

2026

INTERNATIONAL WALISONGO SCIENCE COMPETITION (IWSC)

**“Innovative Minds, Sustainable Solutions: Advancing
Science, Information Technology, and Environmental
Technology for the Future”**



**FACULTY OF SCIENCE AND TECHNOLOGY
UIN WALISONGO SEMARANG**

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TECHNICAL GUIDE

INTERNATIONAL WALISONGO SCIENCE COMPETITION (IWSC)

**“Innovative Minds, Sustainable Solutions: Advancing Science, Information Technology,
and Environmental Technology for the Future”**



INTERNATIONAL WALISONGO SCIENCE COMPETITION (IWSC) COMMITTEE

FAKULTAS SAINS DAN TEKNOLOGI

UIN WALISONGO SEMARANG

2026

IMPLEMENTATION INSTRUCTIONS AND TECHNICAL INSTRUCTIONS
INTERNATIONAL WALISONGO SCIENCE COMPETITION 2026
FACULTY OF SCIENCE AND TECHNOLOGY
UIN WALISONGO SEMARANG
2026

A. NAME OF COMPETITION

The *International Walisongo Science Competition* (IWSC) 2026 is the name of this event.

B. BACKGROUND

The rapid advancement of science, information technology, and environmental technology in the era of globalization has become a crucial factor in addressing future challenges. Global issues such as climate change, environmental degradation, energy crises, and digital transformation require innovative and sustainable solutions developed by highly competent and creative human resources. Therefore, higher education institutions play a strategic role in fostering academic excellence, innovation, and competitiveness among students, enabling them to contribute meaningfully to society and the global scientific community.

As a higher education institution committed to the advancement of science and technology, the Faculty of Science and Technology of UIN Walisongo Semarang continuously strives to provide platforms that encourage students to develop their academic potential, research capabilities, and innovative thinking. One of these initiatives is the organization of the **International Walisongo Science Competition (IWSC) 2026**, an international-level scientific competition designed to bring together students from various universities and educational institutions around the world. The competition serves as a forum for participants to demonstrate their knowledge, exchange ideas, and develop innovative solutions to contemporary scientific and technological challenges.

With the theme **“Innovative Minds, Sustainable Solutions: Advancing Science, Information Technology, and Environmental Technology for the Future,”** IWSC 2026 aims to inspire young scholars to utilize scientific knowledge and technological innovation in creating sustainable solutions for global issues. The theme highlights the importance of integrating science, digital technology, and environmental technology to support sustainable development and improve the quality of life for future generations.

Through this competition, participants are encouraged to think critically, solve problems creatively, and develop innovations that can contribute to social, economic, and environmental sustainability.

Furthermore, IWSC 2026 serves as a strategic platform to strengthen academic culture and promote a spirit of healthy competition among students. By engaging in rigorous scientific challenges, participants will have opportunities to enhance their analytical skills, scientific reasoning, research competencies, and collaborative abilities. The competition also facilitates international networking and collaboration among students, researchers, academics, and institutions, thereby broadening participants' perspectives and fostering future partnerships in education, research, and innovation.

For the Faculty of Science and Technology of UIN Walisongo Semarang, the organization of IWSC 2026 represents a significant effort to improve academic achievement and scientific productivity within the faculty. Participation in international competitions has proven to motivate students to achieve higher academic standards, engage more actively in research activities, and develop innovative projects with real-world impact. In addition, the competition contributes to strengthening the faculty's reputation as a center of excellence in science, information technology, and environmental technology at both national and international levels.

Therefore, the **International Walisongo Science Competition (IWSC) 2026** is expected to become a prestigious international platform for nurturing talented young scientists, promoting innovation, and enhancing academic achievement. Through this event, the Faculty of Science and Technology of UIN Walisongo Semarang seeks to contribute to the development of future leaders who possess innovative minds, global perspectives, and a strong commitment to creating sustainable solutions for the challenges of tomorrow.

