

CURRICULUM

MASTER OF SCIENCE IN CIVIL AND STRUCTURAL ENGINEERING

GENERAL SIR JOHN KOTELAWALA DEFENCE UNIVERSITY

(MEMBER OF THE ASSOCIATION OF COMMONWEALTH UNIVERSITIES AND
INTERNATIONAL ASSOCIATION OF UNIVERSITIES)

MASTER OF SCIENCE IN CIVIL AND STRUCTURAL ENGINEERING

DEPARTMENT OF CIVIL ENGINEERING

INTRODUCTION

1. The MSc/ Postgraduate Diploma in Civil and Structural Engineering is offered by the Department of Civil Engineering. The programme will be conducted over four semesters on both Saturdays and Sundays every other weekend for duration of one / two years. Taught course modules will be covered in the first two semesters and the research component will commence from the third semester onwards. It is required to have minimum 80% 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.

OBJECTIVES

2. To produce high quality professional Civil Engineers who are capable of
 - a. Successfully 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 multi-disciplinary 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

3. 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 perform effectively as a professional in the dynamic environment of engineering and technology.

PROGRAMME STRUCTURE

4. The programme is designed with 40 credits for 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.

COURSE DELIVERY PLAN

5. The PG Diploma shall consist 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.
6. MSc Degree shall consist of the following
 - a. 5a and 5b above
 - b. Research in a specified area under the guidance of a supervisor(s), normally 20 credits, the result of which shall be presented in the form of a dissertation or design project report as envisaged in the curriculum approved by the Senate.
7. The curriculum is attached as annex "A".

ELIGIBILITY CRITERIA

8. Applicants satisfying the following requirements are eligible for admission:
9. 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.

HOW TO APPLY

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

Annex A

CURRICULUM AND SCHEME OF EVALUATION

	Code	Course Unit	Core Credits ¹	Elective Credits ²	Evaluation	
					Assignment	Final Exam
Semester 1	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 2	CE9113	Advanced Survey Engineering	03		30	70
	CE9123	Advanced Steel Design	03		30	70
	CE9133	Research Methodology	03		70	30
	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			30	70
	CE9182	Municipal Solid Waste Management			30	70

	CE9192	Very Long Base Informatory (VLBI)		02	30	70
	CE9202	Advanced Cost Management			50	50
S1 & S2		Total	36	04		
S3 & S4	CE9900	Dissertation (for MSc)	20		100	-

¹ a credit corresponds to 15 hours of lectures or equivalent

² For graduation 04 credits out of elective modules are required