

## WESTERN'S DOCTORAL LEARNING OUTCOMES

This document outlining Learning Outcomes for all PhD programs at Western is comprised of three sections:

- A. Ontario Graduate Degree Level Expectations  
(as prescribed by the Ontario Council of Academic Vice Presidents)
- B. Western's Doctoral Learning Outcomes
- C. APPENDIX: Learning Outcome Exemplars - Acknowledging that there are unique aspects of each doctoral program, this section lists additional Learning Outcome exemplars that may be included in the program's brief.

### **A. GRADUATE DEGREE LEVEL EXPECTATIONS (GDLEs)**

<http://oucqa.ca/wp-content/uploads/2013/06/APPENDIX-1.pdf>

#### **1. Depth & Breadth of Knowledge**

At the Doctoral degree level, students demonstrate a thorough understanding of a substantial body of knowledge that is at the forefront of their academic discipline or area of professional practice including, where appropriate, relevant knowledge outside the field and/or discipline.

#### **2. Research & Scholarship**

At the Doctoral degree level, students demonstrate the ability to conceptualize, design, and implement research for the generation of new knowledge, applications, or understanding at the forefront of the discipline, and to adjust the research design or methodology in the light of unforeseen problems; the ability to make informed judgments on complex issues in specialist fields, sometimes requiring new methods; and the ability to produce original research, or other advanced scholarship, of a quality to satisfy peer review, and to merit publication.

#### **3. Level of Application of Knowledge**

At the Doctoral degree level, students demonstrate the capacity to undertake pure and/or applied research at an advanced level; and contribute to the development of academic or professional skills, techniques, tools, practices, ideas, theories, approaches, and/or materials.

#### **4. Professional Capacity/Autonomy**

At the Doctoral degree level, students demonstrate the qualities and transferable skills necessary for employment requiring the exercise of personal responsibility and largely autonomous initiative in complex situations; the intellectual independence to be academically and professionally engaged and current; the ethical behavior consistent with academic integrity and the use of appropriate guidelines and procedures for responsible conduct of research; and the ability to evaluate the broader implications of applying knowledge to particular contexts.

### **5. Level of Communication Skills**

At the Doctoral degree level, students demonstrate the ability to communicate complex and/or ambiguous ideas, issues and conclusions clearly and effectively.

### **6. Awareness of Limits of Knowledge**

At the Doctoral degree level, students demonstrate an appreciation of the limitations of one's own work and discipline, of the complexity of knowledge, and of the potential contributions of other interpretations, methods, and disciplines.

## **B. WESTERN'S DOCTORAL LEARNING OUTCOMES:**

(organized by GDLE)

### **I. DEPTH AND BREADTH OF KNOWLEDGE**

*Upon successful completion of doctoral studies at Western, graduates will:*

1. Articulate and demonstrate deep knowledge of a substantial body of information and ways of knowing that are at the forefront of the field within the academic discipline
2. Articulate and demonstrate broad knowledge of relevant information outside the discipline in related areas
3. Describe and critique various research methodologies used in the field

### **II. RESEARCH AND SCHOLARSHIP**

*Upon successful completion of doctoral studies at Western, graduates will:*

4. Articulate gaps in existing scholarship in the field and identify an original question/problem for study worthy of peer-review/examination
5. Complete the independent research process:
  - a) Articulate and situate the (research question/problem/performance practice) in relation to the existing literature;
  - b) Select an appropriate research methodology and method(s) having critically evaluated a wide variety of approaches
  - c) Develop and defend the research proposal
  - d) Identify, locate, and collect sufficient body of evidence/data
  - e) Analyse and interpret findings/evidence
  - f) Draw appropriate conclusions; write and successfully defend the research before a panel of senior experts.
6. Reflect on and evaluate the research process constantly and revise as needed to accommodate unforeseen problems that arise.
7. Create new ways of knowing through successful and ongoing research in academic or professional venues
8. Assume a leading role in independently designing and conducting ongoing, relevant and original research project(s) that will generate new knowledge in the field