C. INTENTION AND PURPOSE

1. Intention of Activity

The **International Walisongo Science Competition (IWSC) 2026** is organized to foster a culture of academic excellence, innovation, and scientific competitiveness among students at national and international levels. Through this event, the Faculty of Science and Technology of UIN Walisongo Semarang aims to provide a platform for young scholars to showcase their talents, exchange knowledge, and develop innovative

solutions to global challenges in science, information technology, and environmental technology.

Furthermore, IWSC 2026 is intended to strengthen international academic collaboration, encourage interdisciplinary learning, and inspire participants to contribute to sustainable development through research and innovation. The competition also serves as a strategic initiative to enhance the academic reputation and global engagement of the Faculty of Science and Technology, UIN Walisongo Semarang.

2. Purpose of Activity

- a) **To promote academic excellence** by encouraging students to deepen their knowledge and competencies in science, information technology, and environmental technology.
- b) **To stimulate innovation and creativity** among participants in developing sustainable solutions to current and future global challenges.
- c) **To enhance critical thinking, problem-solving, and analytical skills** through scientific and technology-based competitions.
- d) **To provide an international platform** for students to present their ideas, research findings, and innovative projects to a broader audience.
- e) **To strengthen collaboration and networking** among students, educators, researchers, and institutions from different countries and academic backgrounds.
- f) **To foster awareness of sustainable development issues** and encourage the application of science and technology in addressing environmental and societal challenges.
- g) **To improve academic achievements and research productivity** of students within the Faculty of Science and Technology, UIN Walisongo Semarang.
- h) **To identify and nurture talented young scientists and innovators** who have the potential to become future leaders in science, technology, and environmental sustainability.
- i) **To support the internationalization agenda of UIN Walisongo Semarang** through academic engagement and global scientific collaboration.
- j) **To contribute to the achievement of the Sustainable Development Goals (SDGs)** by promoting innovative and sustainable solutions through science and technology-based initiatives.

D. THEME

The theme of this competition is “Innovative Minds, Sustainable Solutions: Advancing Science, Information Technology, and Environmental Technology for the Future.”

E. FORM ACTIVITY

IWSC activities consist of Olympiads in the field of Natural Science and Scientific Papers in the field of technology.

➤ For Natural Science with 4 categories:	➤ For Scientific Papers with 2 categories:
1. Mathematics Olympiad category 2. Physics Olympiad category 3. Chemistry Olympiad category 4. Biology Olympiad category.	1. Innovation start-up category in the Information Technology 2. Innovation category in Environmental Engineering

F. TIME OF IMPLEMENTATION

There are three stages in this competition, namely the preliminary elimination stage, semifinal stage, and final stage. Details of activities as shown in the table below.

Timeline	Date
RegISTRATION OPENED	18 May – 30 June 2026
Administrative Selection	9 July 2026
Administration Announcement	10 July 2026
Simulation/Paper Submission	13 July 2026
Elimination Round (CBT)	14 July 2026
Semifinalist Announcement	17 July 2026
Video Project Submission	20-23 July 2026
Semifinalist Assessment	24 July 2026
Finalist Announcement	27 July 2026
Video Like Collection Time	27 – 30 July 2026
Technical Meeting	30 July 2026
Final Round	1 August 2026

