

FYRE: First Year Research Experience

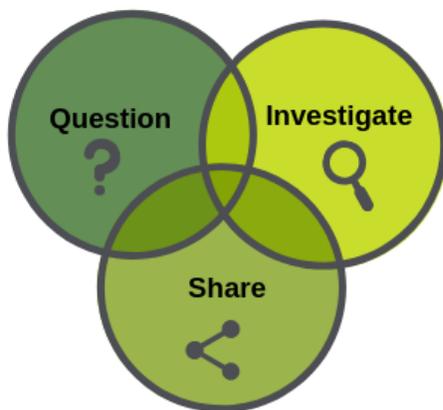
Vision and Commitment

Vision: The University of Saskatchewan aims to enrich the academic experience for students and faculty by fostering active learning across all disciplines. Students learn skills necessary to switch from passive learners to active creators of new knowledge, right from their first year.

Commitment: Every undergraduate student graduating from the University of Saskatchewan has engaged in a meaningful research, scholarly or artistic experience.

Research Cycle: Question. Investigate. Share.

The Undergraduate Research Initiative identifies the **Research Cycle** as the core defining element of course-based First Year Research Experience (FYRE). The Research Cycle reflects the messiness of true research, scholarly or artistic work; it circles and connects, and is never a straight path. Students experience three stages of research:



- **Question.** Developing a researchable question is a teachable/learnable skill requiring practice, initial research, feedback, error and discovery.
- **Investigate.** Learn to investigate the question using discipline-relevant methodologies and scholarly frameworks, engaging students in data literacy, numeracy, data management and analysis, project management, problem-solving and artistic creation.
- **Share.** Sharing findings or finished artistic pieces via authentic dissemination with colleagues and peers to build critical communication and feedback skills.

Research as a Skill

An undergraduate research experience aims to make explicit the processes of discovery and sharing knowledge to a larger community. Together, the **Research Cycle** (Question~Investigate~Share) supports the development of research skills.

For more information on FYRE, please contact: merle.massie@usask.ca.

Why FYRE?

Research in the Classroom

Undergraduate research (UGR) is an experiential learning strategy and one of ten high impact educational practices.¹ Within course learning outcomes, students work through structured experiences with a research coach to scaffold skill development.² UGR exemplifies the University of Saskatchewan Learning Charter commitment to pursuing skills and practices alongside content knowledge.³

Why?

Benefits for Students:

Students experience a different style of content learning through immersion in research (question~investigate~share) to:

- shift the focus from passive to active learning
- elevate student satisfaction and engagement
- support independent, experiential and collaborative learning
- introduce research skills and discipline-specific methodologies
- improve technical, analytical, logical, synthesis and communication skills

Benefits for Instructors:

Faculty, instructors and staff fostering undergraduate research experiences exemplify active learning, broad thinking and curiosity. They bring research, scholarship, artistic work and professional activities to the classroom to promote authentic – and sometimes messy – inquiry.

Instructors who incorporate curriculum-based research experiences report:

- higher student engagement
- increased connection between research and teaching activities
- increased publication and grant opportunities
- benefit of having a paid research coach to support classroom learning
- a refreshed classroom experience⁴

For more information, please contact Merle Massie at merle.massie@usask.ca

¹ George Kuh, High Impact Educational Practices. Association of American Colleges and Universities, 2008.

