Workshop Plan: Celebrating a Century of Quantum

Executive Summary

This report outlines the plan for a 4-day Qiskit Fall Fest 2025 workshop, scheduled from October 14 to October 18, 2025, hosted by BracU's student-led team in collaboration with IBM Quantum. The event features a thematic focus on "Celebrating a Century of Quantum Computing," with offline and online sessions, a mini-hackathon using IBM's provided hackathon package, and renowned professor talks. Each session lasts 2 hours, starting at 5:00 PM BST, aiming to engage 50–100 STEM students, build quantum computing skills, and select 4–6 participants for MIT iQuHACK 2026.

1. Event Overview

- **Dates**: October 14–18, 2025.
- **Duration**: 2 hours per day (5:00 PM–7:00 PM BST).
- **Format**: Hybrid (offline at the university theatre room, online via Zoom for Day 3 and hackathon participation).
- **Participants**: Target 50–100 students from EEE, computer science, and robotics clubs.
- **Objective**: Celebrate the International Year of Quantum Science and Technology, teach Qiskit basics and quantum information, and identify top performers for MIT iQuHACK 2026 via a mini-hackathon.

2. What You'll Learn

By the end of the workshop, everyone should be able to:

- Get the basics of how quantum computing works (things like superposition and entanglement).
- Learn about quantum gates and how to build simple quantum circuits.
- Get hands-on with the **Qiskit** framework to write and run their own quantum code.
- Work together on a project for the mini-hackathon.
- See where quantum computing came from and where it's headed.

3. Who Should Come & What You Need

- **Who it's for:** This workshop is for undergraduate and graduate students in fields like physics, computer science, or engineering. Researchers just starting out or people from the industry who are curious about quantum are also welcome.

- **What you need:**
  - You should know a little bit of Python.
  - It helps to know some basic linear algebra (vectors and matrices).
  - You don't need any prior experience with quantum computing.
  - Please bring your own laptop for the hands-on parts.

4. Workshop Schedule

Theme: Celebrating a Century of Quantum **When:** October 14, 15, 16 & 18, 2025 **Time:** 5:00 PM - 7:00 PM BST Daily

Day 1: Kick-off and Inspiration (Tuesday, Oct 14th - In-Person)

- **5:00 PM - 5:15 PM:** Welcome and a quick intro to what we'll be doing.
- **5:15 PM - 6:15 PM:** Opening talk by a top professor from our university on the theme "Celebrating a Century of Quantum."
- **6:15 PM - 7:00 PM: Hackathon Kick-off.**
  - We'll announce the hackathon's theme and challenges.
  - We'll have a dedicated discord server for this.
  - We'll show you how to use the IBM platform and where to find resources.
  - We'll go over the rules and how projects will be judged.
  - Time to chat and form teams.

Day 2: Quantum Basics & Qiskit (Wednesday, Oct 15th - In-Person)

- **5:00 PM - 6:00 PM: Talk:** What is Quantum Information?
  - Covering the basics: qubits, superposition, and entanglement.
- **6:00 PM - 7:00 PM: Lab:** Getting Started with Qiskit.
  - We'll help you get your computer set up.
  - You'll create your first qubits.

Day 3: Building Quantum Circuits (Thursday, Oct 16th - Online)

- **5:00 PM - 6:00 PM: Talk & Lab:** Quantum Gates and Circuits.
  - We'll build more complex circuits and run them on a simulator.
- **6:00 PM - 7:00 PM:** Dedicated Q&A and support session for the hackathon.

Day Off (Friday, Oct 17th)

- No sessions scheduled. This day is for participants to focus on their hackathon projects.

Day 4: Final Talks & Hackathon Showcase (Saturday, Oct 18th - In-Person)

- **5:00 PM: Hackathon projects due.**
- **5:00 PM - 6:00 PM:** Closing talk by a renowned university professor.
- **6:00 PM - 6:45 PM: Hackathon Showcase.**
  - Announcing the winning teams.
  - Brief presentations from the top 3 projects.
- **6:45 PM - 7:00 PM:** Handing out certificates and a final thank you.

5. Mini-Hackathon Info

- **Platform:** We'll use the official IBM hackathon package. It has everything you need, including tutorials and access to IBM's quantum systems.
- **What we're looking for:**
  1. **Creative Ideas:** How original is the project?
  2. **Good Code:** Does it use quantum concepts correctly?
  3. **Impact:** Could this project make a real difference?
  4. **Clear Pitch:** How well is the project explained?
- **Prizes:** To be confirmed, but we'll be using things like certificates, university merch, or cool tech gadgets.