

Qiskit Hackathon at World of Quantum

June 24-25



Attendee Guide



About

Welcome to [Qiskit Hackathon at World of QUANTUM!](#)

We are excited to welcome you to our hackathon in Germany and to see what amazing projects you create.

Please read through this Attendee Guide to find answers about the structure, setup, agenda, and resources for the hackathon. A more detailed version that includes the challenge information will be shared at the event.

We'll see you at the Qiskit Hackathon at World of QUANTUM!

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Schedule



Training

June 12 @16:00 CET: Introduction to quantum computing with Qiskit [[Join here](#)]

24 June

Tuesday

- 11:00 Check-In at the Hackathon Space
- 12:00 Presentation of Topic
- 13:00 Opening Presentation on Stage
- 13:30 Start of the Hacking Phase in the Hackathon Space
- 18:30 Dinner
- 24:00 Midnight Snack

Snacks, drinks, and coffee will be available throughout the entire hackathon

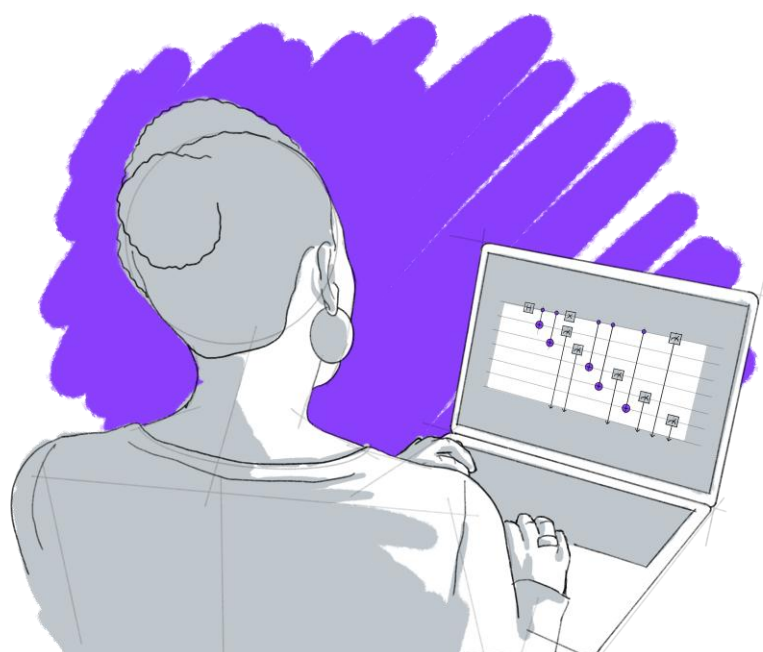
Between 20:00 (24 June) and 08:00 (25 June) you may ask questions in the Qiskit Slack Channel [#woq25-hackathon-support](#) for remote assistance. *Please allow a few days for approval to go through. Contact serena.godwin@ibm.com with further questions or concerns.*

25 June

Wednesday

- 08:00 Breakfast
- 12:00 Lunch
- 13:30 End of the Hacking Phase and start of the Judging Phase
- 15:00 – 16:25 *Optional* Presentations in the hackathon space
- 16:30 – 17:00 Closing Ceremony on main stage at World of QUANTUM

Note: Time zone is CET



Code of Conduct

The [Qiskit Hackathon at World of QUANTUM](#) is committed to maintaining the highest level of enjoyment, accessibility, and inclusivity by maintaining an environment of respect, empathy, and compassion for others. In order to support that, we ask that each attendee review the [Qiskit Community Code of Conduct](#) before the event, and be familiar with our community standards to join us in maintaining a safe and welcoming event for all.



What to bring

We recommend bringing the below to make the most of your hackathon experience:

- Laptop with charger
- Phone charger
- Germany electric adapter *if needed*
- Notebook and pen
- Comfortable clothing
 - Jumper/jacket as fair halls can be slightly cold
- Re-usable water bottle

Food and beverage

- Food and beverages will be provided by the organizers throughout the hackathon.
- Please refer to the Schedule on page 03 for expected mealtimes.
- Food restrictions have been taken into account, but we recommend you bring your own food items if you are concerned about the available offerings.

Staying overnight

- Hackathon attendees are welcome to stay overnight in the hackathon space if desired.
 - If you plan on staying overnight, we recommend you plan accordingly with any items you might need such as blankets, pillows, sleeping bag and personal toiletries.
- Your hackathon ticket also allows you to leave and enter the venue throughout the night if needed.
- A security guard will be monitoring the space throughout the night.



Hackathon Format and Projects

Full details on Hackathon format and projects can be found below.

Challenge Format

The challenge is to design and implement a qiskit transpiler pass to manipulate and improve a quantum circuit, taking real hardware into account.

Your transpiler pass should be compared to a “naive” approach of using the default transpiler for quantum states. What is important is not how fast your transpiler pass to runs, but how good the resulting circuit will be on an actual Quantum Device. This means the depth for a given hardware layout should be not be too big, and the error rate when running the circuit should be low and or the circuit should be well suited for error mitigation techniques.

