

## A Synopsis on the Objective and Some Salient Aspects of the Curriculum Enhancement and Revision

### Preamble

The Department of Civil Engineering (DCE) has enhanced the existing curriculum of the BSc Engineering Honours Degree Programme Specializing in Civil Engineering based on the observations and feedback of stakeholders, including teaching staff, students, alumni and the industry, as well as comments and recommendations of external reviewers and by the evaluation panel for Washington Accord (WA) accreditation conducted by the Institution of Engineers, Sri Lanka (IESL) while also accommodating the decision of the Faculty Board of Engineering to stream students from their second semester. The following is an outline of some salient aspects of the present curriculum enhancement and revision.

### Salient Features

☑ With computational tools being available and utilized for virtually every task of civil engineering analysis and design particularly over the past decade, it is imperative, on one hand, to strengthen even further the sound footing of core theory and fundamentals provided in our curriculum that underpins the practice of civil engineering as well as related research, and on the other, to integrate and embed computational techniques and tools in relevant parts of the undergraduate curriculum including in design courses. A good understanding of the theoretical framework behind such computational tools is necessary, because otherwise, advanced software can become black boxes with graduate engineers not knowing what such software can and cannot do, often leading to misuse, or erroneous results, and at the same time not being able to get the maximum out of such computational models for better designs. Significant enhancements towards achieving both of the above objectives have been incorporated in the revised curriculum.

☑ Flow and the content of mathematics courses in relation to the rest has been reviewed by the department and certain deficiencies that existed in the civil engineering curriculum have been addressed by improving the alignment and inclusion of additional content.

☑ Content covering management, particularly in relation to project and construction planning and management, economics and entrepreneurship, has been significantly enhanced and the

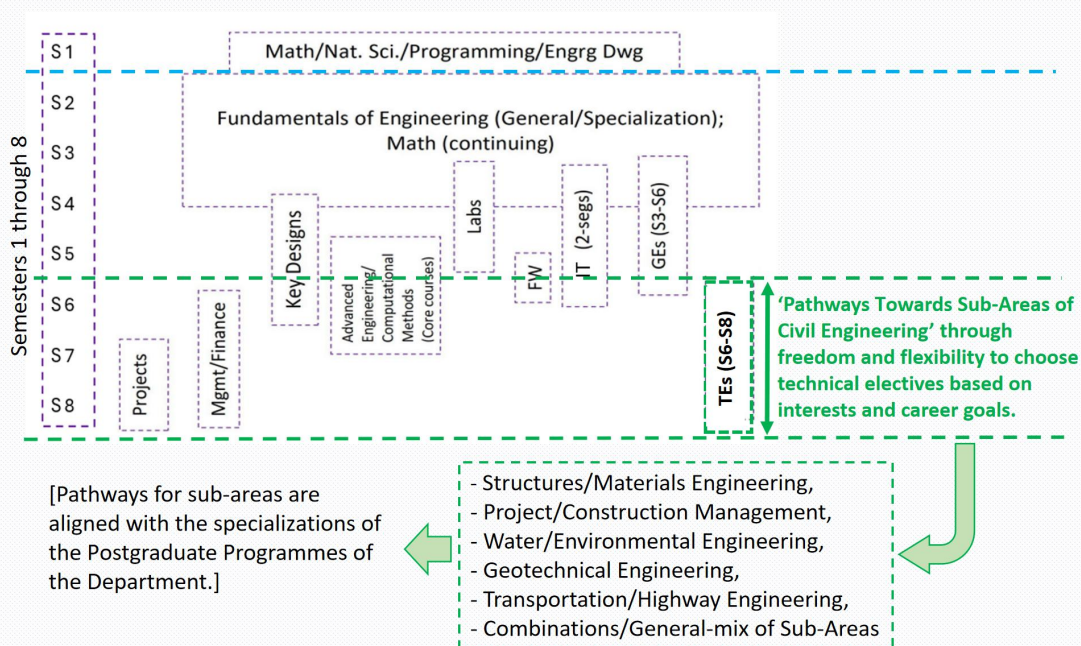
department reckons that such knowledge ought to be an essential, core part of the civil engineering graduates of University of Peradeniya.

