# Womanium Global Quantum Computing + Entrepreneurship Program

| | Quantum Training Program | | | | | Hackathon |
|---|---|---|---|---|---|---|
| **Dates** | July 10 - August 5, 2022<br>4 weeks, 2h/day | | | | | August 8 - 26<br>3 weeks |
| **Module** | Introduction to Quantum | Quantum Computers | Quantum Programming: QBronze | Quantum Programming: QSilver | Entre-preneurship & Career Opportunities | Hackathon |
| Contents | - Keynote "The Possibilities of Quantum Computing"<br>- Crash course Quantum Mechanics<br>- Intro to Quantum Computing<br>- The Quantum Ecosystem | - Intro to QC<br>- Control and readout of qubits<br>- Dilution Refrigerators<br>-Superconducting QC<br>- Trapped-ion QC<br>- Neutral-atom QC<br>- Photonic QC<br>- Quantum Annealing<br><br>**+ Lab tours!** | - Basics of a quantum program<br>- Quantum operators on a qubit<br>- Entanglement and basics of quantum protocols<br>- Quantum search algorithm: Grover | - Quantum States and Operators with Complex Numbers<br>- Global and local phase, Bloch sphere<br>- Quantum Fourier Transform<br>- Quantum phase estimation, order finding algorithm<br>- Shor's Algorithm | - Two career fairs<br>- Pitching & CV Training<br>-Entrepreneurs Panel<br>- Applications of QC<br>- Raising $$<br>- Startup mentoring | - Team up to solve a real-world problem!<br>- Hackathon challenges provided by industry<br>- Present your solutions on Demo Day |
| Level | ☆ | ☆☆ | ☆☆ | ☆☆☆ | | |
| Total Time | 5h | 12h | 16h | 18h | 10h | Variable |
| Certificate | | 🏆<br>After 3.5 weeks | 🏆<br>After 2 weeks | 🏆🏆<br>After 4 weeks | | 🏆🏆🏆<br>Completion of program |

# Quantum Training Program: July 10 - August 5, 2022

**Week 1: 11am - 1pm ET (UTC-4)** *Convert to your timezone here.*

| Sun \| July 10 | Mon \| July 11 | Tue \| July 12 | Wed \| July 13 | Thu \| July 14 | Fri \| July 15 | Sat \| July 16 |
|---|---|---|---|---|---|---|
| Kick-off by Womanium | Keynote "The Potential of Quantum Computing" *Strangeworks, whurley* | Crash course Quantum Mechanics *Science Melting Pot, Shaeema Zaman* | Introduction to Quantum Computing *MIT, William Oliver* | Technology Readiness Levels | Quantum Computing for Drug Discovery *POLARISqb, Shahar Keinan* | Talk "Quantum Games" *Google, Ricardo Olenewa*<br><br>Quantum Game Time<br><br>Happy Hour |
| Qiskit Installation *QWorld*<br><br>Happy Hour | Crash course Quantum Mechanics *Science Melting Pot, Shaeema Zaman* | | Classical systems and introduction to quantum systems *QWorld* | Basics of a Quantum Program *QWorld* | Control and Readout of Qubits *Keysight, Anushka Shrivastava* | |

**Week 2: 11am - 1pm ET (UTC-4)** *Convert to your timezone here.*

| Mon \| July 18 | Tue \| July 19 | Wed \| July 20 | Thu \| July 21 | Fri \| July 22 | Sat \| July 23 |
|---|---|---|---|---|---|
| Neutral-Atom Quantum Computing & Women in Quantum *Atom Computing, Denise Ruffner & Kristen Pudenz* | Cryogenic measurement systems - working at mK temperatures *Bluefors, Elina Potanina* | Virtual Lab Tour: Superconducting Quantum Computing *MIT, Shantanu Jha* | The Quantum Ecosystem Needs You *QED-C, Celia Merzbacher* | The Quantum Internet *Aliro Quantum, Prineha Narang* | Career Panel: Who is the Quantum Industry looking for? *Richard Murray (ORCA Computing), Kiera Peltz (Qubit by Qubit), Tina Brower-Thomas (Center for Integrated Quantum Materials) Moderated by Chris Bishop (Improvising Careers)* |
| Quantum Operators on a Qubit *QWorld* | Superconducting Quantum Computing *IBM, Daniela Bogorin* | Entanglement and basics of quantum protocols *QWorld* | Trapped-Ion Quantum Computing *Quantinuum, Caroline Figgatt* | Quantum Search Algorithm: Grover *QWorld* | |

