




UP ALCHEMES
RESEARCH
FAIR  **2024**

H A N D B O O K



PERSPICAX

Unleashing the Scientific
Prowess of the Filipino Youth

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SUMMARY NOTES



A. Eligibility Guidelines

Participants must meet certain requirements in order to participate in any sub-event.

Sub-event	TABLE HEADER
Research Competition (RC)	
National Science Conquest (NSC)	Bonafide high school student
Youth Science Convention (YSC)	

B. Submissions and Deadlines

- All forms may be accessed at the Research Fair website.
- All submissions must be filled out completely and correctly following the sample format.
- All required attachments must be included following the file name format and file type.
- A response from the organizers will be sent to confirm the submission. Late submissions will not be entertained.

1. Research Competition

- A school may send a maximum of three (3) research entries per category for the Journal Entry Round. Out of the entries submitted for the Journal Entry Round, only the top 15 research entries per category would be able to participate in the Exhibit Presentation, which constitutes the face-to-face component of the stage, wherein the research's poster would be presented to a panel of at most (4) judges who are experts in the field pertaining to the poster's category. Of the 15 entries, only the Top 6 entries per category would proceed to the Closed-Door Defense Round. Ties would be broken by the Journal Entry Round score garnered by each of the teams.
- Continuing projects shall be accepted provided that it shows substantial progress from its previous project.
- Resubmission of research entries will not be allowed. However, researches conducted from **SY 2022-2023** to present are allowed as long



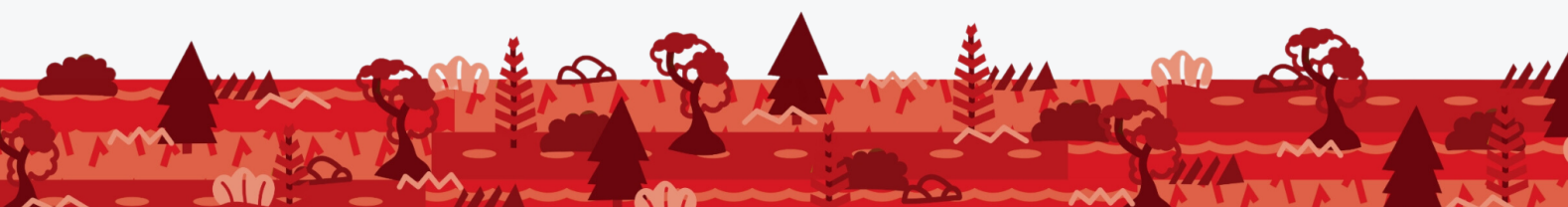
as it was not submitted as an entry to the previous Research Fairs, and the students remain bona fide high school students.

2. National Science Conquest

- Only the first fifty (50) teams to submit their registration forms will be accommodated.
- A school may send up to three (3) teams for the National Science Conquest composed of 3 members each.
- Each team may opt to have an alternate or a 4th member for the Final Round.
- In case a registered participant fails to be present on the competition date due to valid reasons (sickness, death in the immediate family, etc.), a substitute from the same school will be allowed to compete, provided that:
 - The replacement satisfies the eligibility guideline.
 - A document validating the excuse is to be submitted three (3) days before the first day for Research Fair 2024.
 - No replacements shall be allowed thereafter. Failure to comply with the provisions will result in the team competing with less members.
 - The registered alternate may replace a main team member without submitting a document of excuse.

3. Youth Science Convention

- Only the first 150 students to submit their registration forms will be accommodated. Only fifteen (15) participants (excluding the adviser) per school will be allowed to join. In case the 150 slots are not filled by December 15, 2023, the organizers shall accept more participants from schools on a first come, first served basis.
- Each school may send up to two (2) groups (three (3) members each group) for the case study competition. Only the participants registered to attend the talks may participate in the case study competition.