### **III. APPLICATION OF KNOWLEDGE**

*Upon successful completion of doctoral studies at Western, graduates will:*

9. Relate the theoretical research foundations to applied research foundations within the discipline at an advanced level.
10. Create new knowledge in the discipline through independent research.
11. Translate and/or transfer application of theories and models and other skills outside of academia to practitioners and the general public.
12. Contribute to analysis and solving of real-world problems to make a broader social contribution.
13. Demonstrate independence in work habits, including but not limited to: autonomous learning, reading widely, creative thinking, critical thinking, effective time management, collegiality in exchanging and receiving ideas, personal initiative, personal responsibility, problem-solving, and self-reflexivity.
14. Use research methods/tools effectively.

### **IV. PROFESSIONAL CAPACITY AND AUTONOMY**

*Upon successful completion of doctoral studies at Western, graduates will:*

15. Demonstrate the value of, and integrate, academic integrity (AI) into all facets of work/study/interactions
16. Demonstrate the value of, and integrate, ethical standards into all facets of work/study/interactions
17. Demonstrate the ability to be planful by successfully completing Western's OWN YOUR FUTURE program, demonstrating competencies in 6 areas: Career Engagement; Community & Relationship Building; Intercultural & Social Fluency; Leadership; Teaching & learning; Thriving.
18. Learn and work collegially in varied environments
19. Be cognizant of employment opportunities requiring the academic and intellectual autonomy skills gained in doctoral studies that require professional judgement in complex situations
20. Articulate and practice disciplinary, health and safety regulations

### **V. LEVEL OF COMMUNICATION SKILLS**

*Upon successful completion of doctoral studies at Western, graduates will:*

21. Demonstrate both oral and written competence and fluency in English language
22. Speak about research in the field using clear and effective oral expression of evidence-based, analytical reasoning using higher order critical thinking skills
23. Write about research in the field using clear and effective written expression of evidence-based analytical reasoning using higher order critical thinking skills

24. Express oneself using evidence-based arguments in well-structured oral and written presentations
25. Engage in and respond professionally to complex discussions about research area
26. Teach effectively to support learning of varied audiences

**VI. AWARENESS OF LIMITS OF KNOWLEDGE**

*Upon successful completion of doctoral studies at Western, graduates will:*

27. Critically process information from primary and secondary sources distinguishing opinions from facts.
28. Continuously interrogate the accuracy and ethical boundaries of humanly-constructed nature of arguments and interpretations throughout the research process;
29. Identify the limitations inherent to different kinds of evidence, methods, and theoretical approaches, recognizing the intricacy and complexity of knowledge formation;
30. Study about and articulate the contributions of findings and perspectives found in other disciplines that lead to greater understanding in one's own field.

**APPENDIX****ADDITIONAL EXEMPLARS/OUTCOMES SUPPORTING LEARNING OUTCOMES, AS DEFINED BY PROGRAM****1. DEPTH AND BREADTH OF KNOWLEDGE****OVERVIEW:**

Students are accepted into doctoral studies at Western with previous significant knowledge of their discipline and during their studies, are expected to deepen that knowledge to expert level while exploring their field within the social, scientific, cultural and historical contexts. At the same time, because no single area exists in isolation, graduates are expected to have a broad sense of knowledge within the larger and related disciplines. The Quality Assurance Council of Ontario indicates that at the doctoral degree level. According to the discipline, students will demonstrate:

*a thorough understanding of a substantial body of knowledge that is at the forefront of their academic discipline or area of professional practice including, where appropriate, relevant knowledge outside the field and/or discipline.*

**LEARNING OUTCOME I**

**Articulate and demonstrate deep knowledge of a substantial body of information and ways of knowing that are at the forefront of the field within the academic discipline.**

