RESEARCH EXPERIENCE PROGRAM

SCIENCE

Mentorship Manual

Undergraduate Research Opportunities

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URO Science Mentor Manual

Research Experience (REX) Program: An Introduction

The Research Experience (REX) program is created by Undergraduate Research Opportunities (URO), a UBC AMS club dedicated to help students get involved in research. The primary purpose of the program is to provide an opportunity for students to get their first taste of research, while learning important skills in designing research projects, and building meaningful connections between students and mentors. REX pairs undergraduate students with a mentor (graduate or post-doctoral student) to develop a research project that will be presented at a conference (e.g. Multidisciplinary Undergraduate Research Conference), or be published in a journal.

What is a REX mentor?

As a REX mentor, you are a guide and resource who shares your research and education experience to help pave the way for undergraduate students to succeed at UBC and beyond. Mentors will be paired with a group of up to three undergraduate students, to collaboratively create a research project that can be published in a journal or presented at a conference. You will supervise the project, and provide guidance and feedback for students' research process, from formulating a research question, writing a proposal or abstract, to creating the final research poster that can be presented at a conference. The REX program is flexible in that the mentor and mentee(s) can decide together the scope of research and how it will take place.

The Roles of a Mentor

- **Resource** – Teach and advise students in areas of research and the process of research
- **Supporter** – encourage open, honesty and respectful conversations, and responds to the needs of the mentee
- **Coach** – helps mentees develop their research project to give them a first taste of research

What is a REX student?

A REX student ranges from 1st year to 3rd year, and are likely to be very new to the field of research. Think back to that 1st research project or lab course you took as an undergrad, now imagine taking on that course/project 2-3 years earlier. Most would consider our students at a disadvantage, being younger and less familiar with the basic concepts of research.
But they are also brave, passionate, and ready for change – as one should expect from a group of students willing to jump into research at such an early age.

They have the heart of a researcher, already showing their eagerness to learn and explore the unknown.

What is a REX project?

In the past, we have had a diversity of REX research projects. Most REX projects consist of the students developing a research question, hypothesis, and experimental design to test their hypothesis–this consists of the bare minimum required to complete the REX program. Many mentors have allowed their mentees to go into their labs and do the experiments associated with their mentee's research question; however, this is an additional aspect of REX projects that is completely up to the mentor and their research group. REX students are well informed that REX does not promise anything more than the opportunity to design a research project and present it at a conference.

In some cases, mentors have joined REX with a specific research question in mind and are looking for students to test an already developed research hypothesis. These REX projects are very wet lab heavy, and must include an extensive wet lab component if the students aren't developing their own research question, hypothesis, and experimental design.

Note: the chance to develop their own research question, and experimental design are why many students join REX, so if this section is omitted students must be able to produce and analyze results from experiments that they perform, and this must be included on their final poster.

The Final Product

All REX groups, generally consisting of one mentor and 3 students, are required to produce one poster that will be presented at Multidisciplinary Undergraduate Research Conference (MURC). The poster must include all the basic aspects of a poster – such as introduction/ background, hypothesis, and experimental design/methods. The results section is optional, as many of our REX projects will only be research proposals, and will not collect data due to financial limitations.

An abstract must be produced and submitted to MURC by February 9th, and posters will be due March 9th.

The REX Experience: Benefits and Expectations

BENEFITS

We believe that mentoring will be a positive and enriching experience for both, the mentors and the students. Specifically, we hope that you will:

For the Mentor

- Give back some of the support and inspiration you have received throughout your undergraduate and professional career
- Maintain a connection to UBC and the undergraduate community of research at UBC, and contribute to efforts to build a stronger industry and community
- Contribute to the future of your field or industry by fostering the next generation of leaders
- Gain mentorship experience—not only will the role as a mentor affirm your professional competence, but it will also be an opportunity to build your leadership, communication and management skills
- Meeting the right students—students who are selected to be a part of the program are driven students who are eager; URO as a filter to find the right students to have in your industry
- Opportunity to reflect on your own experience on your research journey
- A genuinely rewarding experience—making meaningful connection with mentees and feeling that you have made a positive impact in their lives