**G. COMPETITION MECHANISM (SELECTION) IN NATURAL SCIENCE
COMPETITION**

1. Participants register online through the website address <http://iwsc.walisongo.ac.id> from May 18th – June 30th 2026.
2. The committee conducts administrative selection on July 9th 2026.
3. The committee announces participants who pass the administrative selection through the website <http://iwsc.walisongo.ac.id> on July 10th 2026.
4. Participants take part in the elimination stage with a total of 40 multiple choice question within 90 minutes via the website <http://iwsc.walisongo.ac.id> on July 14th 2026. Before the test, participant have to join CBT simulation on July 13th 2026.
5. Participants with top 10 scores on each competition category eligible to compete in the semifinal round and announce of semifinalists at July 17th 2026.
6. Semifinalists must send a science project video with the maximum duration of 15 minutes as part of the semifinal assessment process through the website <http://iwsc.walisongo.ac.id> from 20 – 23 July 2026.
7. Semifinalists are disqualified if they do not submit video projects.
8. The committee will post the semifinalists' video to the IWSC YouTube account.
9. Evaluation of the video by the internal jury will be held on July 24th, 2026.
10. Semifinalist ranking 1 to 6 in each competition category eligible to compete in final round and will be announced on July 27th 2026 on the website: <http://iwsc.walisongo.ac.id>.
11. Semifinalist rank 7 to 10 will get bronze medals.
12. Participants who have passed the final round must attend the technical meeting (TM) on July 30th 2026 and take part in the final round on August 1st 2026.
13. In the final stages, the finalist will present the video content of the video for a maximum of 7 minutes, then each jury conducts a question-and-answer session on the finalists for a maximum of 10 minutes.
14. The jury determines the participants in the first to six place from each competition category.
15. The most favorite video among the ten semifinalists will be selected based on the number of likes (♥) on the IWSC YouTube channel and completion of the form,

available from July 27th 2026 at 12.00 (UTC+7) and closing on July 30th 2026 at 12:00 (UTC+7).

H. COMPETITION MECHANISM (SELECTION) IN SCIENTIFIC PAPER

1. Participants register online through the website address <http://iwsc.walisongo.ac.id> from May 18th – June 30th 2026.
2. The number of group members participating is 1-4 students.
3. The committee conducts administrative selection on July 9th 2026.
4. The committee announces participants who pass the administrative selection through the website <http://iwsc.walisongo.ac.id> on July 10th 2026.
5. Participants upload a scientific paper on the topic of start-up innovation in Information Technology and Environmental Engineering to the website <http://iwsc.walisongo.ac.id>, no later than 13 July, 2026 at 23.59. The paper must be prepared according to the rules of scientific writing, at least containing an introduction, literature review/previous works, methods, results and discussion, conclusions, and references. The paper will be assessed by a panel of judges.
6. Participants with top 10 scores are eligible to compete in the semifinal round and semifinalists are announced on July 17th 2026.
7. Semifinalist must send a project video related to the scientific paper with the maximum duration of 15 minutes as part of the semifinal assessment process through the website <http://iwsc.walisongo.ac.id> from 20-23 July 2026.
8. Semifinalists are disqualified if they do not submit video projects.
9. The committee will post the semifinalists' video to the IWSC YouTube account.
10. Evaluation of the video by the internal jury will be held on July 24th, 2026.
11. Semifinalist ranking 1 to 6 in each competition category eligible to compete in final round and will be announced on July 27th 2026 on the website: <http://iwsc.walisongo.ac.id>.
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14. In the final stages, the finalist will present the video content of the video for a maximum of 7 minutes, then each jury conducts a question-and-answer session on the finalists for a maximum of 10 minutes.

15. The jury determines the participants in the first to six place from each competition category.
16. The most favorite video among the ten semifinalists will be selected based on the number of likes (♥) on the IWSC YouTube channel and completion of the form, available from July 27th 2026 at 12.00 (UTC+7) and closing on July 30th 2026 at 12:00 (UTC+7).

I. PARTICIPANT REQUIREMENTS

The requirements for participating in this competition are as follows:

1. All participants are active students at the Undergraduate or D3/D4 (vocational) level as shown by a scan of a valid Student Identity Card from their university.
2. Students get a recommendation from campus at least at the study program level.
3. If any fraud is found by the committee, either before, during, or after the competition takes place, the participant will be disqualified.