Sub-event	Deadline		Requirements
ALL	To be submitted along the registration form.		<ul style="list-style-type: none"> o Scanned copy of proof of enrollment
RC: Journal Entry Round	December 8, 2023	11:59 PM	<ul style="list-style-type: none"> o Extended Abstract o OPTIONAL: Journal-type Research Paper
RC: Exhibit, Closed Door Defense, and Final Defense	December 18, 2023	11:59 PM	<ul style="list-style-type: none"> o Soft Copy of Poster o PowerPoint Presentation o Backup PDF Presentation
YSC: Case Study Phase I	December 15, 2023	11:59 PM	<ul style="list-style-type: none"> o Soft copy of Case Study paper o Digital Poster
YSC: Case Study Phase II	January 26, 2024	11:59 PM	<ul style="list-style-type: none"> o PowerPoint Presentation o Backup PDF Presentation

C. Reminders and Sanctions

a. General

1. Incomplete Proof of Enrollment (PoE)
 - o A student lacking a submitted copy of his or her Proof of Enrollment, through the registration form online, three (3) days before the event will not be allowed to join.
2. Walk-ins
 - o Walk-ins are allowed for YSC Talks. For participant substitution, kindly contact us through the contact details in Section H.
3. The organizers reserve the right to change rules/mechanics if deemed necessary. Rest assured that any changes would be in favor of the participants. Participants will be notified regarding the matter.

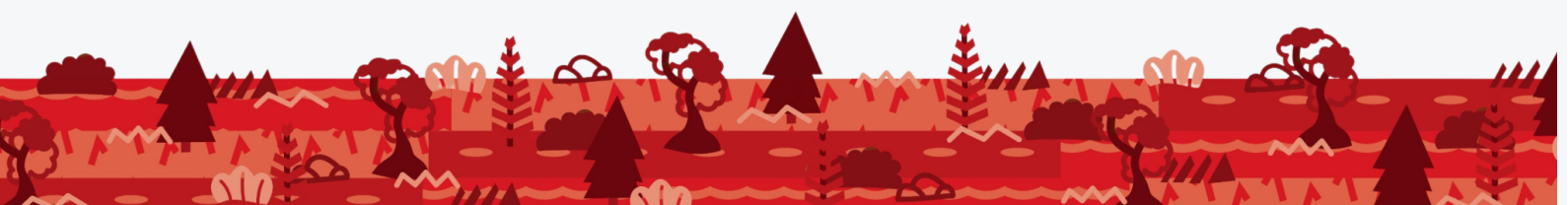


b. RC

1. Incorrect file name and format
 - o 1% will be deducted from the overall score in the Research Competition for every incorrect file name and format.
 - o 1% will be deducted for papers that exceed the page limit or do not follow the specified guidelines.
2. Late submissions
 - o 2% will be deducted from the Journal Entry Round score per day of late submission. Entries sent more than one week after the deadline will not be accepted.
3. Plagiarism
 - o Deductions will be proportional to the amount of plagiarized content in the paper. A similarity score will be decided for each research entry through a plagiarism checker. Entries garnering a similarity score greater than 10% will receive a deduction equal to the similarity score less 10%.
4. Exhibit Stage
 - o 5% will be deducted should the team occupy more than the provided space for their setup.
 - o Non-compliance to the guidelines would automatically result in disqualification.
5. Closed Door Defense
 - o 5% will be deducted for incomplete teams upon holding room attendance checks prior and after the event. A total of 10% deductions could be incurred should team members be incomplete at both.
 - o 2% will be deducted for presentations exceeding the time limit provided per minute, or a fraction thereof, from the total CDD score.
6. Final Defense
 - o If it's the team's turn and at least one of them is missing, they will be given two (2) minutes to complete themselves. Failure to do so will result in a deduction of 2% per minute (or a fraction thereof) to their final defense score. Same rules apply to individual research.
 - o 2% will be deducted for presentations exceeding the time limit provided per minute, or a fraction thereof, from the total FD score.

c. YSC (Case Study Competition)

1. Incorrect file name and format
 - o 1% will be deducted from the overall score (either of Phase I or Phase II, whichever is appropriate) for every incorrect file name, format and for every 150 exceeding words.
2. Presentation overtime (Phase II)
 - 2% will be deducted from the overall score per minute excess of the presentation. Strictly 10 minutes will only be the allotted time per team.