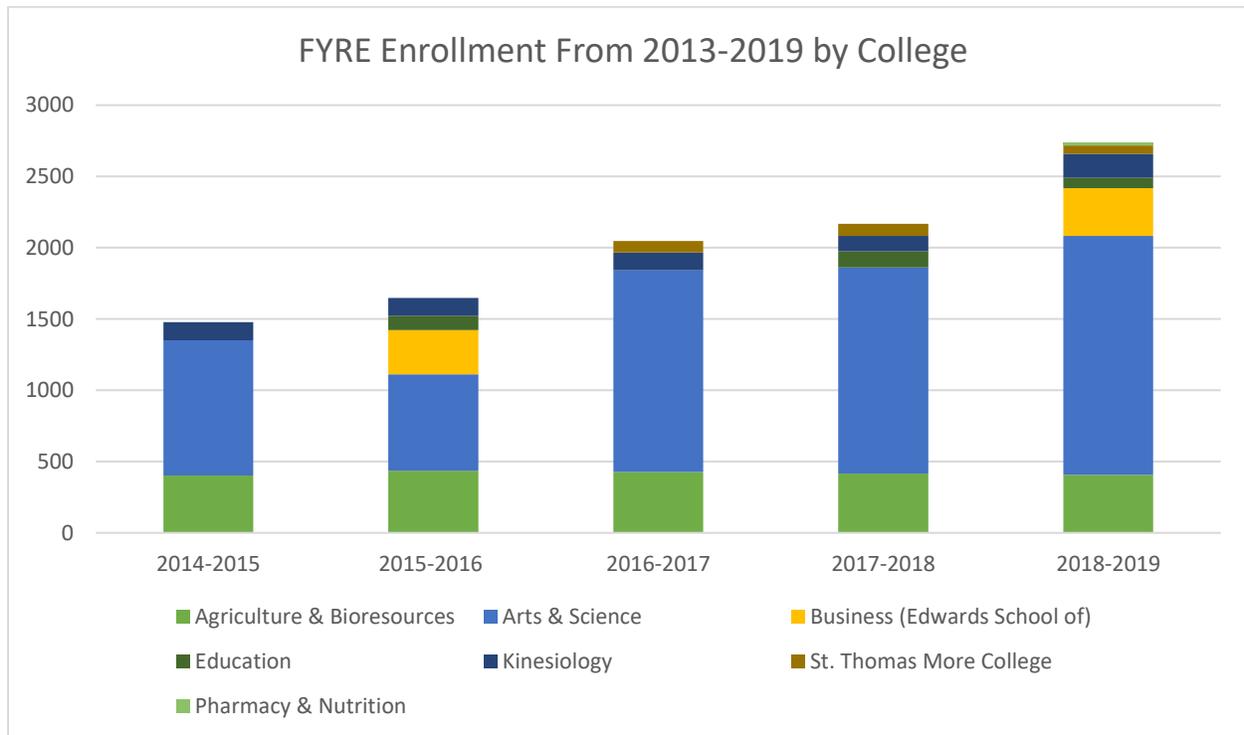
² Research Skill Development for Curriculum Design and Assessment. The University of Adelaide.
<https://www.adelaide.edu.au/rsd/framework/>

³ University of Saskatchewan, *Our Learning Charter*. <https://teaching.usask.ca/about/policies/learning-charter.php>

⁴ Erin Shortlidge, Gita Bangera, Sara Brownell, “Faculty Perspective on Developing and Teaching Course-Based Undergraduate Research Experiences,” *BioScience* Vol 66, Issue 1, January 2016, pages 54-62.

FYRE at USask

FYRE Growth



In 2018-2019, there were over 2700 student enrolments in FYRE courses across campus.

Community of Scholars

As FYRE grows, FYRE faculty numbers, research coaches and student enrolment (the FYRE community) grows. FYRE faculty exchanges bring instructors together to discuss strategy, good practices, issues and celebrate success. Some instructors are using FYRE experiences for Scholarship of Teaching and Learning (SoTL) research and publications.

Institutional Support

The Office of Vice President Research—Strategic Research Initiatives unit is the institutional home for undergraduate research. Undergraduate research is actively supported by the Office of Vice Provost Teaching, Learning and Student Experience, and the University Library. Several colleges and departments have signed MOU commitments to FYRE.

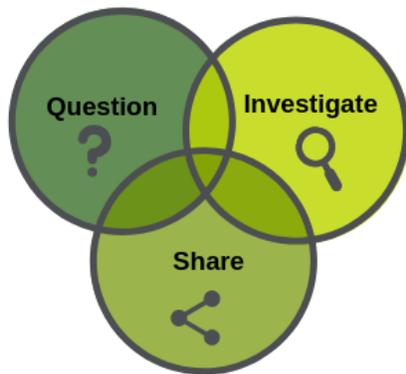
For more information please contact Merle Massie at merle.massie@usask.ca

How to join FYRE

Contact Undergraduate Research Initiatives

Call the Undergraduate Research Initiative office at 966-7127 or email Merle Massie (merle.massie@usask.ca) if you are thinking about joining FYRE. Or, join us at any of the FYRE Faculty exchange or undergraduate research events on campus. Find us online at <https://vpresearch.usask.ca/students/undergraduate/undergraduate-research.php>

Adapt course content



- **Read** about different ways fellow USask faculty have included FYRE in their courses
- **Consult** with fellow USask FYRE faculty
- **Consult** with educational development specialist Ryan Banow at the **Gwenna Moss Centre for Teaching and Learning** ryan.banow@usask.ca for technical expertise and guidance to ensure your FYRE course is clear and manageable
- **Consult** with Research Services and Ethics Office to see if your FYRE project requires Ethics support
- **Build** a curriculum-based research experience that includes all three elements of question~investigate~share
- **Register** your FYRE online at: <https://www.surveymonkey.ca/r/usaskFYRE> (we will work with you through clarification or refinement if needed)

Identify Research Coaches

Select a USask student or students to be hired as a **research coach** for your class section. Research coaches are paid by the Undergraduate Research Initiatives office separate from lab or tutorial assistants (Note: if you are an STM professor, please check with us and STM). Research coaches work with you and the students to support FYRE inside and outside your classroom.