J. SCOPE IN NATURAL SCIENCE OLYMPIADS

Category	Main topics	Sub-topics
Mathematics	Abstract Algebra	1) Group Theory (Group, Subgroup, Group Homomorphism, Quotient Group) 2) Ring Theory (Ring, Subring, Ideal, Ring Homomorphism, Quotient Ring, Euclidean Domain, Principal Ideal Domain, Unique Factorization Domain, Polynomial Ring)
	Linear Algebra	1) Linear Equation System 2) Vector Space (Subspace, Bases and Dimension) 3) Linear Transformation (Kernel, Image, Rank, Change of Bases, Similarity of Matrices)

		4) Quotient Spaces, Dual Bases, Annihilator
	Combinatorics and Discreet Mathematics	1) Fundamental Principle of Counting (Rule of Sum, Rule of Product, Permutation, Combination) 2) Properties of Integers 3) The Principle of Inclusion-Exclusion 4) Pigeon Hole Principle 5) Generating Functions 6) Recurrence Relations 7) Graph Theory
	Differential Equations	1) First-Order Differential Equation (Separable, Homogeneous, Exact, Linear, Bernoulli) 2) Second-Order Linear Homogeneous Differential Equations with Constant Coefficients 3) nth-Order Linear Homogeneous Differential Equations with Constant Coefficients 4) Laplace Transform
	Calculus	1) The Number Systems 2) Functions 3) Limits 4) Continuity 5) Derivatives 6) Integrals 7) Sequences 8) Series 9) Vector-valued Functions 10) Multivariable Functions 11) Partial Derivatives

		12) Multiple and Triple Integrals
	Real Analysis	1) Real Numbers Syatem 2) Sequences and Series 3) Limit of Functions 4) Continuity 5) Derivative 6) The Riemann Integral 7) Sequence of Functions 8) Metric Space
	Statistical Mathematics	1) Analyzing Categoric Data 2) Dispalying and Comparing Quantitative Data 3) Modeling Data Distributions 4) Probability 5) Counting, Permutations, and Combinations 6) Sampling Distributions 7) Significance Test (Hypothesis Testing) 8) Convidence Intervals 9) Linear Regretions
	Complex Analysis	1) Complex Numbers System 2) Topology on Complex Numbers System 3) Analytic Functions 4) Elementary Functions 5) Complex Integral 6) Series 7) Residues and Poles
Physics	Mechanics	1) Kinematics 2) Statics 3) Dynamics

		4) Celestial mechanics 5) Hydrodynamics
	Electromagnetic Fields	1) Maxwell's equations 2) Interaction of matter with electric and magnetic fields 3) Circuits
	Oscillation and Waves	1) Oscillator 2) Waves 3) Interference and diffraction 4) Interaction of electromagnetic waves with matter 5) Geometrical optics and photometry
	Relativity	1) Principle of Relativity and Lorentz transformation 2) Relativistic equation of motion
	Quantum Physics	1) Probability waves Structure of matter
	Thermodynamics	1) Classical thermodynamics 2) Heat transfer and phase transition 3) Statistical Physics
Chemistry	Anorganic Chemistry	1) Atomic structure and molecular structure 2) Solid state chemistry, metallic and ionic crystal structure, lattice energy, molecular symmetry, molecular orbital theory 3) Electronic configuration, trend of periodic table 4) Stoichiometry, block s, p, and d 5) Coordination chemistry
	Physicals Chemistry	1) Chemical and phase equilibrium, liquid, and colloids 2) Kinetics of chemical reaction

		3) Thermodynamic 4) Hydrogen atom, quantum number, term symbol, schrodinger equation 5) Orbital configuration, diatomic molecule, bond order, Huckel theory, and atomic and molecular spectroscopy (rotation, vibration, dan electronic)
	Organic Chemistry and Biochemistry	1) Functional groups and stereochemistry 2) Reactivity and reaction mechanism of organic compounds, structure elucidation of organic compounds, and synthesis of organic compounds 3) Macromolecules, polymer, enzymatic reaction, and bioteknology
	Analytical Chemistry and Environmental Chemistry	1) Qualitative analysis of cations and anions: general reaction (K_{sp}, buffer pH, hidrolisis, salt hydrolysis, complex equilibrium, redox), identification of cations and anions. 2) Quantitative analysis: volumetry (acid base titration, complexometric titration, argentometry titration, oxidimetric/reductive titration), gravimetry, dan electrometry (potensiometry; voltammetry; amperometry). 3) Chemical separation: extraction, distillation, electrochemistry