3. Powerpoint presentation changes (Phase II)
 - 1% will be deducted from the overall score for every change made in the PowerPoint Presentation, relative to the one which will be presented on the competition day.
4. Missed Workshop
 - Team/s who fail to attend the workshop before the Case Study showcase will be automatically disqualified.
5. Late submissions
 - 2% will be deducted from the Phase I overall score per day of late submission. Phase I entries sent more than five (5) days after the deadline will not be accepted.
 - 0.75% will be deducted from the Phase II overall score per hour (or a fraction thereof) of late submission.

D. File Formats

Requirements	File Name	Type	Example
Scanned proof of enrollment ¹ (all participants)	[Subevent] PoE_[Name of School*]	.pdf	RC ID_University of the Philippines.pdf
Digital Poster (RC)	RC Poster_[Name of School]_[Category Code ²][Entry Number]	.jpg or .png	RC Poster_University of the Philippines_AS1.png
Extended Abstract ² (RC)	RC Extended Abstract Entry_[Name of School]_[Category Code][Entry Number]	.pdf	RC Extended Abstract Entry_University of the Philippines_AS1.pdf
Presentation ³ (RC)	RC PPT_[Name of School]_[Category	.ppt or .pptx	RC PPT_University of the Philippines_AS1.ppt



	Code][Entry Number]		
Backup of Presentation ³ (RC)	RC Backup PPT_[Name of School]_[Category Code][Entry Number]	.pdf	RC Backup PPT_University of the Philippines ⁴ _AS1.pdf
Case Study Phase I ⁴ (YSC)	YSC Phase I_[Name of School]_[Team Number]	.pdf	YSC Phase I_University of the Philippines _1.pdf
Case Study Presentation ⁵ (YSC)	YSC Phase II Presentation_[Name of School]_[Team Number]	.ppt or .pptx	YSC Phase II Presentation_University of the Philippines _1.pptx
Case Study Backup of Presentation ⁵ (YSC)	YSC Phase II Backup Presentation_[Name of School]_[Team Number]	.pdf	YSC Phase II Backup Presentation_University of the Philippines _1.pdf

¹ Proof of enrollment can be a) certificate of matriculation, b) certificate of enrollment, or c) school ID for SY 2021-2022. For scanned copies of IDs (front and back), it must be colored and must have good resolution (clearly scanned) for the inside information to be readable and recognizable.

² Category code corresponds to AS, LS, and PS, representing Applied Science, Life Science, and Physical Science, respectively. Entry Number refers to the entry number per category per school, should a school send more than one entry per category. If a school sends only one (1) entry in a category, Entry Number is "1".

³ For Closed-Door Defense Round qualifiers only.



⁴ For schools with more than one (1) submission for the YSC Case Study Phase I, team numbers shall be assigned by the adviser of the school. Schools with only one (1) submission should still indicate the team number as "1".

⁵ For Phase II qualifiers only

* Name of the school shall be complete. Abbreviations will not be accepted.

E. Advisers

Only a faculty member of the school will be considered as an adviser. Only one adviser per category per school is allowed for the Research Competition. Only one adviser per school is required and must not be an adviser of other sub-events for the Youth Science Convention. Therefore, a school may send exactly one adviser if they are only joining YSC, a minimum of two advisers if they are joining YSC along with one for RC if they have one qualified entry in one of the categories, and a maximum of 4 advisers, provided that they have qualified entries in the three categories of Research Competition, and have joined the Youth Science Convention. All advisers may attend the Youth Science Convention.

