Global Quantum Mechanics Challenge

Information Flyer

Edition of 2026 · https://glqmc.org

What is GQMC?

Vision, Mission, and Values

Quantum mechanics is the branch of physics that describes the behaviour of matter and energy at the most fundamental level: governing the motion of electrons, photons, and atomic nuclei according to principles that have no counterpart in everyday experience. Its insights underpin technologies as diverse as semiconductors, lasers, MRI scanners, and quantum computers, and it connects fields ranging from chemistry and materials science to information theory and cosmology. Our society urgently needs talented physicists, researchers, and innovators to address global challenges including quantum computing, sustainable energy, advanced materials, medical diagnostics, and secure communications.

The Global Quantum Mechanics Challenge offers students a platform to challenge their analytical and problem-solving skills, explore diverse quantum mechanics concepts, and delve deeper into this fascinating discipline beyond the standard school curriculum. We believe that blending education with friendly competition can inspire students to develop a lasting passion for quantum mechanics, potentially leading to fulfilling careers in research, industry, education, or scientific innovation.

GQMC is accessible to all students from all countries. All you need is a pen, paper, and an internet connection to join!

What makes GQMC unique?

While competition is part of GQMC, our core mission is to foster genuine engagement with quantum mechanics, sparking curiosity and encouraging further exploration in this and related scientific fields. GQMC is a learning journey, enabled by diverse problem formats that enhance a student's understanding through practical application.

- **Internationality**: From the very first round, GQMC is a truly global event. All participants tackle the same challenges, ensuring fair assessment and fostering international connections.
- **Digital Accessibility**: We utilize the power of the internet to open participation to students everywhere, regardless of geographic location or school affiliation. While teacher guidance is beneficial, motivated individuals can participate independently from anywhere.
- **Diverse Quantum Mechanics Topics**: GQMC embraces the full scope of quantum mechanics. The competition covers a broad set of topics, including wave mechanics, quantum states and operators, angular momentum and spin, perturbation theory, atomic and molecu-

lar quantum mechanics, quantum statistical mechanics, quantum optics, solid-state physics, and quantum information and computing.

- **Real-World Research**: GQMC problems typically incorporate concepts from recently published research papers. This unique feature provides many participants with their first exposure to actual quantum mechanics research and current scientific discoveries.
- **Scaling Difficulty Levels**: Our problems are designed to engage both experienced quantum mechanics enthusiasts and those beginning to explore the subject beyond the classroom.
- **Online Tools for Educators**: A dedicated teacher interface allows for streamlined management of student submissions, results tracking, and certificate access.
- **Local Communities & Ambassadors**: Our Ambassador Program empowers motivated students to inspire peers, organize local events, and build vibrant communities centered around shared interests in quantum mechanics.

Who can participate?

Current high school and university students from all grades and countries are invited to participate. We have three age categories:

Junior	10th Grade and below (and < 16 years of age)
Youth	11th to 13th Grade (and < 19 years of age)
Senior	1st Year College/University and higher (or $\geq$ 19 years of age)

Students from all age categories will receive the same problems in all rounds. However, the number of problems required to advance differ based on your age group. To succeed, you'll need curiosity, analytical thinking, mathematical skills, and creativity. A reliable internet connection is necessary for participation and submission.

My age or grade changes after the submission deadline. Which group do I belong to?

Your grade/age on the day of the Qualification Round submission deadline determines your age group for the entire competition duration.

Do I have to be a student to participate?

Yes, participation is open to students currently enrolled in high school, college, or university. If you are in a transitional period (e.g., gap year between high school and university) and intend to begin university studies soon, you are also welcome to participate.

Why participate?

The Global Quantum Mechanics Challenge is foremost an educational initiative, enabling students to develop and demonstrate their analytical skills across a wide range of quantum mechanics challenges. To foster enthusiasm and friendly competition, participants also receive certificates and have the opportunity to earn awards, cash prizes, and international recognition.