		4) Instrumental analysis: spectrophotometry UV-Vis, AAS, FT-IR, XRD, NMR, MS), chromatography (HPLC dan GC/GC/MS). 5) Proximate analysis. 6) Chemometry. 7) Environmental chemistry: <i>green chemistry</i>, current issue.
Biology	Cell biology	1) Structure and function of cells • Chemical components • Organelles • Cell metabolism • Protein synthesis • Transport through membranes • Mitosis and meiosis 2) Microbiology • Prokaryotic cell organization • Morphology • Phototrophy and chemotrophy 3) Biotechnology • Fermentation • Genetic manipulation of organisms
	Plant anatomy and physiology	Structure and function of tissues and organs involved in: 1) Photosynthesis, transpiration and gas exchange 2) Transport of water, minerals and assimilate 3) Growth and development 4) Reproduction (ferns and mosses included)

	Animal anatomy and physiology	Structure and function of organs and tissues involved in 1) Digestion and nutrition 2) Respiration 3) Circulation 4) Excretion 5) Regulation (neural and hormonal) 6) Reproduction and development 7) Immunity
	Ethology	1) Methodology of Ethology 2) Innate and Learned Behaviour 3) Communication and Social Organization 4) Foraging Behaviour
	Genetics and Evolution	1) Variation : mutation and modification 2) Multiple allelism, recombination, sex linkage 3) Mechanism of evolution
	Ecology	1) Individual Organisms 2) Population 3) Biotic Communities 4) Ecosystems 5) Biosphere and man
	Biosystematics	Structure and function, evolutionary and ecological relationships among typical organisms in the following groups.
Environmental Engineering	Environment	1) Wastewater Treatment 2) Water Treatment 3) Hazardous & Solid Waste Treatment 4) Air Pollution Control
Information Technology	Information Technology	Start-Up Innovation for Information Technology

K. ASSESMENT IN NATURAL SCIENCE OLYMPIAD

The scoring mechanism for this competition is as follows:

1. In the elimination stage: correct answer (+4), incorrect answer (-1), and no answer (0).
2. In the final stage, the percentage of the video science project assessment is 40% and the presentation score is 60%.

**L. SCIENTIFIC PAPERS : INNOVATION IN ENVIRONMENTAL ENGINEERING
AND START-UP INNOVATION OF INFORMATION TECHNOLOGY**

1. Purpose

- To encourage and stimulate interest in undergraduate research in environmental engineering subject and information technology
- To provide an opportunity for undergraduate students to organize and present their original research through oral presentations

2. Competition Descriptions and Specific Guidelines

- Abstracts must not exceed five hundred (500) words in length, and should include the study objective, methodology, results, and significance and implications of results. At least five (5) pertinent references must be included. References are not included in the word count and must follow APA style.
- Two versions of the abstract must be submitted. One must include the paper title, as well as the name and address of the author. The second must only include the paper title, do not put your name on the abstract itself or within its file name.

3. Judging of Abstracts

Abstracts will be judged based on the criteria below.

Abstract judging criteria	Points
Adherence to rules of competition	5
Presentation of research importance and relevance	20
Explanation of objectives and background	15
Presentation and explanation of experimental methodology	15

Presentation and explanation of results	15
Explanation and soundness of conclusions	15
Professionalism, organization, and style	15
Total	100

4. Oral Presentation

Finalists will present their research during the IWSC 2026. The presentation is limited to ten (10) minutes per speaker, plus and additional five (5) minutes to answer questions from judges. The presentation should outline the scope of the research, study methodology and design, results, and significance of the results, and will be judged based on the criteria below. Presentation aids such as PowerPoint slides may be used during the presentation so long as they fulfill the content guidelines and the time limit.