The idea here is that it not only works for a single quantum state, but to write a transpiler pass which works at least for a class of states, or maybe even for all circuits.



List of Possible Ideas

Below is a selection of some some passes you can create, however, feel free to implement your own ideas if you think they are interesting.

Transpilation Stages

Routing
Optimization

High Level Synthesis

Optimization of entangled states
Removing dependant parameters

Error Suppression

Pauli Twirling
Dynamical Decoupling



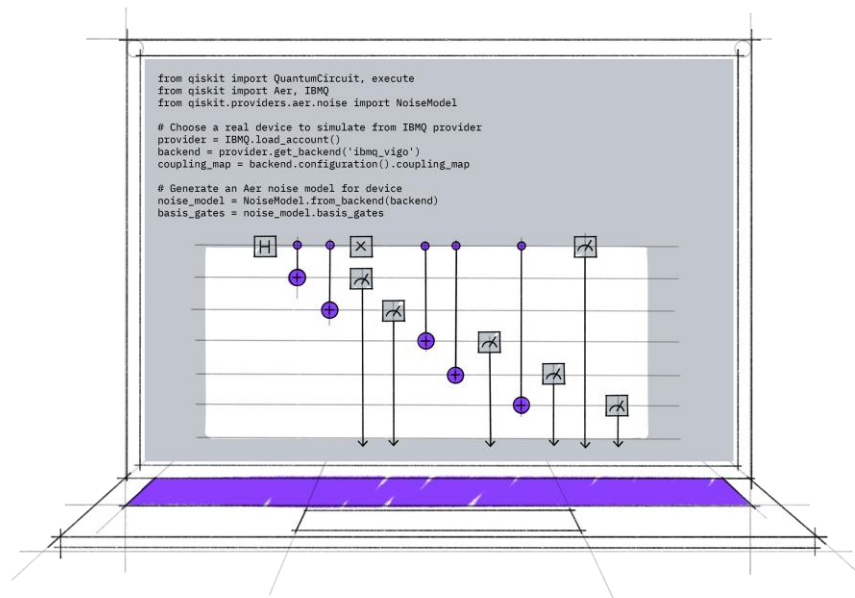
Project Submission

This is what you are required to submit in order to be eligible for the judging phase.

Jupyter Notebook

To make it easy for the judges we request you to submit a single Jupyter Notebook on a GitHub page containing all the content you want to be judged.

Exact components that need to be included in the notebook will be shared at the event.



Note: Your Jupyter Notebook must use Qiskit.

Teams can do an **optional** presentation to be eligible for a **Community Choice Award**.

Presentations will occur at 15:00 on 25 June and should be a maximum of 3 minutes/3 slides.

Awards and Prizes



First Place Winning Team

1st Place Certificate
2500€ for Team
Exclusive Quantum Swag

Selected by team of Judges



Community Choice Award

Qiskit Mug
Exclusive Stickers

Participants will choose a team based on an *optional* presentation



Active Participants

Quantum Swag

To recognize your hard work in the Hackathon



Judging Criteria

Below is the criteria our expert panel of judges will be using to select the top team.

Originality and Uniqueness (40%)

- The idea is original and shows promise over other possible implementations.
- There are no factual errors in the material.
- How general is the idea? Can it be applied to a wide variety of states?

Structure (30%)

- The Jupyter notebook is easy to understand.
- The structure of the notebook makes sense.
- It would be easy to modify the code.

Results (30%)

- You show clear improvements over a naive/simple implementation.
- Your results show improvements in theory and with noise (on the simulator).
- The results are taking real hardware into consideration.