Every participant receives a certificate acknowledging their effort. In the Final Round, exceptional performance is recognized with Bronze, Silver, or Gold Honours. The top students in each age category receive 1st, 2nd, and 3rd Prizes, while National Awards are presented to the highest-scoring participants from each country.

Senior Category

1st Prize	**250 USD**	Cash Prize, Special 1st Prize Certificate
2nd Prize	**175 USD**	Cash Prize, Special 2nd Prize Certificate
3rd Prize	**125 USD**	Cash Prize, Special 3rd Prize Certificate

Youth Category

1st Prize	**200 USD**	Cash Prize, Special 1st Prize Certificate
2nd Prize	**150 USD**	Cash Prize, Special 2nd Prize Certificate
3rd Prize	**100 USD**	Cash Prize, Special 3rd Prize Certificate

Junior Category

1st Prize	**175 USD**	Cash Prize, Special 1st Prize Certificate
2nd Prize	**125 USD**	Cash Prize, Special 2nd Prize Certificate
3rd Prize	**100 USD**	Cash Prize, Special 3rd Prize Certificate

We further honour the following achievements:

Additional Honours

National Awards	Special National Award Certificate
All Finalists	Participation Certificate with Bronze, Silver, or Gold Honour
All Participants	Official Participation Certificate

Who will receive National Awards?

Reflecting GQMC's global outlook, we recognize the top three participants from each country who achieve at least 50% of the total points in the Final Round. These students receive a National Award certificate, and a list of top national performers will be published on our website.

Awards for Ambassadors

Each year, we recognize the dedication and impact of our most active ambassadors with special awards:

- **Ambassador Award for Most Overall Participants** — Awarded to the ambassador who successfully encouraged the highest number of students to join GQMC.
- **Ambassador Award for Most Finalists** — Awarded to the ambassador whose guidance helped the most students reach the Final Round.
- **Ambassador Award for Excellent Encouragement** — Presented to ambassadors who demonstrate outstanding commitment within their communities.

Awards for Schools

In recognition of the vital role educators and institutions play in nurturing talent in quantum mechanics, GQMC presents three types of school awards (non-monetary):

- **School Award for Most Participants** — Awarded to the school with the highest number of registered participants.
- **School Award for Most Finalists** — Awarded to the school with the most participants qualifying for the Final Round.

- **School Awards for Excellence** — Presented to schools that demonstrate strong overall student performance.

How do schools participate to win these awards?

Schools automatically participate when students register using the school's name. Please ensure all students enter the school name accurately and consistently. We also encourage teachers from participating schools to register on our educator platform.

Further Achievements

Engaging in international competitions like GQMC contributes to personal growth and strengthens your academic profile.

Global Network: Successful participants and winners join the international GQMC network: a community of talented, motivated students from around the world.

Opportunities: The GQMC team curates and shares information about relevant international and regional opportunities, including internships, scholarships, research programs, and science events.

Regional Meetups & Events: The GQMC team will organize meetups, workshops, and study sessions in various regions.

Do I receive a hard copy of the certificate(s)?

Hard copies of certificates will be mailed to all 1st, 2nd, and 3rd Prize winners. All other participants will receive high-quality digital certificates (PDF) featuring permanent verification IDs, accessible via: https://glqmc.org/verify

Process and Rounds

The Global Quantum Mechanics Challenge is divided into three rounds: the Qualification Round, Semi-Final Round, and Final Round. Each round features unique challenges that test and deepen your understanding of quantum mechanics and problem-solving.

Qualification Round

The Qualification Round is the starting point of the competition. It includes five quantum mechanics problems (labeled A – E), designed to be accessible whilst spanning a range of quantum mechanics topics. Each problem is worth 5 points.

To qualify for the Semi-Final Round, participants must meet the following minimum scores:

15 points	17 points	20 points
Junior	Youth	Senior

All participants receive participation certificates. There are no fees or registration costs to participate in the Qualification Round.

Qualification Round Deadline

The submission deadline for the Qualification Round is **Sunday, 14 June 2026**, 23:59 UTC+0. This deadline is strictly enforced, so please plan accordingly.