Oral presentation judging criteria	Points
Presentation and explanation of research importance, relevance, and significance	10
Presentation and explanation of research methodology, results, and conclusions	15
Professionalism and scholarship of presentation	15
Ability to answer judges' questions	10
Total	50

M. JUDGES

Each competition category has three judges with the following details:

1. One lecturer or practioner from foreign universities or institution from abroad
2. One lecturer or practioner from universities or institution outside UIN Walisongo Semarang
3. One lecturer from UIN Walisongo Semarang

N. WINNER AWARDS

1. The first to third highest score will get a gold medal, certificate, and a coaching fund prize.
2. The fourth to six highest score will get a silver medal and certificate.
3. Bronze medals and certificates are awarded to semifinalists who do not go to the final round.

O. REGISTRATION FEE PAYMENT PROCEDURE

All participants who register for the International Walisongo Science Competition (IWSC) 2026 are required to complete the payment of the registration fee through a bank transfer. The technical details of the payment are as follows:

Bank Name	Bank Syariah Nasional (BSN)
Branch	Syariah Semarang
Account Number	7141003120
Account Name	RPL 134 BLU UIN WS UTK DK 1
Registration Fee	IDR 100.000

Transfer Description:

[Full Name] – [Institution] – [Competition Category] (Example: Ahmad Zain – UIN Walisongo – Physics Olympiad)

After completing the transfer, participants are required to upload the payment proof during the registration process on the official IWSC website at <http://iwsc.walisongo.ac.id>.



Please ensure that the name and category match the data used during registration to avoid any administrative issues.

P. SECRETARIAT

Office : Faculty of Science and Technology UIN Walisongo Semarang
Jl. Prof. Dr. Hamka KM.2 Semarang Telp.024 76433366

Contact Person : Participant **outside Indonesia** : **Ayus Riana** (+62 813 2958 0263)
Participants from **Indonesia** : **Muji Suwarno** (+62 8967 2428 585)

Website : <http://iwsc.walisongo.ac.id>

Email : i_wsc@walisongo.ac.id

IG & TikTok : @international_wsc

YouTube : International Walisongo Science Competition

Q. CLOSING

The success of holding the International Walisongo Science Competition (IWSC) in 2026 is determined by all elements with an interest in carrying out selection activities in an orderly, orderly, disciplined, and high sense of responsibility.

By understanding these guidelines, it is hoped that the committee and all related parties can carry out their duties as well as possible, so as to achieve optimal results. Recognizing that there are still many shortcomings in this guide, we expect criticism and suggestions as input for the implementation of the selection in the coming years. Hopefully this guideline can be used as a reference so that this selection activity can be carried out properly, effectively, and efficiently.

IWSC Chief Committee

Agus Wayan Yulianto, M.Sc

STATEMENT OF ORIGINALITY

The undersigned below:

Full Name of Team Leader :
Student Identification Number :
Study Program :
University/Institution :
Team Name :
Phone Number/Mobile :
Email :

Team Members:

Full Name of Member 1 :
Student Identification Number :
Full Name of Member 2 :
Student Identification Number :

Supervising Lecturer:

Full Name :
Lecturer ID (NIP/NIDN) :
Phone Number/Mobile :
Email :

Hereby declare that the written work entitled:

"TITLE OF WRITTEN WORK"

Submitted to the International Walisongo Science Competition 2026 is genuinely the original work of our team and has never been published or entered in any other competition previously.

We guarantee that this work is:

1. Free from all forms of plagiarism and infringement of others' copyrights.
2. Not currently or intended to be submitted to similar competitions at other institutions or events during the selection process of the International Walisongo Science Competition 2026.
3. All sources of information, data, or references used in this work have been cited in accordance with applicable scientific writing standards.

If evidence of violation of this statement is found at a later date, we are prepared to accept the consequences and sanctions, including disqualification from the competition.

This statement is made truthfully and with full responsibility for use as necessary.

City, date month year

Supervising Lecturer,

Team Leader,

(Revenue Stamp Rp10,000)

Full Name of Supervising Lecturer

Full Name of Team Leader

NIP/NIDN.

NIM.