For the Student

- Receive an introduction into the research and professional world
- Start building a professional network
- Opportunity to get involved in research and present your work at a conference, or to a call for paper
- Develop and enhance professional and transferrable skills
- Acquire advice on research, academic and career experiences
- Explore new ideas and areas of interest
- Gain clarity on career, academic and personal plans

EXPECTATIONS

One of the best aspects of the REX program is that it is flexible – mentors and students can decide one how the research experience and mentor-student relationship will work. We do have some minimal expectations including:

For the Mentor

- You are expected to:
    - o Spend at least two hours per month building the mentoring relationship
    - o Set expectations with students for how and when you will contact each other
    - o Help your student identify and set goals, track progress and make changes
    - o Approach the mentoring relationship with an open mind, professionalism and respect
    - o Support student's professional and personal development
    - o Respond to all communications in a timely manner
    - o Maintain and model professional behavior. Define professional behavior if needed.
    - o Communicate problems with mentoring relationship to URO Science Co-branch Coordinators at science.uro@gmail.com
- You are not expected to:
    - o Have all the answers for your mentee
    - o Initiate all contact with your mentee

For the Student

- Spend at least two hours per month building the mentoring relationships
- Make the first contact with the selected mentor and respond to all communication in a timely and professional manner
- Spend at least two hours per month building the mentoring relationships
- Make the first contact with the selected mentor and respond to all communication in a timely and professional manner
- Set specific goals for the mentoring relationship with mentor

- Agree and commit to expectations and goals set with the mentor
- Be appropriate in their request of their mentor
- Approach the mentoring relationship with an open mind, professionalism and respect
- Be receptive to suggestions and feedback
- Communicate problems with the mentoring relationship to URO Science Co-branch Coordinators at science.uro@gmail.com

How REX Works

Matching Process

Matching Students and Mentors

1. After attending the mandatory orientation sessions, mentors are required to submit their profiles by Friday October 24, 2014.

2. Students can search through the mentor profiles and select their top 3 mentors by Friday, Oct 31, 2014.

3. The mentor receives an e-mail with the requests and selects their top student(s) choices by Friday, November 7, 2014.

4. Results will be announced on Monday, November 10, 2014.

Mentor Profile (Due: Oct. 24, 2014)

- 300 words max. about your research
- Provide link to webpage (if necessary), and 2 citations for further background reading
- Include enough information for undergraduates to understand. If there are special circumstances such as only being only available for consultation via Skype, or if you have a specific project in mind already, please mention this here.

Students Application (Due: Oct. 31, 2014)

- Students will receive an e-mail after all the mentor profiles have been posted about their REX Application form
- Application answers "What interest you about this mentor's research?"

Once a Match is made

Students are expected to initiate contact with their mentor and arrange a time to meet as a group.

- We encourage the student to send an introductory e-mail to the mentor and their peer group

- Sometimes, however, students are nervous or intimated to reach out, so if you don't hear from your mentee, please feel free to take the lead

- If no contact is made within 1 week, please contact URO at uro.ubc@gmail.com.

The First Conversation

We strongly suggest that you have a conversation early on in this relationship in-person, over the phone, or via Skype. This personal interaction will go far in creating a connection and setting up a good foundation for your relationship. Here are some guidelines for the conversation:

- Voice your **excitement!** – Sharing your enthusiasm will help reassure each other that you are committed to making the relationship succeed.

- Build **rapport** with each other by asking questions about their background and experiences. Remember, you have UBC and your curiosity/passion for research in common, and that is a great place to start!

- It is important at the beginning of the relationship to talk about **expectations and goals** for the REX program. Make sure to either start this dialogue in this first conversation or set up another time to do so. You can use our REX Mentorship Agreement and Goal-Setting sheet, which can be found in the appendix.

The Research Project

Project Goal: Poster Project Proposal. Students will be presenting a poster geared towards the general public at MURC on March 21st, 2015.