**Exemplars/indicators: According to the discipline, students will**

- i) Explain and critique historical schools of thought in the field of study
- ii) Demonstrate expert knowledge of current problems and insights at the forefront of the field
- iii) Identify gaps or deficits with respect to issues in the field
- iv) Relate and describe the knowledge in the field in historical, political, cultural and social contexts
- v) Successfully complete required courses, attend/participate in seminars/symposia/conferences in the discipline
- vi) Participate in engaged discussions of current issues in the field

**LEARNING OUTCOME II**

**Articulate and demonstrate broad knowledge of relevant information outside the discipline in related areas.**

**Exemplars/indicators: According to the discipline, students will**

- i) Articulate broad knowledge beyond the expert field explaining the connections, relevance and significance in relation to one's own topic
- ii) Apply foundational knowledge to specific and interdisciplinary problems
- iii) Investigate one topic in depth and relate/link that topic through intersectional analyses to other related fields within the discipline and related disciplines

- iv) Explain how specific research relates to other areas and to real world issues/situations
- v) Justify research within societal, environmental, and scientific contexts
- vi) Successfully complete elective courses, attend/participate in seminars/symposia/conferences in field and related areas
- vii) Participate in engaged discussions of current issues in field, discipline and related disciplines
- viii) Explore one topic in depth and situate within entire discipline
- ix) Identify implications of research on other areas and policies

### **LEARNING OUTCOME III**

**Describe and critique various research methodologies used in the field.**

**Exemplars/indicators: According to the discipline, students will**

Describe, assess, and evaluate appropriate and varied research methods and methodologies in the field

## ***2. RESEARCH AND SCHOLARSHIP***

### **OVERVIEW:**

The defining characteristic of research and scholarship at Western during doctoral studies is the identification and creation of new knowledge or scholarly creativity that is successfully defended in front of, and evaluated by, an expert academic panel proving the graduate's ability to carry out meaningful and important research independently. Graduates should be competent to practice in a variety of academic or professional roles. The Quality Assurance Council of Ontario indicates that at the doctoral degree level, that according to the discipline, students will demonstrate:

*the ability to conceptualize, design, and implement research for the generation of new knowledge, applications, or understanding at the forefront of the discipline, and to adjust the research design or methodology in the light of unforeseen problems; the ability to make informed judgments on complex issues in specialist fields, sometimes requiring new methods; and the ability to produce original research, or other advanced scholarship, of a quality to satisfy peer review, and to merit publication.*

### **LEARNING OUTCOME I**

**Articulate gaps in existing scholarship in the field and identify an original question/problem for study worthy of peer-review.**

No further exemplars/indicators identified

### **LEARNING OUTCOME II**

**Complete the independent research and/or scholarly creative process**

- a) **Articulate and situate the research question/problem in relation to the existing literature**

**Exemplars/indicators: According to the discipline, students will**

- Speak and write knowledgeably about the literature of the topic in relation to the field and broader discipline

**b) Select an appropriate research methodology and method(s) having critically evaluated a wide variety of approaches**

**c) Develop a written research proposal**

**Exemplars/indicators: According to the discipline, students will**

- Design a viable research proposal and see through to completion
  - ✓ Original ideas
  - ✓ Worthy of peer review
- Defend the research proposal

**d) Identify, locate, and collect sufficient body of evidence/data**

**Exemplars/indicators: According to the discipline, students will**

- Complete ethical review as appropriate

**e) Analyse and interpret findings/evidence**

**f) Draw appropriate conclusions; write and successfully defend the research before a panel of senior experts.**

**Exemplars/indicators: According to the discipline, students will**

- Write effectively, including
  - ✓ Dissertation
  - ✓ Scholarly writing
  - ✓ Professional writing
- Gather data
  - ✓ Knowing about research methods
  - ✓ Identifying optimal research method
- Articulate the norms and protocols of publication and authorship for various audience readers
- Write proposals and apply for funding from diverse agencies

**LEARNING OUTCOME III**

**Reflect on and evaluate the research process constantly and revise as needed to accommodate unforeseen problems that arise.**