F. Payments

- Payments and proof of payments for the events with fees will be accepted from October 20, 2023 until a week after the registration deadline of each respective event.
- Participants who are planning to avail the discounted registration bundle must be paid on or before **November 24, 2023**. This promo can only be availed once.
- Participants who are planning to avail the early registration promo must be paid on or before **November 24, 2023**. This promo can only be availed once.
- Participants who are planning to join the Research Competition, the Journal Entry Round fee must be paid on or before **December 15, 2023**. Payments made after the deadline shall incur a deduction on their scores.
- Participants who are planning to join the Case Study Competition under Youth Science Convention, the fee must be paid on or before **November 24, 2023**. Payments made after the deadline shall incur a deduction on their Pre-Qualifying Round scores.
- Participants who are planning to join the Talks under Youth Science Convention, the fee must be paid on or before **December 22, 2023**.
- Participants who are planning to join the National Science Conquest, the fee must be paid on or before **January 25, 2024**. Payments made after the deadline shall incur a deduction on their Pre-Qualifying Round scores.
- Participants and advisers must note that ALL payments made cannot be refunded.



- Proof of payment (e.g. bank deposit slip) shall be sent to the organizers through the Proof of Payment (POP) form at researchfair.upalchemes.org/forms/proof-of-payment/.

Sub-event	Fee	Inclusions
Early Bird Promo Price		
NSC (per participant)	₱325	Certificate of Participation Certificate of Appearance ² Registration Kit ³ Guaranteed seats to YSC Talks
YSC Case Study Competition (per participant)	₱425	
YSC Talks (per participant)	₱100	Certificate of Participation Certificate of Appearance ² Registration Kit
Regular Price		
RC Journal Entry Round (per team)	₱150	Certificate of Participation
RC Qualifiers¹ (per participant)	₱500	Certificate of Participation Certificate of Appearance ² Registration Kit Guaranteed seats to YSC Talks
NSC (per participant)	₱350	
YSC Case Study Competition (per participant)	₱450	
YSC Talks (per participant)	₱125 ₱135 (for walk-ins)	
Discounted Registration Bundle*		
RC Journal Entry Round, National Science Conquest, and Youth Science Convention	₱2,350	<ul style="list-style-type: none"> • 1 research entry** for RC Journal Entry Round • 1 team** for NSC • 1 team** for YSC Case Study Competition • Certificates of Participation for all sub-events

* can only be availed once per school

** for every additional entry/team, standard registration fees will apply.



Notes:

1. Only the top 15 entries per category from the Journal Entry Round will proceed to the rest of the competition, and participants will need to pay the RC Qualifiers fee to continue. Results of the Journal Entry round will be released at least one (1) month before the event proper.
2. For advisers.

- Payment Procedure
 - o All registration fee payments must be paid by deposit to any of the following accounts:

Bank: GCash

Account Name: Nicole Andrea Mendoza

Account Number: 09150561972

Bank: Maya

Account Name: Nicole Andrea Mendoza

Account Number: 09397111966

Bank: Landbank

Account Name: Nicole Andrea Mendoza

Account Number: 3077174094

Bank: BPI

Account Name: Nicole Andrea Mendoza

Account Number: 0639403187

G. Lodging

For schools that will need lodging assistance, our School Affairs representatives may send a lodging guide upon request.

