design based work, laboratory work, tutorials, field trips and seminars, for which the credits are allocated in section (a) and as envisaged in the curriculum approved by the Senate.

2. MSc Degree shall consist of the following:

a. 1a and 1b above.

b. Research in a specified area under the guidance of a supervisor(s), normally 20 credits, the result of which to be presented in the form of a dissertation or design project report as envisaged in the curriculum approved by the Senate.

3. Summary of the Course Delivery Plan is attached at the end of the by-law.

Scheme of Evaluation

1. The performance of a candidate shall be assessed in individual modules, based on any one or combination of the following components:
 - a. Written examination(s);
 - b. Assignments;
 - c. Examination of the Dissertation or Design Project Report including a viva-voce examination where applicable.
2. If the performance of a student is below the pass mark specified in the EPC for (a), (b) or (c) above of a module, the student may be re-examined in that component after a period of time specified by the FGS.

Schedule of Fees

The schedule of fees shall be as laid down by the Board of Management (BOM) on the recommendation of the BOM/Senate and set out as a separate document. The applicable schedule of fees for a particular candidate shall be as determined at the time of initial registration of the candidate for the programme.

Award of PG Diploma

1. A student registered for MSc/PG diploma fulfilling the academic requirements for the award of PG Diploma is awarded the respective PG Diploma on application.
2. A student registered for MSc but not completed the requirement for the award of the MSc within the permitted duration **or** adjudged by FGS as not meeting the standards required to pursue a MSc **or** opt to discontinue the MSc is awarded the PG Diploma on application.

Award of MSc

A student registered for MSc fulfilling the academic requirements for the award of MSc is awarded the respective MSc on application.

Effective date of the award

The effective date of the award of the Degree/Diploma shall be the first day of the month following the satisfactory completion, by the candidate, of the requirements for the award as specified in the EPC.

Note:

- ❖ **By-Laws and Regulations subject to amend as per the University Board of Management decisions.**

MSc in Civil & Structural Engineering Programme – Summary of the Course Delivery Plan

MSc in Civil & Structural Engineering Programme					
Code	Course Unit	Core Credits	Elective Credits	Evaluation	
				Assignment	Final Exam
Semester I					
CE9013	Advanced Water and Wastewater Treatment	03		30	70
CE9024	Advanced Reinforced Concrete Design	04		40	60
CE9033	Construction Project Management	03		40	60
CE9043	Water Resources Engineering	03		30	70
CE9053	Advanced Engineering Mathematics	03		30	70
CE9062	Advanced Bridge Engineering	02		30	70
CE9072	Introduction to Finite Element Methods		02	30	70
CE9082	Environmental Impact Assessment			30	70
CE9092	Introduction to Nonlinear Analysis of Structures			30	70
CE9102	Advanced Pre-stressed Concrete Design			40	60
Semester II					
CE9113	Advanced Survey Engineering	03		30	70
CE9123	Advanced Steel Design	03		30	70
CE9133	Research Methodology	03		100	-
CE9144	Highway Design & Transportation Engineering	04		30	70
CE9153	Advanced Foundation Engineering	03		50	50
CE9162	Advanced Structural Dynamics	02		30	70
CE9172	Design of Hydraulic Structures		02	30	70
CE9182	Municipal Solid Waste Management			30	70
CE9192	Very Long Base Informatory (VLBI)			30	70
CE9202	Advanced Cost Management			50	50
	Total	36	04		
Semester III & IV					
CE9900	Dissertation (for MSc)	20		100	-

Eligibility and Performance Criteria

Participation in the Academic Programme

1. 50% attendance is required in lectures.
2. Participation is compulsory for all assignments,
3. Prior approval must be obtained in writing from the University, with the necessary documentation, for leave of absence. Only such leave will be considered for any official purpose, such as considering a subsequent attempt as a first attempt.
4. The programme is planned to be completed in the normal duration, but a student may take time up to the maximum permitted duration.
5. Only the leave approved on medical grounds will be considered by the Senate in extending the maximum duration of study.

Normal & Maximum Durations

1. The normal duration for MSc is two years comprising two Semesters.
2. The maximum duration for MSc is five years.
3. The normal duration for PG Diploma is one year comprising two Semesters.
4. The maximum duration for PG Diploma is three years.

