Helix Summer Science Institute Summer 2018

Call for Course Proposals

Science Engagement Programs

Science Engagement Programs offers innovative and engaging programs designed to inspire youth and discover exciting topics in science, technology, engineering, and mathematics (STEM). Based out of the Faculty of Science at York University, our programs use a discovery and inquiry-based learning approach that is focused on 'learning by doing'. Programming now includes York Science Saturdays, March Break Science Camp, Science Explorations Summer Day Camp, and the Helix Summer Science Institute. More information about Science Engagement Programs can be found at: scix.science.yorku.ca.

Helix Summer Science Institute

Helix is a high school enrichment program designed exclusively for high-performing students who have a strong interest in science and mathematics. Helix consists of a series of week-long, non-credit courses for students in Grades 9-12 that run for the month of July. Considered one of Canada's premier high school summer science enrichment program, students study advanced topics in science, engineering, and applied mathematics that draw upon the research strengths of the Faculty of Science at York University.

Students are guided through cutting-edge interdisciplinary topics through a series of lectures, hands-on workshops, experiments, demonstrations, and field trips. Courses are developed and delivered by professors, post-doctoral fellows, visiting scholars, and graduate students. More information regarding Helix summer Science Institute can be found at helix.science.yorku.ca.

Instructor Eligibility

Taking place in July, Helix is a high school enrichment program for students with an interest in science and mathematics. The program targets gifted and/or high performing students, with the aim of attracting top students into the Faculty's undergraduate programs. This summer program consists of a series of week-long non-credit courses for students in grades 9 to 12, designed to highlight specific research strengths within the Faculty of Science.

Past instructors have included teachers, faculty members, and graduate students from the Faculty of Science; however, students and faculty from other Faculties at York University are also encouraged to apply. Students in undergraduate programs with significant research experience may also apply to teach Helix. Past alumni, and individuals working in education or industry who have graduated from York University's Faculty of Science or Faculty of Engineering are also encouraged to apply.

Instructor Requirements

Upon course approval, successful applicants must submit the following to Science Engagement Programs:

- Current Vulnerable Sector Screen (police background check) for all Instructors
- Copy of their WHMIS and Health and Safety training, issued within the past two years
- Instructors will be required to attend a six-hour training program, to be completed in early June
- Additional qualifications may be required, depending on the course submitted

Students, high school teachers and faculty who wish to participate and teach with the Helix Summer Science Institute will receive a stipend of $800 per course developed and $1000 per course taught at the end of program. This stipend does not affect graduate and research funding graduate students already receive. The stipend received is also subject to taxes and other applicable deductions unique to each individual.

Instructors are expected to:

- Assist in obtaining course materials
- Maintain lab safety procedures with their students
- Clean their labs/classrooms daily
- Report attendance to the Program Coordinator
- Submit any required paperwork to Science Engagement Programs
- Perform other duties as outlined in the Staff Manual

Delivery Details

Training session | six hours | Date TBD

For each course, the weekly schedule will be:

Monday: 8:30am – 4:00pm (Opening Ceremonies run from 9:00am-9:30am)
Tuesday: 9:00am – 4:00pm
Wednesday: 9:00am – 4:00pm
Thursday: 9:00am – 4:00pm
Friday: 9:00am – 4:00pm (Closing Ceremonies run from 2:30pm-3:30pm)

Contact Details

Cora Reist | Program Coordinator | Science Engagement Programs
York University | 416-736-2100 EXT 44552 | helix@yorku.ca

Submission Deadline: November 1, 2017

Meetings/Interviews will be held between November 13 and November 30, 2017. Courses will be finalized by December 20, 2017.

Proposal Submission Details

Section 1: Application Form

Instructor A
Instructor B

Section 2: Biography

Instructor A
Instructor B

Section 3: Resume, and outline of relevant teaching experiences
Section 4: Substitute Instructor
Section 5: Course Proposal

Section 1: Application Form

Personal Information – Instructor A

Please select your title:

First Name: _____ Last Name: _____

Email Address: _____ Phone (Day): _____ Phone (Evening): _____

Home Address: _____ Country: _____

City: _____ Province/State: _____ Postal Code: _____

Educational Background (please list in chronological order starting with the most recent education)

Institution and Faculty	Program and Department	Degree / Certification	Year Completed / Expected Completion

Please select the following that best applies to you:

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If you are a Visa Student, do you hold a permit permitting you to work in Canada throughout the dates indicated below? ◯ Yes ◯ No

If you are a member of the York community, please include your information below:

York University Employee ID: _____ York University Student Number:

Please list your current lab supervisor (if applicable):

Availability for Employment

Please check all that apply:

☐ July 9-13, 2018 ☐ July 16-20, 2018 ☐ July 23-27, 2018 ☐ July 30 – Aug. 3, 2018

Please note that offers of employment are conditional upon instructors attending a mandatory training session. Instructors will be required to submit a police vulnerable sector screening, WHMIS certification, and may have to show evidence of BioSafety training.