- This project involves: Conducting a **literature review** (December-January)
    - Students should be encourage to explore areas of your field that interest them, as well as to keep track of their literature for the final poster/paper
        - Mentors might want to provide suggestions and feedback as to how they would approach a literature review, and key papers they might want to start with
        - The goal of this step is to provide your students with enough knowledge of your field that they can find an ask a novel research question
- Selecting a **research question** (Due: January 16th)
    - In nearly all cases, your students should be developing the research question based on their interests. If it would be considered impossible for a student to develop a research question in your field, then you may provide one on the student's consent.
    - Collaboratively, the students and mentor would decide on a research question together.
    - The mentor's role here is to help students narrow down the question to something feasible for an average research group. Both REX and MURC encourage creative and imaginative projects, and this should be prioritized over feasibility. As a general rule of thumb, any project goes as long as the technology exists and it could be completed in the duration of an average PhD.
    - With that noted, elaborate research questions will usually require much more work you're your students. As the more complicated a question is, the more research they will need to do to demonstrate that it is indeed feasible to the MURC judges.
    - Note: this is a soft deadline the URO uses to identify groups that may need more help if they don't make the deadline. Groups that miss the deadline will be contacted by the URO execs the following week.
- Writing a **research proposal** (Due: February 9th)
    - All students are required to write and submit a proposal type abstract to the MURC
    - More info and submission: http://students.ubc.ca/career/murc/present

- (Anticipated) results: most REX projects will not include results, as such some students choose to write about anticipated results. This section will talk about and discuss the signific and meaning of either supporting or providing evidence against your hypothesis.

- If the mentor feels comfortable and/or if it is applicable, mentors may wish to provide their data to their mentees to analyses and present.

- There will be a proposal writing workshop for students on January 23, 2015.

- This is a Hard deadline, and students who fail to submit an abstract to MURC (https://forms.students.ubc.ca/career/apply-be-presenter) will not be able to present at MURC.

- Preparing the final **research poster** (Due: March 9th)

    - MURC participants will get their posters printed for FREE!

    - MURC: March 21st, 2015

    - There will be a workshop on conference presentation for students on March 6, 2015

        - Info will become available in early March: http://students.ubc.ca/career/murc

Past Project Examples

Father involvement in HIV-related care and antiretroviral (ARV) medication adherence in South Africa (Anita Bal, Bianca Yeung) – 2014 MURC poster presentation winner
http://uro.ubc.ca/files/2014/07/HIV-Infected-Infants.pdf

The Byzantine Pilgrims of St. Stephen's Monastery: Understanding Historical Migration through Strontium and Oxygen isotopic Analysis (Hannah Guo, Sophyia Ly) – 2013-2014 REX poster
http://uro.ubc.ca/files/2014/07/Byzantine-Pilgrims.pdf

MURCH Sample Poster Presentations
http://murc.ubc.ca/apply-to-present/sample-posterspresentations/

Timeline

OCTOBER 2

Students Research Experience Orientation Session
This mandatory orientation for registered mentors will provide a full breakdown of the program and answer any of your questions.

OCTOBER 9

Mentors Research Experience Orientation
This mandatory orientation for prospective students will provide an overview about the REX program and answer any of your questions.

OCTOBER 16

Mentor Training Workshop
The mentor training workshop will be hosted by the Centre for Student Involvement.

OCTOBER 22

Mentors Profile Deadline
To help match you with students who are interested in your research, we require all our mentors to submit description of their current field of research.

OCTOBER 31

Research Experience Application Deadline for Students
Students will need to complete the following application to be eligible for the REX program, and select their top 3 mentors.

Research Question Deadline

NOVEMBER 10

Mentor-Mentee Matchup Results

JANUARY 16

Methodology Submission Deadline

JANUARY 26

Research Proposal Writing Workshop
Hosted by MURC at Irving K Barber Learning Centre Room 301 (Lilooet Room), 4:30 – 6:00PM.

FEBRUARY 2

Abstract submission (to Mentor) Deadline

FEBRUARY 6

Oral Presentation Workshop
Hosted by MURC at Irving K Barber Learning Centre, Victoria Learning Theatre, 4:30 – 6:00PM

Deadline for abstract submission to MURC
Submission closes at 11:59PM.

FEBRUARY 9

FEBRUARY 23

Poster Presentation Workshop
Hosted by MURC at Irving K Barber Learning Centre, Victoria Learning Theatre, 5:00 – 6:30PM

FEBRUARY 24

MARCH 9

Final Poster Submission to MURC
Submission closes at 11:59PM.

Multidisciplinary Undergraduate Research Conference

MARCH 21

REX Resources and Support

Bi-weekly e-mails for URO feedback purposes

Students and mentors are expected to fill out a weekly feedback form to check-in with URO. This should be quick and easy, and should not take more than 3 minutes of your time.