Evaluation and Grading

1. The performance of each student in each module will be evaluated by continuous assessment (CA) and end-of-semester examination (WE).
2. The continuous assessment of a student may be based on a specified combination of assignments including coursework, project work, design project work, laboratory work, tutorials, field trips, field camps, quizzes, presentations, term papers and participation in the course activities.
3. Each Candidate should obtain at least 40% from each of CA and WE components.
4. Grade C+ or above is required to pass a module.
5. A student failing to reach 40% in one of CA or WE components receives an incomplete grade I, and is required to repeat only the failed component(s) as a repeat candidate to complete the module.
6. A student failing to reach 40% in both CA and WE components receives an F grade, and must repeat both components in order to upgrade the result.
7. A student obtaining 40% or more in both components but fails to obtain in a C+ grade has to repeat the WE component.
8. The grades *F* or *I* can be improved up to a *C+* grade. Students who wish to upgrade need to complete their examinations and obtain the upgraded grade before the relevant final board of examiners after the graduation requirements are met.
9. Except when an Academic Concession has been granted, the highest grade obtainable at a repeat attempt is the grade “C+”.

10. The symbol “Ex” signifies an Academic Concession granted, in the event a student is unable to sit for the WE component due to illness or other compelling reason accepted by the BoS/Senate. In such instances the student must make an appeal, with supporting documents, to the BoS/Senate through the Dean Faculty of Graduate Studies for an academic concession.

11. Letter grades based on the Grade Point System and corresponding description, as illustrated in the below table will be used to express the performance at each module. Benchmark percentages are given for the guidance of the examiner and may be changed upwards or downwards by the moderator in consultation with the examiner.

Benchmark Percentage	Grade	Grade Point	Description
85 and above	A+	4.2	Excellent
75 to 84	A	4.0	
70 to 74	A-	3.7	Good
65 to 69	B+	3.3	
60 to 64	B	3.0	
55 to 59	B-	2.7	Pass
50 to 54	C+	2.3	
	I	0.0	Incomplete
	F	0.0	Fail
	Ex	---	Academic Concession

Table of Grading System

12. The Grade Point Average (GPA) is calculated based on the summation of Grade Points earned for all modules registered for credit (except those awarded with academic concession) weighted according to number of credits as follows:

$$GPA = \frac{\sum n_i \times g_i}{\sum n_i}$$

where n_i is the number of credits for the i^{th} module and g_i is the grade points earned for that module.

13. The GPA is rounded to the nearest second decimal place and reported on the transcript.

Academic Concession

1. A student who has missed a WE or any other course requirement because of illness or other compelling reason may appeal for a repeat WE with supporting documents to the Dean Faculty of Graduate Studies. In case of an examination, the student should submit an application with supporting documents within two weeks from the date of the examination. In instances where a student misses any other course activity such as CA, the student should submit the application with supporting documents before the last date of academic activities of the relevant semester.
2. An academic concession may be granted for medical reasons and other exceptional circumstances subject to the approval by the Senate of the University.

Academic requirement for the award of PG Diploma and Progression to the MSc

1. A candidate completes the academic requirement for the award of PG Diploma only if he/she has earned 40 credits including all the compulsory Credits specified in the below course delivery plan within the maximum duration (see normal and maximum durations above).
2. Those who satisfy the requirement in above point no 1 with an overall GPA of not less than 2.5 can decide to proceed to 2nd year (MSc).

Award of PG Diploma

Following are eligible for the award of respective PG Diploma:

- a. Those who satisfy the academic requirement for the award of respective PG Diploma and do not proceed to 2nd year (MSc).
- b. Those who proceed to MSc but do not complete requirements for the award of respective MSc within the stipulated maximum period (see normal and maximum durations above).

Award of MSc

A candidate is eligible for the award of MSc only if he/she has earned 60 Credits including all the compulsory Credits specified in the respective curriculum within the maximum duration (see normal and maximum durations above).

Lecturer Panel

1. **Prof SS Wickramasuriya**

PhD (UNSW), BSc Eng (SL), CEng, MIE (SL)

2. **Prof I De Silva**

PhD (ANU), MA (ANU), BDevS (Hons.) (University of Colombo)

3. **Dr (Mrs) WDCK Fernando**

PhD (University of Moratuwa), M. Eng in Environmental Water Resources Engineering and Management (University of Moratuwa), B.Sc Engineering (Hons) Degree, First Class (University of Moratuwa), Associate Member, Institution of Engineers, Sri Lanka, Staff and Educational Development Association, SEDA UK, Certificate of Teaching in Higher Education, CTHE Colombo