☑ Besides the new courses on construction management, economics and entrepreneurship, a core course on Timber and Masonry Design as well as technical electives on Construction Technology, Computer Applications and Optimization in Construction, Building Services Engineering, and Artificial Intelligence and Machine Learning have also been introduced to the curriculum.

☑ Existing three-credit capstone design project offered in semester-8 has been expanded in the revised curriculum by incorporating 'Integrated Design Project' of four credits spanning the entire final year of study enabling the students to spend more time on conceptual planning and detailed designs of complex, multi-faceted, real-life, civil engineering projects through a holistic and sustainable approach.

☑ The lineup of technical electives offered to the students has been further enhanced and aligned so as to give them the freedom and flexibility of several pathways towards sub-areas of civil engineering through their choice of technical electives from semesters-6 to -8 should they desire.

### Basic Structure and Pathways Towards Sub-Areas of Civil Engineering In Revised Curriculum of BScEngHons Specializing in Civil Engineering



Abbreviations: TEs- Technical Electives, GEs- General Electives, FW - Field Work, IT - Industrial Training

☑ Individual assessment of students has also been further strengthened by incorporating individual viva-voce assessments in several design and laboratory courses as well.

☑ Further, the existing ‘general elective’ category of ‘Management, Economics and Communication’ as well as ‘Professional Ethics’ are now determined to be essential core course requirements of Civil Engineering graduates of UoP and are thus placed under the core content, so the ‘general electives’ in the revised curriculum belong to ‘Humanities, Social Sciences and Arts’.

☑ The revisions to the curriculum were also presented and discussed twice at the bi-annual meetings of the Department-Industry Consultative Committee held in 2022 and the suggestions have been taken into consideration during the curriculum revision process.

<ul style="list-style-type: none"> <li>• Streaming from semester-2</li> <li>• Improved flow and progression of courses through semesters</li> </ul>	
<p>New content on:</p> <ul style="list-style-type: none"> <li>• Engineering economics</li> <li>• Entrepreneurship</li> <li>• Project/Construction management</li> <li>• Timber &amp; Masonry design</li> <li>• Plates and Shells</li> <li>• Artificial Intelligence &amp; Machine Learning (elective)</li> </ul>	<ul style="list-style-type: none"> <li>• Design courses - reshaped</li> <li>• Research project- restructured</li> <li>• Integrated design project - expanded</li> </ul>
<p>Enhanced contents on:</p> <ul style="list-style-type: none"> <li>• Mathematics</li> <li>• Structural analysis</li> <li>• Soil mechanics</li> <li>• Engineering geology</li> <li>• Mechanical, electrical &amp; electronic engineering for civil engineers</li> </ul>	<p>More emphasis on:</p> <ul style="list-style-type: none"> <li>• Fundamentals of basic and engineering sciences</li> <li>• Incorporation of computational tools and software applications</li> <li>• Ethics and sustainability</li> </ul>
	<p>Changes to assessment:</p> <ul style="list-style-type: none"> <li>• Increased and streamlined continuous assessments</li> <li>• Increased individual viva-voce based assessments</li> <li>• Increased presentations, reports</li> </ul>

### Compliance with Washington Accord

In regard to compliance with WA accreditation requirements, the distribution and allocation of credits in the revised curriculum has been verified to be over and above the WA accreditation requirements compared to the existing programme which has already been accredited through 2025.

### In Summary

The present curriculum revision aims to address the deficiencies noted particularly during the past six-years and to further strengthen and introduce content in view of the evolving landscape of the practice of civil engineering and the tools employed therein in modern times and also looking into the present and future requirements of the country.