Week 3: 11am - 1pm ET (UTC-4) *Convert to your timezone here.*

| Mon \| July 25 | Tue \| July 26 | Wed \| July 27 | Thu \| July 28 | Fri \| July 29 | Sat \| July 30 |
|---|---|---|---|---|---|
| Room-temperature diamond-based quantum computing<br>*Quantum Brilliance* | Virtual Lab Tour: Trapped-Ion Quantum Computing | Photonic Quantum Computing | Virtual Lab Tour: Photonic Quantum Computing<br>*QuiX Quantum, Caterina Taballione* | Entrepreneurship Panel: How to go from Idea to IPO?<br>*Yan Zheng (In-Q-Tel)*<br>*Russ Fein (Corporate Fuel Partners)*<br>*David Dorsey (11.2 Capital)*<br>*Bill Payne (Duality)*<br>*Dean Chang (UMD)* | Career Training:<br>- Pitching<br>- CV Preparation<br>- How to impress a recruiter<br>*QURECA, Araceli Venegas-Gomez*<br><br>Happy Hour |
| Quantum States and Operators with Complex Numbers<br>*QWorld* | Global and local phase, Bloch sphere<br>*QWorld* | | Quantum Fourier Transform<br>*QWorld* | | |

Week 4: 11am - 1pm ET (UTC-4) *Convert to your timezone here.*

| Mon \| Aug 1 | Tue \| Aug 2 | Wed \| Aug 3 | Thu \| Aug 4 | Fri \| Aug 5 |
|---|---|---|---|---|
| Career Fair<br><br>- Virtual Career Fair with *IQM, Bluefors, Quantum Brilliance, ORCA Computing, Riverlane, QuiX, QDevil* and more<br><br>- Keynote "Quantum Careers"<br>*Oxford Quantum Circuits, Ilana Wisby* | Virtual Lab Tour: Dilution Refrigerators<br>*Maybell Quantum* | Bridging academic and real-world problems<br>*Amazon, Helmut Katzgraber* | Post-quantum cryptography | Special Closing Session of Quantum Training Program |
| | Quantum Annealing<br>*D-Wave Systems, Alex Koszegi & Sara Ejtemaee* | Quantum phase estimation, order finding algorithm<br>*QWorld* | Shor's Algorithm<br>*QWorld* | |

# Quantum Hackathon: August 8 - 26, 2022

**Week 5-7: 11am - 1pm ET (UTC-4)** *Convert to your timezone here.*

| Aug 8 - Aug 24 | Fri \| Aug 12 | Thu \| Aug 25 | Fri \| Aug 26 | Stay tuned.. |
|---|---|---|---|---|
| Hackathon<br><br>*Solve a real-world challenge with your team!* | Quantum Entrepreneurs Panel<br>*Christopher Savoie (Zapata), Amir Naveh (Classiq), Jan Goetz (IQM), Corban Tillemann-Dick (Maybell), Yudong Cao (Zapata). Moderated by Ethan Hansen (Podcast "Quantum Now")* | Hackathon: Demo Day<br><br>*Present your solution to industry* | Career Fair<br><br>- Virtual Career Fair with *IBM, IonQ, Keysight, Atom Computing, Maybell Quantum, Strangeworks,* and more<br><br>- Keynote "Building a Quantum Network" *ChemicalQDevice, Kevin Kawchak*<br>>Ways to network and gain visibility in the quantum community | .. for special talks and lab tours during the hackathon! |