Solution and Submission Information

Participants must prepare a solution document with written explanations for **all problems**. Participants may submit their solution document in one of two formats:

- Digitally typed solutions (recommended), using LaTeX or a standard word processor.
- Clear scans or photos of handwritten work. Multiple pages must be combined into one PDF.

It is essential that participants show their work clearly for all problems. Points are awarded for demonstrating correct reasoning and solution steps, even if the final answer is incorrect.

When you submit your solution, a participant account will be created automatically. You can access your account and submission using the credentials you set during the submission process: https://glqmc.org/login

Announcement of Results

Qualification Round results will be announced on Monday, 29 June 2026. Participants will be notified via email and through their online participant accounts at: https://glqmc.org/login

Semi-Final Round

Participants who successfully complete the Qualification Round are invited to the Semi-Final Round, which features more challenging and engaging problems.

This round consists of six problems, each varying in topic, difficulty, and points:

- **2 Foundational Problems** (4 points each): Building on core quantum mechanics concepts.
- **2 Advanced Problems** (6 points each): Addressing more complex scenarios.
- **2 Research Problems** (8 points each): Involving engagement with current research topics.

The maximum score is 36 points. To qualify for the Final Round, you must score at least:

16 points	20 points	24 points
Junior	Youth	Senior

Registration and Costs

Successful Qualification Round participants can register for the Semi-Final Round via their participant account (https://glqmc.org/login). We ask participants to contribute a registration cost of 12 EURfor the Semi-Final Round to help sustain GQMC at an international level. Financial aid options are available for students facing economic hardship.

Semi-Final Round Registration Deadline

The registration deadline for the Semi-Final round is Tuesday, 21 July 2026.

Qualified and registered participants will receive access to the Semi-Final Round problems via their online account on Friday, 24 July 2026. Participants then have four days, until Tuesday, 28 July 2026 (23:59 UTC+0), to work on the problems.

Announcement of Results

Semi-Final Round results will be announced on Monday, 10 August 2026 via email and the participant portal.

Can I participate only in the Qualification Round?

Yes, you can participate solely in the Qualification Round and receive your certificate. However, you would not proceed to the subsequent rounds or be eligible for finalist awards.

Final Round

Participants who excel in the Semi-Final Round qualify for the Final Round: a fast-paced online exam consisting of 30 multiple-choice questions.

The exam covers a range of quantum mechanics topics, drawing from concepts explored in the Qualification and Semi-Final Rounds. You will have 60 seconds to answer each question. Each question has four possible answers, with only one being correct. A correct answer earns 1 point, and there is no penalty for incorrect answers.

Final rankings, awards, and prizes are primarily determined by the Final Round score. In case of ties, scores from the Semi-Final (and potentially Qualification) Round will be used as tie-breakers.

Final Round Date

All Final Round exams will take place on Tuesday, 25 August 2026.

Final Round Supervision

Finalists take the exam through a secure online portal: `https://glqmc.org/exam`. The exam should be supervised by a teacher at the participant's school. Finalists must nominate a teacher who agrees to oversee the 20-minute exam session.

Alternatively, participants may choose to self-record their session. This would require capturing both screen and webcam activity according to provided guidelines.

Result Announcement

The final results of the competition, including winners and honors, will be announced on Monday, 31 August 2026.

Timetable and Deadlines

Please find the key dates for GQMC below. Note that all deadlines are at 23:59 UTC+0.

Qualification Round

Sunday, 14 June 2026	Submission Deadline
Monday, 29 June 2026	Announcement of Results

Semi-Final Round

Tuesday, 21 July 2026	Registration Deadline
Friday, 24 July 2026	Release of Problems
Tuesday, 28 July 2026	Submission Deadline
Monday, 10 August 2026	Announcement of Results

Final Round

Tuesday, 25 August 2026	Day of the Final Round Exam
Monday, 31 August 2026	Announcement of Results

Information for Teachers

Teachers, schools, and parents are encouraged to share GQMC as an extracurricular learning opportunity for students interested in quantum mechanics and scientific problem-solving. We provide dedicated tools and resources to help teachers integrate the competition into classroom settings.

