

Guidelines for Summer Research Internship Program 2022 Faculty participants

Introduction

Summer Research Internship program 2022 provides successful candidates the opportunity to improve their analytical and technical skills in a highly substantial research environment. The internship program targets training undergraduate and graduate students by providing real-world experience-based training in research methods, and techniques. This year it also offers a new track titled an “outcomes-directed Intensive research program” with a novel concept of instilling a deep understanding of research methodology. This new track focuses on fostering students with enhanced research competencies and tangible outcomes.

QU Summer Research Internship 2022 tracks:

Track 1: Special call for outcomes directed Intensive research program:

This track is launched for the first time in QU to engage students in acquiring knowledge in research methodology and culminating the project with tangible outcomes in the form of a publication. This program invites STEM integrated multidisciplinary proposals from the faculty members who are willing to engage students with outcomes-directed research with targeted TRL/SRL measures. This track will witness participation of faculty from all QU colleges apart from the research centers including College of arts & science, College of Sharia and Islamic law and other colleges in QU. The students will initially undergo a compulsory 1-week research methodology course followed by 1-3 weeks of research experience projects and follow-up sessions to meet the outcomes requirement.

Benefits to professors

- Acknowledged for the multidisciplinary STEM integrated proposal concept
- **Special appreciation will be provided to the best faculty participants.**
- Meet the KPI and appraisal needs

Benefits to Students

- Research career exploration
- Professional development with scholarly outcomes
- Understanding the significance of real-world research and analysis
- Instilling the confidence and competences in research
- Competitive advantage in the job market

Track 2: Research & training focused:

This track offers research internships for 2 to 4 weeks by research faculty mentors in specialized domains of specific research areas. The students may choose any of the listed research topics, which will be published on the website. The topics will be published soon on the website. <https://www.qu.edu.qa/research/ysc/internship/internship-2022>.



Tracks session breakdown

Track 2 will be carried out according to the tasks and timeline set by the participating faculty, however, track 1 session breakdown is detailed hereafter.

Daily sessions would be at least two hrs. for both male and female batches, separately

- **Orientation Day**
- **Lesson 1: PRISMA flow diagram (how to perform systematic literature review)**
PRISMA flow diagram (systematic literature review) : The session will familiarize the students on identifying the right keywords for the database search. Also, the sessions will engage students in introducing Covidence, the concept of Grey Literature and how to identify and extract the most appropriate articles for literature review.
- **Lesson 2: How to identify the research problem and frame a research question?**
The students will learn the method of identifying a research problem and framing a research question.
- **Lesson 3: Data collection techniques**
The students will understand the aspects of sampling and data collection methods. They will also develop data collection instruments or tools and further also engage in systematically recording the respective results.
- **Lesson 4:How to perform data analysis?**
The students will develop understanding in data analysis techniques, data conversion and graphical representation techniques. They will also acknowledge the Qualitative & Quantitative analysis methods, moreover, understanding the process of selecting relevant data to address the research questions.
- **Lesson 5: Study on synthetic analysis & meta-analysis**
The students will be introduced to Meta analysis software in order to perform regression, correlation & comparison tests. Also, the students will develop Forests & Funnel graphs.

All the sessions will be hands-on training based with internship mentors from research centers.

Learning Outcomes:

Lesson 1: Students will develop basic understanding to performing systematic literature review

Lesson 2: Students will experience project-based learning and will be able to frame research questions independently

Lesson 3: Students will acquire knowledge of different data collection techniques through project-based practices.

Lesson 4: Students will recognize the different graph plotting software and enhance their data interpretation skills

Lesson 5: Students will acquaint themselves with different analytical tools and statistical tests to check the data reliability.

Week 2 – 4 courses break down: Research experiment sessions

- Only those research projects with specific TRL/SRL measures and that integrate STEM subjects according to the criteria, detailed in the later sections will be allowed to participate in this track.
- The students will perform research under the mentorship of the faculty in the chosen faculty projects **at QU labs.**

- The students will be monitored using different assessment tools to record their learning outcomes from the program
- The session breakdown of the research experiment sessions will not be subjected to any limitation, and **it completely depends on faculty research plan.**
- Students need to submit Poster presentations at QU Annual Research Forum and Exhibition

Application criteria:

Faculty mentors and students may select any of the tracks depending upon their choice. The detailed application criteria have already been published on the website.

However, faculty members participating in **Track 1** should ensure that the research proposal meets the following criteria:

- Applicants from STEM colleges will have to integrate STEM (science, technology, engineering, and mathematics) aspects in their proposals (refer Table 1 & Table 2).
- Applicants from non-STEM colleges will have to integrate either mathematics or technology part within their research proposal (refer Table 1 & Table 2).
- The internship proposal must offer research experience in real-world laboratories that culminate with outcomes with distinct TRLs/ SRLs (refer Table 2).
- The internship proposal also should reflect the scope for the participants to present the research outcomes:
 - Posters at the QU Annual Research Forum Exhibition
 - Oral at Qatar University 5th Youth Research forum 2023 titled “Higher Education Institutions - key drivers of the Sustainable Development Goals”
 - Research articles to be presented/published at any tier 1 international venue.

Table 1: Integration of STEM subjects and the expected weightage of each discipline

Colleges	Multi-disciplinary
STEM colleges	The proposal should cover Science, Technology, Engineering, & Mathematics disciplines
Non- STEM colleges	Either Mathematics/statistics/ ICT should be integrated in the proposal

Table 2: Expected TRL/ SRL measures for the participation from each QU college.

Colleges	Disciplinary weightage (%)	Expected TRL/ SRL
College of Arts & Science (CAS)/ College of education	Science – 30 Mathematics - 30 Engineering - 20 Technology - 20	TRL 2 - 3
College of Engineering, CENG	Science – 20 Mathematics - 20 Engineering - 30 Technology - 30	TRL 4 - 5
QU-Health	Science – 40 Mathematics - 20 Engineering - 20 Technology - 20	SRL- 3-4
Sharia / law/ business/social sciences	Mathematics-10 Technology-10	SRL- 2-3

Student assessment measures:

Students' experience for both tracks will be subjected to an assessment to compare the effectiveness of both tracks using the following data collection tools:

1. **Questionnaire and feedback forms (pre-post):** Students will be provided with pre-post questionnaires and feedback forms to assess the quality of the program as well as to monitor the progress of the students.
2. **Facilitators' observations:** The participant faculty will be required to note the student improvement during the research week
3. **Focus groups:** A focus group discussion will be held with the selected student participants and faculty members to perform a SWOT analysis of the program
4. **Interviews:** Interviews also will be conducted with the selected student participants and faculty members to assess the quality of the program as well as student improvement during the research week.

Application deadline:

- Research faculty will have to submit the proposal no later than 25th April 2022.
- Students may apply for the research internship program no later than May 12, 2022

Note: Kindly send the completed applications to the email id, RIP@qu.edu.qa