- no further exemplars identified

**LEARNING OUTCOME IV**

**Critically process information from primary and secondary sources distinguishing opinions from facts.**

- i) Show proficiency in reading and critically evaluating literature in the field
- ii) Critically process information from primary and secondary sources, distinguishing opinions from facts

- iii) Attend seminars, guest lectures, symposia, etc in the field (and related areas) having read the literature being presented and be able to engage in discussion

### **LEARNING OUTCOME V**

**Create new ways of knowing through successful and ongoing research in academic or professional venues.**

**Exemplars/indicators: According to the discipline, students will**

- i) Speak and write knowledgeably about the theoretical foundations of discipline area
- ii) Critically analyse current state of the art in the discipline and propose new directions for research and interpretation.
- iii) Complete comprehensive examination process (as determined by program) demonstrating student's ability to make original and substantive contribution to a specific topic in a cogent manner
- iv) Complete in-depth literature review
- v) Publish x peer-reviewed papers/chapters based on the dissertation
- vi) Present at scholarly conference(s) and publish research papers in peer-reviewed publication(s)

## **3. APPLICATION OF KNOWLEDGE**

### **OVERVIEW:**

The Quality Assurance Council of Ontario indicates that according to the discipline, students will demonstrate:

*The capacity to undertake pure and/or applied research at an advanced level; and contribute to the development of academic or professional skills, techniques, tools, practices, ideas, theories, approaches, and/or materials.*

### **LEARNING OUTCOME I**

**Relate the theoretical research foundations to applied research foundations within the discipline at an advanced level.**

### **LEARNING OUTCOME II**

**Create new knowledge in the discipline through independent research.**

**Exemplars/indicators: According to the discipline, students will**

- i) Extract question/problem and conduct literature review to ascertain past findings and to select appropriate methodology
- ii) Articulate the significance and complexity of problem
- iii) Evaluate and apply range of methodologies to choose the best design for the research question/problem
- iv) Design and independently conduct original research to create new knowledge for interrelated consumers in academia, public, profession
- v) Interpret, analyze, and apply a wide variety of sources

- vi) Demonstrate scholarly and technical skills to implement research plan using appropriate research techniques
- vii) Relate existing bodies of knowledge to the question/problem
- viii) Analyse and apply existing knowledge to new question/problem
- ix) Develop and articulate novel questions/problems/arguments, frameworks and perspectives

## **LEARNING OUTCOME II**

**Translate and/or transfer application of theories and models and other skills outside of academia to diverse audiences, including practitioners and the general public.**

**Exemplars/indicators: According to the discipline, students will**

- i) Create a lay abstract of the final research product
- ii) Use the scholarly and applied knowledge in the field to analyse epistemological, aesthetic, scientific, and/or political arguments, debates and movements
- iii) Work diligently to advance the conceptual knowledge base between researchers and broader society
- iv) Organize research materials in varied and intelligible ways to reach relevant audiences
- v) Explore and apply knowledge, critical thinking skills, analytical, pedagogical, and research skills of the question/problem to variety of life situations within and outside of academia
- vi) Interpret and transfer application of theories and models and other skills outside of academia, using academic, professional, and layperson language to describe their field of study, knowing community interest/importance of knowledge in area
- vii) Use varied and appropriate pedagogical skills to communicate effectively with scholarly community, professional community, public/society
- viii) Publish for peer reviewed audiences and the professional community
- ix) Create and/or expand knowledge expertise in field, extending it to other fields as appropriate

## **LEARNING OUTCOME III**

**Contribute to analysis and solving of real-world problems to make a broader social contribution.**

**Exemplars/indicators: According to the discipline, students will**

- i) Serve as a leader and guide public policy in the discipline
- ii) Be cognizant of the interrelatedness of disciplines and the value in learning/sharing beyond the discipline

## **LEARNING OUTCOME IV**

**Demonstrate independence in work habits, including but not limited to: autonomous learning, reading widely, creative thinking, critical thinking,**