H. Contact Information

For questions or clarifications, please do not hesitate to contact us through the following:

Email researchfair.sa@upalchemes.org

Website researchfair.upalchemes.org



Facebook facebook.com/upalchemesresearchfair

School Affairs Head

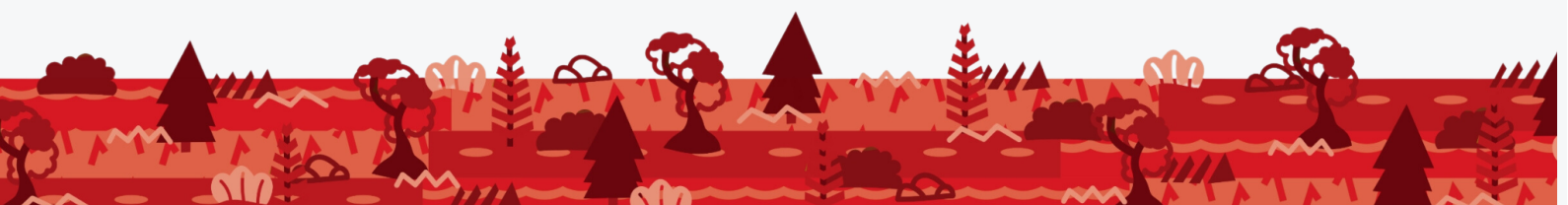
Ma. Leighla Ysobel Canton +63 908 860 2363

I. RF 2024 Steering Committee

Project Managers:	Eduard Angelo B. Mesa Audrey J. Su
Publicity and Creatives Heads:	Krexan Emmanuel E. Bulosan Mark Joshua R. Macabeo
External Resource Head:	Chelyka Faye B. Arellano
Finance Head:	Nicole Andrea G. Mendoza
Logistics Heads:	Kamia Mikaela T. Bontuyan Branden Kyle E. Gamilla
Marketing Head:	Ruth May C. Banania
Programs (RC) Head:	Brianne Bleau A. Opina
Programs (NSC) Head:	Jonas Rhic C. Pinpin
Programs (YSC) Head:	Gabriela D. Rawat
School Affairs Head:	Ma. Leighla Ysobel Canton
Secretariat Head:	Julianna E. Angeles
Technicals Head:	Rand Ivan Kim L. de Jesus

J. Data Privacy Clause

At the end of the registration forms, a data privacy statement shall be read, understood, and agreed on by the participants, and their adviser, should they decide to provide their information and submissions upon participating in Research Fair.





Objectives

The Research Competition aims to:

1. Provide an avenue for high school students to promote their talents and scientific discoveries to their fellow peers, teachers, and the scientific community.
2. Showcase what Filipino high school students can achieve through science and technology (S&T).
3. Encourage healthy discourse between students and professionals.
4. Promote scientific professionalism and appreciation of S&T among the youth.
5. Develop the capabilities of high school students in discovery and innovation through exposure to the field of research.

Student Eligibility Guidelines

- Any scientific research project from the three categories – Applied Science, Life Science, and Physical Science – of bona fide high school students (of any year level from Grade 7 to Grade 12) in the Philippines is qualified for the pre-evaluation.
- Only the selected research entries from the pre-evaluation are qualified to enter the competition.
- The research project can be the work of a single (1) student, up to a maximum of three (3) students coming from the same school.
- A school may send a maximum of three (3) research entries per category.
- In case of sicknesses, injuries, or emergencies, a participant may be replaced by a fellow student, with the provision of proof, as long as the Student Eligibility Guidelines outlined in this section are followed.

Special Guidelines for Continuing Projects

- Any project based on the student's prior research could be considered a continuing project, as long as the project shows substantial progress from its previous project (*e.g. testing a new variable, new objectives, or focus of experimentation*).
- Projects are not considered to be continuing projects (*and are not allowed to join the competition*) if the project is proven as an exact or near copy of the previous work/s (*e.g. same methodology, same hypothesis*). Modifications in the project such as changes in hypothesis target (*such as test material, sample location, etc.*) or changes in sample size or number of replicates will not be considered as substantial modifications.



