

**EXPERIENCE
UNIVERSITY**

FOR GRADE 7-12 STUDENTS

2018 - 2019
Summer Enrichment
Experience @ Queen's
(SEEQ) Program
Course Descriptions

(Alphabetical by grade range)

**All courses and instructors are subject to change*

OPEN COURSES | GRADE 8-12

Writing Compelling Fiction

(Literature, Creative Writing)

Course Description

You have imagination, passion, a love of stories, and you're great with words – so how do you take your writing to the next level? In this course, you'll discover the secrets to writing stories that stir readers' emotions and take them on a page-turning and meaningful adventure. You'll learn the essential elements of great plots as well as how to develop original story ideas, design memorable characters, hook your readers, and flesh out your hero or heroine's inner journey. Plus, short cuts for improving your writing style. Taught through a combination of collaborative games, creative exercises, lecture, and self-directed writing opportunities.

Instructor Biography

Glen has been a freelance writer since 1999 and has been instructing with ESU since 2013. He is the author of the award-winning middle-grade novel, *Dancing on the Inside* and currently teaches creative writing at St. Lawrence College in Kingston, Ontario.

GRADE 8-9 COURSES

Engineering: Creating Sustainable Solutions

(Engineering)

Course Description

Have you ever wanted to design your own prototype? Thinking about engineering as a possible future career? In this course, you will learn about engineering and apply the engineering design process to create sustainable solutions to various problems we face in modern society. You will also learn about how different disciplines of Engineering work together to solve the global complex challenge of harnessing renewable energy sources. Working in teams as engineers, you will apply your new knowledge and skills to design and build a prototype to solve various challenges. This course includes a tour of various engineering buildings on campus where you will be able to interact with Queen's engineering students in action.

Instructor Biography

Scott has been coordinating courses for ESU since 2014 and is currently the Outreach Coordinator for Connections: Queen's Faculty of Engineering and Applied Science Educational Outreach Program. He holds a Master's degree specializing in Engineering Education with a thesis on high school students' perception of engineering. Instructors for this course are specially selected and supervised by Scott.

Let's Go to Court! An introduction to Canadian Tort Law

(Law)

Course Description

When does bumping elbows become battery? When does a joke become infliction of emotional harm? Doctors are humans and make mistakes - when are those mistakes actionable? Where is Tort law headed? These are some of the questions you will be able to answer at the end of the course. Join this class to learn about intentional torts (such as assault & battery), negligence/medical negligence and the possibilities for the future. Equipped with this new set of knowledge, you will learn advocacy skills and put it all together during a mock trial.

Instructor Biography

Kathryn has been an instructor with ESU since 2016. She earned her Law Degree at Queen's University while focusing on students' rights in education, mental health law, and tort reform.

Pathology: From DNA to Forensics

(Biology, Pathology)

Course Description

Do you dream of becoming a Crime Scene Investigator? Want to investigate a mock crime scene? Then this course is for you! You will learn about the human body, diseases, DNA and genetics through hands-on activities including: a genetics testing lab, dragon genetics lab, blood typing (with simulated blood), and examining plastinated specimens. You will also learn forensics skills such as fingerprinting, and handwriting analysis. Are you ready to solve the case?

Instructor Biography

Dr. Mackenzie Bowman is in her eighth year as course coordinator and holds a PhD in Pathology and Molecular Medicine. She is currently a Senior Scientist in the Clinical and Molecular Hemostasis Research Group at Queen's University. Instructors for this course are specially selected and supervised by Dr. Bowman.

What's Beneath the Surface? The Study of Lake Life

(Biology/Ecology)

Course Description

Earth is often called "the water planet" because it has approximately 14,000 cubic kilometers of water. Have you ever wondered what is happening in all that water? Over the three-day course, we will explore what is happening beneath the surface in our lakes. What makes a healthy lake ecosystem and how can we tell? Through hands-on experiences and lessons, we will learn about phytoplankton, zooplankton and fish and how the interactions between them provide us with opportunities for recreation, employment and food! Out of that 14,000 cubic kilometers of water, only 0.009% is fresh and accessible, we will also explore how lake ecosystems are changing with human development and impact.