**effective time management, collegiality in exchanging and receiving ideas, personal initiative, personal responsibility, problem-solving, and self-reflexivity.**

#### **LEARNING OUTCOME V**

**Use research tools effectively, accurately, and safely.**

**Exemplars/indicators: According to the discipline, students will**

- i) Demonstrate familiarity and use of multiple resources to solve problems
- ii) Use technology effectively and as appropriate
- iii) Use library facilities and data-bases effectively
- iv) Master experimental tools and strategies in the discipline and modify, create as needed
- v) Identify the limitations of research tools.

### ***4. PROFESSIONAL CAPACITY/AUTONOMY***

#### **OVERVIEW:**

Preparing PhD students for employment is a critical outcome of doctoral study whether they choose to work in the academy or in the professional sector. Each pathway is equally important and PhD graduates are necessary in each sector to make an essential contribution in advancing society. Ontario's Quality Assurance Council indicates that at the end of their study, doctoral graduates will have:

*The qualities and transferable skills necessary for employment requiring the exercise of personal responsibility and largely autonomous initiative in complex situations; the intellectual independence to be academically and professionally engaged and current; the ethical behavior consistent with academic integrity and the use of appropriate guidelines and procedures for responsible conduct of research; and the ability to evaluate the broader implications of applying knowledge to particular contexts.*

Two significant points to raise here:

Firstly, Learning Outcomes 1 & 2 below were the most frequently raised as a priority across the programs with the indication that while academic integrity and ethical standards are a significant expectation and essential for students during their studies, they are equally important after graduation and into their career.

Secondly, to support students in achieving professional capacity and autonomy, Western has implemented a compulsory self-assessment (copyrighted) program for all PhD students, called OWN YOUR FUTURE (OYF), noting that

*In today's society, the impact and influence of doctoral education extends beyond the professoriate. To maximize the value of the doctoral degree in this contemporary labour market, students must articulate and align their advanced knowledge and skills in the context of shifting and emerging job markets.*

After much study in the literature and with employers, six professional competencies were identified for all PhD graduates at Western:

1. Leadership
2. Communication
3. Career Engagement
4. Thriving
5. Intercultural & Social Fluency
6. Teaching & Learning

OYF articulates the following process:

- **ASSESS:** Students complete the *Own Your Future* Self-Assessment © to reflect on their proficiency in the six competencies
- **FOCUS:** Students acquire knowledge in each competency by participating in foundational modules, and customize their path by selecting program electives to enhance their proficiency
- **COMMIT:** Students take control of their own professional development strategy to maximize personal and professional growth  
[Western's]doctorate holders are expected to exhibit advanced proficiency in these competencies, and thus, their training should align with the expectations of their degree-level learning outcomes.

### **LEARNING OUTCOME I**

**Demonstrate the value of, and integrate, academic integrity (AI) into all facets of their work**

**Exemplars/indicators: According to the discipline, students will**

- i) Maintain the highest standards of Academic integrity, including all of the following:
  - ✓ proper attribution
  - ✓ data integrity
  - ✓ accepting of consequences for non-adherence
  - ✓ using appropriate professional judgement
  - ✓ be independently responsible
  - ✓ show zero tolerance for academic dishonesty with respect to: plagiarism, improper collaboration, academic dishonesty, cheating, as a student and graduate
  - ✓ conduct oneself in a responsible and respectful manner at all times
  - ✓ respect rules and norms of intellectual property
  - ✓ represent/present data/findings accurately,
  - ✓ adhere to the Tri-Council framework regarding Responsible Conduct of Research
  - ✓ properly cite and credit sources
- ii) Articulate honestly and openly the implications of research/knowledge creation in their topic area for society