Team Formation



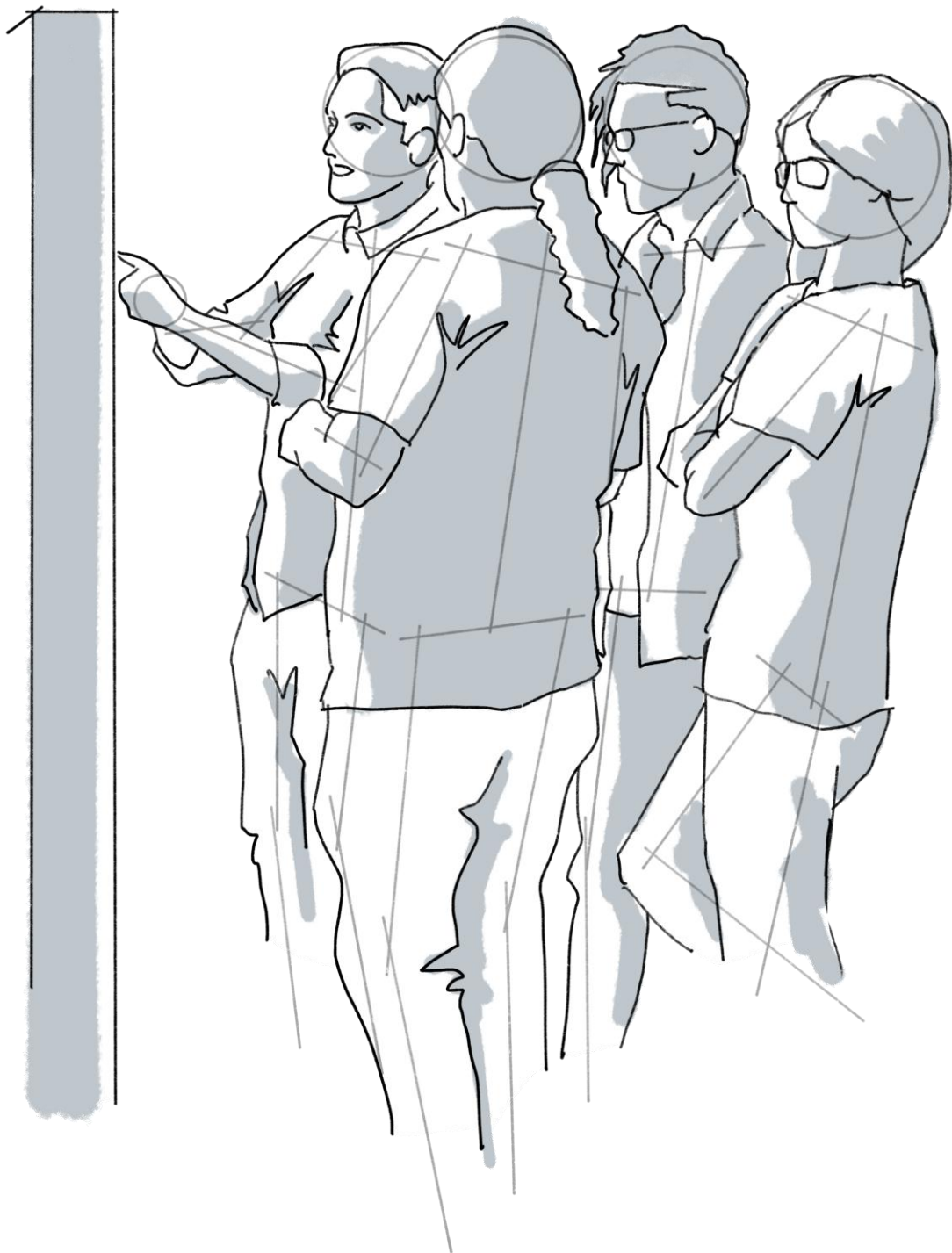
Team Formation

Once you've reviewed the challenge format, you should connect with other attendees to form a group!

Group up in teams of a minimum of 4 or maximum of 5 members.

If you are interested in a topic based on the challenge format, **write it on one of the boards** so that others can join your team.

Interested in joining a team? Check out the topics on the boards and **add your name to the topic post-it note** (please do not exceed 5 members).



Roles

To make it easier for you to organize your team, we have listed some roles which might be distributed among the team. This is a suggestion & is not required to be used.

Of course, it's still fundamental to discuss, brainstorm, and help the rest of the team, even if you use these roles.

Coder

Writes efficient Qiskit code implementing the theory

Mathematician

Comes up with formulas and theories.

Planner

Brings everything together, plans & has an overview of the lecture

Scientific Visualization

Makes illustrations/animations to help understand the idea and the improvements

Lector

Rewrites text to be easier to understand and better to follow



The Necessities

WIFI: Hackathon25

Password: Hacka!laser25

Install these software packages before the event:

- [Python 3.9](#) or later
- [Jupyter notebook](#)

For installing Qiskit, you can follow the instructions provided [here](#).

Qiskit Documentations:

<https://docs.quantum.ibm.com/guides/transpile>

Qiskit Resources

Top Qiskit resources for you to review:

- [Qiskit](#)
- [Documentation](#)
- [Qiskit tutorials](#)
- [Contributing to Qiskit](#) (required for code contributions!)
- [API](#)

Map of the Venue

Fairgrounds map 2025 June 24-27, 2025 | Trade Fair Center Messe München



- A2** Laser and optoelectronics, integrated photonics, optical information and communication
- A3** Laser and laser systems for production engineering, sensors, test and measurement, optical measurement systems, imaging
- B1** Optics, manufacturing technology for optics
- B2** Lasers and optoelectronics, biophotonics and medical engineering
- B3** Laser and laser systems for production engineering



- A1** Laser systems, subsystems and components for quantum technology, quantum computing and stimulation, quantum communication and cryptography, quantum sensing and quantum imaging



- B6** Industrial robots, drive technology, control systems technology and industrial communications, software and cloud computing, electrical engineering
- B5** Machine vision, sensor technology, industrial robots
- B4** Industrial robots (incl. collaborative, mobile), professional service robotics, start-ups
- A6** Assembly and handling technology, fluid technology
- A5** Assembly and handling technology, clamping and gripping technology, drive technology
- A4** Machine vision, safety components, industrial robots (incl. collaborative, mobile), professional service robotics



Stay connected!

- Join the dedicated event channel [#woq25-hackathon-support](#)
- Follow us on [LinkedIn](#)



If you have any questions, please reach **ask the mentors in-person** or **post in the** [#woq25-hackathon-support](#) Slack channel.