Personal Information – Instructor B

Will this course be taught by two or more Instructors? ◯ Yes (Complete below) ◯ No (Complete Section 4)

Please select your title:

First Name: _____ Last Name: _____

Email Address: _____ Phone (Day): _____ Phone (Evening): _____

Home Address: _____ Country: _____

City: _____ Province/State: _____ Postal Code: _____

Educational Background (please list in chronological order starting with the most recent education)

Institution and Faculty	Program and Department	Degree / Certification	Year Completed / Expected Completion

Please select the following that best applies to you:

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Section 2: Biography

Each instructor must submit a short bio which will be shared with parents and students to promote your course.

Sample Bio: Prof. Michael Chen graduated from Northwestern University with a PhD degree in Industrial Engineering and Management Science. Michael's research focuses on mathematical modeling of sophisticated business/industry/government management problems and fast computer algorithms for solution seeking. Michael's research is supported by the National Science and Engineering Council of Canada. Since joining York University in 2009, Michael has taught multiple courses in mathematical modelling and has been a popular teacher in this area. Michael's students are working for business intelligence or analysis department at IBM, Walmart, banks, insurance companies, etc.

Biography – Instructor A

Instructor Bio:

Biography – Instructor B

Instructor Bio:

Section 3: Outline of Teaching Experience and Resume

Resume of each Instructor to be attached separately.

Section 4: Substitute Instructor

This section is required for courses with only one instructor.

In the event that you are called away on emergency or too sick to teach, please list a substitute who will be available to teach the course in your absence (preferably someone with similar education).

Please select their title:

First Name: _____ Last Name: _____ Phone (Day): _____

Email Address: _____ _____ Phone (Evening): _____

Indicate that your substitute has agreed to be available to teach your course in the event you are absent: ◯ Yes, they have agreed ◯ No, they have not been informed

Please note that your substitute will be required to submit a Vulnerable Sector Screen prior to the course commencement. In the event that they must teach the course, full Instructor requirements will be expected (i.e. WHMIS and Health and Safety documentation).

In the event that a substitute is unavailable or cannot be provided, an external Instructor may be brought on at your expense to cover the teaching time.

Section 5: Course Proposal

The Helix Summer Science Institutes aims to develop and offer courses from the various departments in the Faculty of Science at York University. In the past, courses have been challenging and exciting, and offer high school students a unique university level experience. Previous years have included projects that include PCR and Gel Electrophoresis, computer mathematical modelling of the transmission of disease, game programming, and practical computations in astrophysics. Course proposals that are submitted may be taught in future years by alternate Helix Instructors if you are unable to teach the course.

This year, course proposals that involve field trips and out-of-classroom experiences will be given preference. Course proposals in the following fields of study are particularly requested: Animal Physiology; Biological Chemistry; Astronomy; Math & Technology; and Biological Physics.

Please note: Helix is not permitted to use human cells or dangerous toxic substances. Please include safe substitutes when developing your course proposal.

In the table below, please identify the materials (including quantity and cost) you require for each activity with approximately 25 students. Each course has an approximate budget of $400.00. In past years, Instructors have purchased materials at a pro-rated cost from their York University supervisors and/or contacts. Preference will be given to courses that are within budget and have connections to the York community.

Course Title:

Proposed Grade Level: Junior (Grade 9 & 10) Senior (Grade 11 & 12)

Proposed Stream: _____ (If other, please specify)

Possible Stream Options:

1. Biomedical Sciences
2. Laboratory Medicine & Pathobiology
3. Neuroscience
4. Physics & Astronomy
5. Applied Mathematics
6. Environmental Biology & Chemistry
7. Engineering & Applied Sciences

Course Description

To be posted on the Helix website to engage student interest.

	Monday	Tuesday	Wednesday	Thursday	Friday
Title/Theme *State the overall theme of the day (e.g., Introduction, Current trends, Future direction).*					
Lecture Topics *Clearly identify topics you wish to cover each day.*					
Proposed Activities/Experiments *State what students will be doing (eg. Gel Electrophoresis, computer modelling, feeding cells, problem sets). You may wish to state in what undergraduate experiment or course your activity is found. Human cells or tissue are not permitted.*					
Learning Goal *Identify what you would like students to learn from the activity*.					
Activity Details *Briefly describe the **protocols** and procedure of the experiment /activity.* *(If your course is selected, you will need to describe the protocol in greater detail separately.)*					
Facilities Required *Describe what would be the ideal facility (Computer Lab, Wet Lab, Standard Classroom). Be specific (eg. CB 217B) .*					
Materials – *Identify the materials (including quantity and cost) you require for each activity with approximately 25 students.* – *In past years, instructors teaching Helix have purchased materials at a pro-rated cost from their supervisors.*					
Cost – *Estimate the cost associated for each day the course. Each course has an approximate budget of $400.*					