### **LEARNING OUTCOME II**

**Demonstrate the value of, and integrate, ethical standards into all facets of their work**

**Exemplars/indicators: According to the discipline, students will model**

- i) Ethical behaviour
  - ✓ Commit to and demonstrate ethical inquiry and social responsibility as well as to respectful treatment of colleagues, research participants, animals, environment, and consumers of research
- ii) Professional standards
  - ✓ know and respect Codes of Conduct in their respective fields both professional and academic

**LEARNING OUTCOME III**

**Demonstrate the ability to be planful by successfully completing Western's OWN YOUR FUTURE program, demonstrating competencies in 6 areas: Career Engagement; Community & Relationship Building; Intercultural & Social Fluency; Leadership; Teaching & learning; Thriving.**

**Exemplars/indicators: According to the discipline, students will demonstrate**

- i) Independence and autonomy as they
  - ✓ develop research path from inception to completion of project
  - ✓ analyse, problem solve, and make decisions
  - ✓ defend ideas and findings
  - ✓ personally accountable
  - ✓ make complex decisions
  - ✓ create new knowledge
  - ✓ autonomous learning, reading widely, creative thinking, critical thinking, effective time management, collegiality in exchanging and receiving ideas, personal initiative, personal responsibility,
- ii) Transferable skills
  - ✓ articulate skills learned in formal studies and transfer to 'real world' skills
- iii) Communication
  - ✓ listen effectively
  - ✓ mentor new graduate students
  - ✓ defend ideas and findings
  - ✓ articulate ideas clearly
  - ✓ provide constructive feedback to peers
- iv) Time management
  - ✓ ability to work efficiently and productively with minimal supervision
  - ✓ maintain daily logbook or research/study progress
  - ✓ complete program in 4 years
- v) Critical and creative thinking

- vi) Self-motivation
  - ✓ show initiative
  - ✓ autonomous learning
  - ✓ reads widely

#### **LEARNING OUTCOME IV**

##### **Learn and work collegially in varied environments**

###### **Exemplars/indicators: According to the discipline, students will be**

- i) collegial in exchanging and receiving ideas/feedback
- ii) collaborative
- iii) active as leaders and team members as appropriate
- iv) be respectful of colleagues and research participants
- v) be a mentor to new members of the team
- vi) problem-solvers
- vii) self-reflexive
- viii) act professionally and show professional judgement

#### **LEARNING OUTCOME V**

##### **Be cognizant of employment opportunities requiring the academic and intellectual autonomy skills gained in doctoral studies that require professional judgement in complex situations**

###### **Exemplars/indicators: According to the discipline, students will**

- i) Identify and articulate personal strengths
- ii) Engage in mature career planning as they complete OYF  
*e.g.*, list goals and strategies for finding future employment; participate in career planning; articulate transferable skills from academia to employment
- iii) Maintain current *curriculum vitae* and resume
- iv) Remain current in field of study
- v) Serve as, and be recognized, as leader in field
- vi) Pass professional examinations as required by profession/become certified

#### **LEARNING OUTCOME VI**

##### **Work safely, and articulate and practice disciplinary, health and safety regulations**

###### **Exemplars/indicators: According to the discipline, students will**

- i) Articulate and adhere to Code(s) of Conduct
  - ✓ University
  - ✓ Profession and professional standards
- ii) Comply with workplace safety guidelines and requisites
- iii) Work safely and independently in laboratories/facilities

- ✓ University
- ✓ Field

### **5. LEVEL OF COMMUNICATION SKILLS**

#### **OVERVIEW:**

The Quality Assurance Council of Ontario requires that upon successful completion of doctoral studies, and according to the discipline, students will demonstrate:

*The ability to communicate complex and/or ambiguous ideas, issues and conclusions clearly and effectively.*

While the LO's could be pared down essentially to ability to speak and write clearly and cogently to varied audiences, there are various nuances amongst the expectations which require different skill management sets.

#### **LEARNING OUTCOME I**

Demonstrate both oral and written competence and fluency in language.