Weekly office hour drop-ins

Office hours available for students to ask questions, voice their concerns, and receive feedback through one-to-one consultation.

Facilitated workshops/Guest Speakers

Workshops are available periodically to better prepare and assist students with their research project. The workshops available for this year are:

- Writing in Humanities and Social Sciences – November 6
- How to conduct a Literature Review? – November 21
- Writing a Successful Proposal – January 23
- Presenting at a Conference – March 6
- Mock Conference – March 9

Monthly newsletters

A REX newsletter will be sent out to mentors and mentees every month to announce opportunities, resources and updates. Profiles of projects and/or mentor/mentee highlights may also be featured.

Thank you, Contact Us

We want to express our deepest gratitude for your participation in the URO Research Experience Program. This program would not be possible without your commitment and enthusiasm. This guide will evolve with the REX Program. As we work together throughout this year, we welcome your suggestions for improving our written materials as well as our program. Your participation in this process will help the REX Program become a best practice model for UBC and other universities.

If you have any questions or concerns, please do not hesitate to contact us at science.uro.ubc@gmail.com.

Best,

Jacqueline Siu
Science Branch Co-Coordinator
Undergraduate Research Opportunities

Jessica Li
Science Branch Co-Coordinator
Undergraduate Research Opportunities

Appendix A

To get the most out of your REX experiences, URO strongly recommends that you talk about your expectations and goals both the student and mentor have for the mentoring relationship. Commit to the communication plans discussed and decided upon by the mentor and mentee. Renegotiate as needed.

Addressing expectations: How will the relationship work?

1. Meeting together: How will we meet together?
    - o In Person
    - o Skype
    - o Phone
    - o E-mail

2. Frequency of interaction: How often would we like to meet/interact?
    - o Once per week
    - o Every other week
    - o Once a month

3. If an e-mail/voice mail is received, we will respond within: 24 hours, 1-2 days, 3 days, other

4. If we cannot make an expected meeting, how will we get in touch?

5. When will they meet/talk next?

Agreeing on goals – What do you hope to gain from the relationship?

1. What are the mentee's goals for mentoring relationship?

2. What are the mentor's goals for mentoring relationship?

3. What are some initiative and support we can both take to help achieve these goals?

If one party is unresponsive at any point in the relationship, initiate contact. If the mentor/ mentee does not respond after multiple attempts, please do not hesitate to contact URO Science Branch Coordinators.

Appendix B

Setting goals at the beginning of the REX relationship is critical because it gives direction to the relationship and informs mentor in how to better support their mentee(s).

Creating SMART Goals

SMART means:	Action	Consider
Specific	Specify how goals will be accomplished	What specifically am I trying to accomplish? E.g. I want to get better grades in my upper-level English course
Measurable	Create a criteria for how to achieve a goal; to measure success in completing a long-range goal	How can I measure whether or not I achieve my goal? E.g. I want to get an A in my upper-level English course
Action-Oriented	Result-driven actions to be taken	What concrete results or skills will I have as a result of my time and energy?
Realistic	Strive for attainable goals, considering resources and constrains relative to the situation	Is the goal realistic?
Timely	Allow a reasonable time frame to complete each goal	When do I want to accomplish the goal by? E.g. I want to get an A in my upper-level English course by the end of the semester.

Remember that goal setting is a process, meaning that the priorities of the mentee can change and evolve. A skill that successful goal setters have is knowing when to change, or create new goals.

Appendix C

Setting goals at the beginning of the REX relationship is critical because it gives direction to the relationship and informs mentor in how to better support their mentee(s).

An Example Format of a Thank You Letter

Dear Mr./Ms./Dr._____,

First paragraph
Thank the mentor for meeting with you and for any activities they engaged in with you. Two to three sentences are sufficient.

Second paragraph
Mention two to three specific things that the mentor did that were helpful to your academic/ professional/personal development (e.g., provided information, shared experiences, gave you printed/online resources, referred you to a contact person).

Third paragraph
Final thank you. If you would like to explore the possibility of incorporating your mentor into your network, indicate your interest in staying in touch.
Note: You and your mentor are not obligated to remain in touch after the REX Program is over.

Sincerely,