Instructor Biography

Robin – a first time instructor for ESU – is a graduate student in the Biology Department at Queen's University. Her research interests focus on lake ecology, specifically the impact of additions of road salt on lake ecology in Ontario. Over the summers, she enjoys spending her time canoeing and collecting samples from lakes all over Ontario!

GRADE 10-12 COURSES

Chemistry: Life in the Laboratory

(Chemistry)

Course Description

Do you wonder what exactly chemists do? Or what happens in a chemistry lab? In this course, you will gain experience in a state-of-the-art chemistry lab using practical lab techniques. You will learn how to extract natural products from different plant sources and use anthocyanins as pH indicators to determine the pH of various solutions. Other lab activities will include demonstrations with a rotary evaporator, acid and base experiments, and identifying chemical structures with NMR, IR, and MS spectra. There will be opportunities for you to ask questions and learn about the diverse fields of chemistry with guest lecturers from a variety of positions within the Queen's chemistry department. If you are thinking about a possible future in chemistry, then this may be the course for you!

Instructor Biography

Hailey acquired her Bachelors of Science degree from Vancouver Island University and is now a Chemistry Master student in the Ross Lab at Queen's University. This is her first year with ESU and she is excited to be challenging you in the world of chemistry.

Kinesiology & Health: The Study of the Human Body, Mind, and Performance

(Kinesiology, Health Studies)

Course Description

Have you ever wondered how runners like Usain Bolt and Andre De Grasse became so fast? Or how Olympians like Clara Hughes and Christine Sinclair developed such strength and endurance? Or perhaps you are interested in helping people with disabilities maximize their abilities and quality of life. You will learn about the human body in motion by studying the effects of physical activity on health and performance, the physiological factors effecting body during movement, and important concepts in sport psychology. You will also be introduced to concepts involving how certain social factors can influence our physical and mental health, as well as performance. Opportunities to visit various labs and learn more about exercise physiology, sport psychology, biomechanics and ergonomics, cardiovascular physiology, and health promotion, will turn your passion into a possible future career.

Instructor Biography

Rob has been coordinating courses for ESU since 2017. He is currently the Laboratory and Educational Coordinator of the School of Kinesiology & Health Studies at Queen's University. Instructors for this course are specially selected and supervised by Rob.

Pathology and Molecular Medicine

(Biomedical and Molecular Science)

Course Description

Have you ever wanted to solve your own diagnostic case or learn how to find your blood type? If yes, then this is the course for you! This course will provide you with a thorough introduction to the field of Pathology – the study of diseases and the structural and functional changes they cause. You will interact with graduate students, professors, and doctors as you learn about genetics, cancer, neuropathology, and even have the opportunity to discuss education and career options. You will also extend your learning in the state-of-the-art Queen's University Anatomy Museum and Clinical Simulation Centre.

Instructor Biography

Dr. Mackenzie Bowman is in her eighth year as course coordinator and holds a PhD in Pathology and Molecular Medicine. She is currently a Senior Scientist in the Clinical and Molecular Hemostasis Research Group at Queen's University. Instructors for this course are specially selected and supervised by Dr. Bowman.

Physics: Discovering The Secrets of the Universe

(Physics)

Course Description

Do you wonder what it must have been like to be the first one ever to discover phenomena like fluorescence or the electromagnetic motor effect? Are you interested in learning more about the life of a physicist? In this course you will explore different experiments and learn about what it means to discover – as physics is a process of discovery, not just a set of facts that can only be learned from a textbook! You will form hypotheses about why something happens, and think about a follow-up experiment to test your hypothesis. By the end of this course, you will choose a question to investigate experimentally, gather data, and present a conclusion. This course will also discuss gender trends in Ontario and ask why there are fewer women than men studying physics. You will also get the opportunity to visit a facility to see physics in action, and engage with current physicists and learn about their work.

Instructor Biography

Jon is a new instructor for ESU. A former teacher, Jon has run engaging physics shows and hands-on activities in schools across London, UK. He has also worked as a research scientist using GPS so that people can get the time accurately from atomic clocks. Jon has also run professional development for hundreds of British teachers of physics, reviewed dozens of papers for an academic journal in physics education, and wrote physics activities for eight student workbooks for grades 7 & 8. He also likes to experience firsthand the physics effects of cycling through his first winter in Canada!