##### **Exemplars/indicators: According to the discipline, students will**

- i) Speak in English with competence and fluency so as to be understood by varied audiences.
- ii) Write in English with competence and fluency so as to be understood by varied audiences.
- iii) Communicate in English language and language of discipline at appropriate scholarly level for academic discourse with respect to history of discipline/topic, evidence, methods, theory, ethics, and knowledge transfer/mobilization.
- iv) Complete additional language requirements as required by program.

#### **LEARNING OUTCOME II**

Speak about research in field using clear and effective oral expression of evidence-based analytical reasoning using higher order critical thinking skills.

##### **Exemplars/indicators: According to the discipline, students will**

- i) demonstrate oral skills consistent with scholarly researchers.
- ii) explain complex concepts/arguments with accuracy and precision using appropriate language for varied audiences including senior researchers, peers, profession, undergraduate students, community members.
- iii) give clear, cogent and concise presentations on academic work.
- iv) explain significance and impact of research findings and theories on society.
- v) present research at university symposia/seminars, academic conferences, professional conferences, media interviews.

- vi) using technology as appropriate, create and utilize audio-visual materials to complement oral presentation and to illustrate complex concepts and materials.

### **LEARNING OUTCOME III**

Write about research in the field using clear and effective written expression of evidence-based analytical reasoning using higher order critical thinking skills.

- referenced by all programs

#### **Exemplars/indicators: According to the discipline, students will**

- i) demonstrate written skills consistent with scholarly researchers.
- ii) write complex concepts/arguments with accuracy and precision using appropriate language for varied audiences including senior researchers, peers, profession, undergraduate students, community members.
- i) explain significance and impact of research findings and theories on society.
- ii) submit articles/chapters on research findings for publication in peer-reviewed journals and books as well as in professional journals, meeting specific formatting requirements
- iii) using technology as appropriate, produce coherent documents in varied formats to accurately describe theoretical foundations of topic, research process, conclusions.

### **LEARNING OUTCOME IV**

Express one's self using evidence-based arguments in well-structured oral and written presentations

#### **Exemplars/indicators: According to the discipline, students will**

- i) Develop skills and terminology to discuss complex issues with peers, scholars, professionals, and community
- ii) Attend conferences and seminars/symposia to learn how to express complex ideas from experienced scholars and/or public figures.
- iii) Read scholarly and professional materials to learn how to develop effective communication skills
- iv) Practice in public speaking in varied settings
- v) Present at conferences and in media, asking for and responding to, constructive feedback on presentation skills
- vi) Mentor and provide constructive feedback to peers as they learn how to express themselves orally and in writing.

### **LEARNING OUTCOME V**

Engage in and respond professionally to complex discussions about the research area.

#### **Exemplars/indicators: According to the discipline, students will**

- i) Speak and write about complex ideas/concepts/findings in multiple ways to promote understanding by various audiences.
- ii) Speak about research topic, respond thoughtfully and appropriately to questions and clarify details from public, experts, and peers.
- iii) Recognize importance of listening, giving, and receiving constructive feedback.
- iv) Assess, respond, and engage thoughtfully to peer-reviewed comments, criticisms, and questions about method, findings, and interpretations in one's writing.
- v) Defend complex ideas, arguments, and conclusions thoughtfully in writing and orally.
- vi) Contribute to work of peers and scholars in field by attending sessions/reading, and commenting critically and constructively.
- vii) Provide thoughtful and constructive feedback to peers.
- viii) Engage in intellectual debate formally and informally while respecting multiple perspectives.
- ix) Recognizing and accepting one's own limitations of knowledge.

#### **LEARNING OUTCOME VI**

Teach/mentor effectively to support the learning of varied audiences.