Special School Awards

We recognize the vital role of schools and educators by offering special awards to institutions with high participation rates and exceptional student performance throughout the competition. (See Section 3.2 for details.)

Teacher Login and Resources

We invite teachers to register for access to the dedicated GQMC Teacher Portal (https://glqmc.org/teacher-login). This platform provides tools to:

- Track students' progress, view results, and download certificates.
- Oversee the supervision process for Final Round participants.
- Coordinate group registration payments for the Semi-Final Round, if needed.

Register as a teacher here: https://glqmc.org/teacher-registration

If you are interested in establishing an GQMC or quantum mechanics club at your school, integrating GQMC problems into your curriculum, or need promotional materials, please visit our website or contact us.

Ambassador Program

As a global competition, GQMC depends on passionate ambassadors to reach students across schools, cities, and countries. Ambassadors act as local representatives of GQMC, promoting the competition, helping organize activities, and fostering a community centered around quantum mechanics.

Requirements

Applicants must be at least 14 years old, have a genuine interest in quantum mechanics and science, and be willing to invest time in promoting GQMC within their community. Ambassador certificates are awarded to those who actively contribute.

Responsibilities and Benefits

Ambassadors take on meaningful tasks, including:

- Encouraging students and youth to participate in GQMC.
- Informing schools, technology clubs, and local organizations about the competition.
- Optionally organizing local events, workshops, or study groups.
- Serving as a local point of contact and ambassador of GQMC.

Benefits include operating under the GQMC name, gaining valuable organizational experience, and making a tangible impact. Official ambassadors receive access to a personal management page and an optional GQMC email address.

Possible ambassador activities include:

- Using social media to share GQMC updates and quantum mechanics content.
- Presenting GQMC to teachers, school administrators, or student clubs.
- Starting or supporting after-school quantum mechanics clubs.
- Organizing info sessions or problem-solving practice groups.

Special Awards for Ambassadors

Each year, we recognize outstanding ambassadors for their dedication and impact. (See Section 3.1 for details.)

Application Process

To become an official GQMC Ambassador, applicants must complete the online application form. The selection process consists of two stages:

1. Submit a CV or résumé along with a brief statement outlining motivation and plans for promoting GQMC.
2. Complete a short problem sheet and submit a motivational video.

Apply here: https://glqmc.org/application

Further Information

Submission Status Page

All registered participants receive access to a personal online account. Use this portal to manage your submissions, check your results, view performance reports, and download your certificates.

Access your account here: https://glqmc.org/status

Further Materials and Documents

Visit our official website for additional resources that can be used to promote the Global Quantum Mechanics Challenge:

- Information Flyers (like this one)
- GQMC Posters (Digital/Printable)
- Official GQMC Logos and Brand Assets

Newsletter and Notifications

Subscribe to GQMC notifications on our website to stay updated on competition deadlines, upcoming events, relevant quantum mechanics opportunities, and other important announcements.

Social Media Page

Follow us on social media for the latest updates, announcements, and engaging content related to GQMC and quantum mechanics education.

Find us at: www.facebook.com/ichcompetition

And Instagram: www.instagram.com/theichc

Contact and Questions

If you have questions, feedback, or experience any issues related to GQMC, please first consult our online FAQ section or contact your regional GQMC ambassador.

You can also reach out to the central GQMC team via email: info@glqmc.org

Organizers and Partners

The Global Quantum Mechanics Challenge is an independent initiative led by a dedicated team committed to advancing quantum mechanics education. Meet the full team online: https://glqmc.org/team

The main coordinators for this year's competition are:

- Subject Coordinator: Hamidur Rahman, coordinator@glqmc.org
- Program Coordinator: Fabian Schneider, team@glqmc.org
- Technical Coordinator: Dr. Rami Aly, coordinator@glqmc.org

We extend our sincere thanks to all coordinators, volunteers, and partners whose dedication makes the Global Quantum Mechanics Challenge possible for students around the world.