

Degree Level Expectations, Learning Outcomes, Indicators of Achievement and the Program Requirements that Support the Learning Outcomes

Expectations	Learning Outcomes	Indicators of Achievement	Relevant Courses and academic requirements
<b>Depth and breadth of knowledge</b>	To gain specialized expertise in one of the four Civil Engineering sub-disciplines (Environmental, Geotechnical, Hydrotechnical, or Structural Engineering)	<p>Successful performance in four (4) graduate level courses in Civil Engineering beyond the Masters degree,</p> <p>A thorough understanding of the current state of the art and practice in the sub-discipline related to student’s area of research,</p> <p>The ability to communicate and debate with experts in specialized Civil Engineering topics relating to the student’s chosen sub-discipline</p>	Graduate courses, research that merits publication within peer reviewed journals, and a successfully completed PhD comprehensive and oral examination.
<b>Research and scholarship</b>	<p>The development of critical evaluation skills to critically review the literature in the area of professional competence, and the suitability of experimental or numerical techniques currently used in advanced research and scholarship.</p> <p>Advanced knowledge of one or more highly specialized techniques in the area of professional competence (laboratory techniques, physical or numerical modeling, field monitoring, etc.)</p> <p>The development of problem solving techniques in the context of economic decision making, legal constraints, codes of practice, and health and safety.</p>	Thesis research	It is expected that the dissertation research will lead to original research which merits publication within peer reviewed journals

<b>Application of Knowledge</b>	Competence in the research process by applying an existing body of knowledge in the critical analysis of a new question or of a specific problem or issue in a new setting	Thesis research	Thesis research Projects in Graduate Courses
<b>Professional capacity/autonomy</b>	<p>a) the qualities and transferable skills necessary for employment training including the exercise of initiative and of personal responsibility accountability; and decision-making in complex situations, project management; and</p> <p>the intellectual independence required for continuing professional development;</p> <p>the ethical behaviour consistent with academic integrity and the use of appropriate guidelines and procedures for responsible conduct of research; and</p> <p>the ability to appreciate the broader implications of applying knowledge to particular contexts</p> <p>the appreciation of the importance of Workplace Health and Safety</p>	Thesis research.	Thesis research CIVL801 – “Health and Safety in Civil Engineering Research”
<b>Communication Skills</b>	The ability to communicate ideas, issues, and conclusions clearly in both oral and written communication, demonstrating increasing independence from supervisory team..	<p>Successful performance in oral presentations during graduate courses, research group meetings, and conference presentations (if possible)</p> <p>Successful performance in technical writing, as measured by readability of dissertation</p>	Thesis and oral defense, Graduate course presentations and term projects

<b>Awareness of limits of knowledge</b>	An awareness of the approximations within the relevant analytical models used in the research or commonly assumed in practice within the student's chosen sub-discipline, the idealisations and simplifications in boundary conditions adopted in the field, laboratory, or numerical modeling research undertaken, and the simplifications or idealisations used to simplify material behavior or the engineering system to achieve the research outcome.	A thorough discussion of the limitations of the research, methodology, and current state of knowledge within the thesis document.	Thesis research
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