#### **Exemplars/indicators: According to the discipline, students will**

- i) Demonstrate teacher effectiveness
  - ✓ Organize effective and clear presentations/lessons etc.
  - ✓ Demonstrate varied pedagogical strategies for learning
  - ✓ Gain experience in assessing learning of varied audiences
- i) Demonstrate self-assessment as instructor
- ii) Contribute to training of new graduate students in department/lab
  
- i) Identify excellent teachers and observe classes with discussions about the learning observed;
- ii) Prepare and present clear and cogent individual and group presentations in graduate classes and assess outcomes after with peers and instructor.
- iii) Use technology as appropriate to audience and venue in oral presentations.
- iv) Find opportunities for teaching undergraduate students as a GTA, lab assistant, lead tutorials, and/or classroom assistant.
- v) Organize and prepare teaching materials to optimize learning in the classroom.
- vi) Request peers or learning experts to observe teaching and to discuss afterward.
- vii) Attend and complete one session with Teaching Support Centre with respect to effective teaching.

## **6. AWARENESS OF LIMITS OF KNOWLEDGE**

### **OVERVIEW:**

Completing an independent and significant research project in doctoral studies is a vital part of scholarly apprenticeship. However, the Quality Assurance Council of Ontario requires that students upon successful completion of doctoral studies will demonstrate:

*An appreciation of the limitations of one's own work and discipline, of the complexity of knowledge, and of the potential contributions of other interpretations, methods, and disciplines.*

In analysing this portion of Learning Outcomes across Western's doctoral programs, it is apparent that programs understand that completion of a doctoral program with a successful dissertation – or any research project for that matter – leads to more questions than answers, paving the way for future research paths. While many of the LO's in other categories are skill-based, these seem to be more habits of mind and practise. The LO's have been refined into five outcomes as described below.

### **LEARNING OUTCOME I**

**Critically process information from primary and secondary sources distinguishing opinions from facts.**

- No additional exemplars identified
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### **LEARNING OUTCOME II**

**Continuously interrogate the accuracy and ethical boundaries of humanly-constructed nature of arguments and interpretations throughout the research process**

**Exemplars/indicators: According to the discipline, students will**

- i) Value potential contributions of alternative interpretations;
- ii) Identify one's own personal limitations/lens in addressing a research problem and realize the impact this can have on outcomes;
- iii) Articulate how forms of power, culture, policy, and history in the discipline may influence knowledge formation
- iv) Recognize ambiguity in finding truth/answers as well as the contraversial "p" and "P"olitical involvement/influence in research
- v) While being an expert in one area, realize that one cannot be an expert in all aspects of the area
- vi) Know when an approach to a problem/question cannot succeed and have the courage and ability to change directions
- vii) Show confidence and humility while engaging in research
- viii) Continuously evaluate accuracy of and sources of errors in scholarly approach/research design, implementation, and interpretation to mitigate errors

**LEARNING OUTCOME III**

Identify the strengths inherent to different kinds of evidence, methods, and theoretical approaches, recognizing the intricacy and complexity of knowledge formation.

**Exemplars/indicators: According to the discipline, students will**

- i) Know that there are multiple effective ways to approach a research problem using diverse contexts and approaches
- ii) Identify issues where non-scholarly resources are essential in examining problem
- iii) Interrogate continuously ethical efficacy

**LEARNING OUTCOME IV**

Identify the limitations inherent to different kinds of evidence, methods, and theoretical approaches, recognizing the intricacy and complexity of knowledge formation.

**Exemplars/indicators: According to the discipline, students will**

- i) Identify the limitations and/or gaps of knowledge, methodology, interpretation in the discipline, such as sole use of experimental design.

**LEARNING OUTCOME V**

Study about and articulate the contributions of findings and perspectives found in other disciplines that lead to greater understanding in one's own field.

**Exemplars/indicators: According to the discipline, students will**

- i) Know that all areas of research exist within broader fields, respecting the strengths that come from collaboration and an interdisciplinary view.
- ii) Be aware that simultaneous scholarly or professionally-based research may replicate or surpass one's work and may result in a requirement to do further analysis and/or reorientation of values and views in the discipline.
- iii) Engage with multiple intellectual, practical, professional, and/or artistic viewpoints related to the research topic and findings.