4. **Dr HLDMAJ Samaranayake**

PhD (University of Moratuwa), M. Eng in Highway and Traffic, B.Sc Engineering (University of Moratuwa)

5. **Dr AH Lakmal**

PhD (LNTU, China), MSc in GIS & RS (Peradeniya), BSc (Hons) in Surveying Sciences (ISMD), MSISL, MIEEE

6. **Dr (Ms) TWKIM Dias**

PhD (Kansas, USA), MSc (Moratuwa), BSc. Eng (Hons) (Moratuwa)

7. **Dr (Mrs) N Sirirsoma**

PhD (Moratuwa), BSc Eng. Hons (Moratuwa), C.Eng, CMILT (UK), MITE (US), MIE (SL)

8. **Dr S Lewangamage**

PhD (Tokyo), BSc Eng. Hons. (Moratuwa), M Eng. (Tokyo), C.Eng, MIE (SL)

9. **Dr PAK Karunananda**

Dr Eng. (Ehime), MPhil (Peradeniya), BSc Eng. (Hons) (Peradeniya), MEng. (Ehime)

10. **Dr RU Halwatura**

PhD (Structural and Building Services Engineering) (University of Moratuwa), BSc Engineering, First Class Honours (University of Moratuwa)

11. **Dr TMRMB Samarakoon**

Doctor of Philosophy, Graduate School of Science and Engineering (Saitama University, Japan), MSc in Engineering (Asian Institute of Technology, Bangkok), BSc in Engineering (Civil Engineering) (University of Peradeniya)

12. **Dr GGT Chaminda**

PhD Eng (Tokyo), M. Eng(AIT), BSc Eng. Hons. (Peradeniya)

13. **Dr C Mallikaracchchi**

PhD (University of Cambridge), BSc Engineering (University of Moratuwa)

14. **Eng R Sugathadasa**

MSc.Eng (Moratuwa), MBA (Colombo), BSc Eng (Hons) (Moratuwa), MIE (SL), MILT (UK), CEng, PMP (USA)

15. **Ms DP Perera**

MBA in Project Management (University of Moratuwa), BSc in IT (UK), Dip in Computer System (NIBM)

16. **Eng BHJ Pushpakumara**

MPhil in Stuctural Eng (University of Ruhuna),MSc Eng (University of Ruhuna), MBA (Colombo), BSc Eng (Hons) (Moratuwa), MIE (SL), MILT (UK), CEng, PMP (USA)

Note:

❖ **Lecturer panel subject to change as per the University requirements.**

Contact Persons

❖ Course Coordinator (Academic)

Dr A H Lakmal

Doctor of Philosophy, Cartography and Geographic Information Engineering (Liaoning Technical Uni., China), Master of Science, Geographic Information Systems & Remote Sensing (Uni. of Peradeniya), Bachelor of Science, Surveying Sciences (Institute of Surveying & Mapping, Diyathalawa)

Tel : 0716865304
E-mail : lakmalah@gmail.com

❖ Course Coordinator (Admin)

Lieutenant Commander (ND) JPCJ De Silva

Tel : 0710219325
E-mail : soiifgs@kdu.ac.lk

Course Fee Structure of MSc in Civil & Structural Engineering

Item	Amount	
	Military/Police/MOD	Civil
Tuition Fee	Rs. 350,000.00	Rs. 350,000.00
Registration Fee - 3 Years (Initial Registration)	Rs. 4,000.00	Rs. 5,000.00
Library Fees	Rs. 2,000.00	Rs. 2,000.00
Refundable Library Deposit	Rs. 10,000.00	Rs. 10,000.00
Refundable Mess Deposit	Rs. 2,000.00	Rs. 2,000.00
Total	Rs. 368,000.00	Rs. 369,000.00

Registration Renewal Fee

1 st Year after initial registration	-	Rs. 12,500/=
2 nd Year after initial registration period	-	Rs. 25,000/=
Continuation to another additional year under any circumstances	-	Rs. 100,000/=

Repeat Examination Fee

For entire semester	-	Rs. 2,500/=
For one subject	-	Rs. 1,000/=
Repeat Thesis Defence Viva-Voce Fee	-	Rs. 11,500/=

- Selected candidates may opt to pay programme fee in two equal installment, first of which should be paid at the time of registration, together with all other cost components.

- 2nd installment – **Before 1st semester examination of the 2nd year.**

Note:

1. FGS will be compelled to not permit the students who are unable to pay the course fee to sit for semester examinations.

2. Course fee and other payments mentioned in above subject to change as per the University Board of Management decision.