For more information about integrating UGR in your course, please contact Ryan Banow of the GMCTL ryan.banow@usask.ca or Merle Massie merle.massie@usask.ca

FYRE Examples at USask

■ **ENVS 110.3 *Renewable Resources and Environment* with C. Laroque**

Student opt for one of two FYRE projects in EVSC 110. Up to 16 students can select to do a FYRE on the Beamlines project, selecting a project subject, developing a research question around that subject, and then testing it at the Canadian Light Source (CLS); for those that do not select this option, they will choose a subject to research around the general theme of climate change, develop a research question, and try to answer their question using found data sources. All student will present a poster and oral presentation at the AG/Bio poster day at the end of term.

■ **WGST 112.03 *Introduction to Women's and Gender Studies* with M. David**

Students are asked to form groups of 5 and choose topics surrounding the following theme: "Breaking the taboo on sexual violence and sexist, racist, xenophobic, transphobic and homophobic, and islamophobic behaviour." Your task is to come up with a research question that would guide your group project and try to address it in your presentations. Your presentations can refer to any historical time up to the present. Students will be asked to make an oral presentation which can take any form depending on the students' abilities: blog, video, poster, artistic production, written report, powerpoint etc.

■ **COMM 119.3 *Skills for Academic Success* with T. Maber**

In groups of 5, students are required to complete a collaborative research project based on a supplied case study. There are two separate deliverables associated with this project: a) a report that incorporates both academic and business elements; and b) a formal presentation of their findings and recommendations (results).

■ **HIST 165.3 *History Matters: History of Science and Medicine from the Black Death to Breaking Bad* with K. Patton**

Students are asked to write a research paper (based on 3 scholarly secondary sources, one primary archival source, and one historical object) as well as present their research in a public and creative way. Historians almost never rely on secondary sources alone in their original research so students are required to uses one archival source and one historical object to inform their research. Both the archival source and historical object must be featured on the public history poster as well.

■ **POLS 111.3 *Democratic Citizenship in Canada* with L. Berdahl (online)**

Students will study the 2019 federal election to build upon existing knowledge about local campaigns in Canadian federal elections. This will be completed in three steps: Step 1: Research proposal. Step 2: Research paper: You will use two federal electoral districts as a comparative case study to answer the research question with publicly available data. Step 3: Research dissemination: Online: You will share your reflections on the research with your classmates through the class Blackboard discussion forum. You will respond to any questions your research coach, professor, or classmates raise.

FYRE Examples at USask

ANBI 110.3 *Introductory Animal Bioscience* with M. Drew

Students examine, discuss and explore polemic issues in animal bioscience to develop both understanding and skills related to conducting research: learning the scientific method, hypothesis testing, and designing experiments. Students work in groups to determine a research question, read and consider scientific articles, analyze data, and write a report in stages culminating in a research poster for competition at the end of term.

KIN 122.3 *Social Behavioural Foundations of Physical Activity* with S. Forrester

The research project will include a paper and poster presentation. The theme of the research paper will be around the health initiative of increasing physical activity levels as well as a secondary health promotion initiative for the chosen demographic. Students will research a demographic population of their choice. Research findings should act to justify the group they have chosen. Subsequently students will develop a health promotion initiative to combat physical inactivity and the secondary health concern that they have identified as applicable to the chosen demographic.

GEOG 120 *Introduction to Global Environmental Systems* with K. Chutko

Each student will conduct a research project on their own. A research question will be chosen by each student in a relevant field of student and location that is interesting to the student. Students will attend 3 research tutorials that will guide students through the processes of identifying a research topic, formulating a research question, and analyzing and presenting their findings. Research tutorials will be led by research coaches. Topics may cover an aspect of environmental systems discussed in class, and must be spatial in nature. Students will present their research as digital posters presented to their peers during presentation sessions at the end of term.

INTS 102 *Essential Skills for Studying Science* with S. Bonny

The academic research arc will be introduced in the context of asking an original question, researching approaches to an answer through (1) literature; (2) content expert interview; (3) synthesis and creative connection to personal experience, and sharing results through (1) a presentation; (2) a research snapshot (students are encouraged to submit to USURJ), and a reflective writing activity. Topics can be chosen to connect to a concurrent USask course or this course content.

ECUR 164 *Is this a course about science?* With T. Molnar

This class encourages the development of academic skills through experiential learning. Engaging in inquiry and research processes is important for you as a future teacher. Inquiry is a complex process of questioning, constructing personal meaning, applying critical thinking skills, solving problems, and creating understanding. Working in groups of 3-5 students, you will develop a research question, conduct preliminary research and create a working thesis, build research and evidence, and present findings in both a poster session and an individual report.