- Continuing projects are required to document the substantial progress, changes, or expansion from the previous work by filling out the Continuing Project Section in Forms RC-AS, RC-LS, and/or RC-PS.
- Continuing projects must mention years or which year the project is in their title (e.g. *“Year Two of an Ongoing Study”*, if the project is in its second year of experimentation).
- Continuing projects will be judged only on experimentation/data collection performed over 12 continuous months beginning no earlier than January 2022 and ending January 2024. Thus prior projects’ written materials (*raw data, methodology, etc.*) or visual depictions are not allowed in the Exhibit, Research Summary, Research Paper and PowerPoint Presentations.
- Continuing projects, if qualified for Exhibit and Project Presentation, will be tagged accordingly.
- Multi-year longitudinal projects, projects that are more than one year of experimentation and longitudinal (*involving the repeated observation or examination of a set of subjects over time with respect to one or more study variables*) are considered and allowed as Continuing Projects.
- However, multi-year longitudinal projects are allowed to show in the Exhibit, Research Summary, Research Paper, and PowerPoint Presentations a summary of prior years’ data (*or collective past conclusionary data*) and its comparison to the current year data set and the overall methodology.

General Guidelines

1. Author/s of a research entry – if proven upon sufficient evidence – who have committed research misconduct will automatically be disqualified.
2. See section L (Research Integrity) for an in-depth discussion of research misconduct.
3. A student is qualified for exactly one (1) research entry.
4. A research entry is qualified for exactly one (1) category.
5. All research entries will be subjected to the Journal Entry Round. Only the top fifteen (15) entries per category that will pass the initial round and will proceed to the Face-to-Face Exhibit.
6. Each entry must have an adviser. However, an adviser may handle several entries in the event. The authors themselves must present their project.
7. In case a research team is in a time conflict with another research competition, the team may send at least one (1) of their members to represent their research project to Research Fair 2024. The members present in RC will be considered as one (1) whole team. However, individual research projects cannot be in two (2) research competitions at the same time.



8. The organizers reserve the right to change rules/mechanics if deemed necessary. Rest assured that any changes would be in favor of the participants. Participants will be notified regarding the matter.

Competition Categories

a. Category Overview

The Research Competition is divided into three (3) categories as presented in the table below. **A school may send a maximum of three (3) research entries per category.**

Category	Subcategory
Applied Science	Biological Engineering
	Chemical Engineering
	Civil Engineering
	Computer Science
	Electrical and Electronics Engineering
	Energy and Transportation
	Environmental Engineering
	Industrial Engineering
	Materials Engineering
	Mechanical Engineering
	Statistics
Life Science	Agricultural Sciences
	Behavioral and Cognitive Studies
	Animal Sciences
	Biochemistry
	Cellular and Molecular Biology
	Medicine and Health Sciences



	Microbiology
	Plant Sciences
Physical Science	Astronomy and Cosmology
	Chemistry
	Earth Sciences
	Environmental Sciences
	Mapping
	Physics
	Mathematical Modeling

b. Descriptions of Categories

Applied Science

This category involves engineering, such as chemical and civil engineering, and the application of existing scientific knowledge to solve practical problems and to develop emerging technology useful to society. Unlike the other two categories, this category focuses on practical applications rather than on theories and natural phenomena. Projects that involve invention, engineering and development of structures, machines, products and technology belong to this category.

Subcategories of the Applied Science category include the following, but are not limited to:

- **Biological Engineering** – This relatively new field involves the integration and application of life sciences with engineering. Fields involving biological engineering include biomedical engineering (application of medical principles with engineering principles), biotechnology (use of cellular or molecular biology in food technology and industry), development of biological-based devices such as biosensors, prosthesis and orthotics, and pharmaceutical engineering (engineering of pharmaceutical products).
- **Chemical Engineering** – This involves the application of physics, chemistry, and engineering principles in solving real world problems. Fields involving chemical engineering include environmental sustainability, chemical and material processing, and process design.



- *Civil Engineering* – This involves design, construction and maintenance of public works, facilities and transportation. Fields involving civil engineering include construction and structural engineering, geosystems engineering, environmental management, public safety, and disaster risk management.
- *Computer Science* – This involves not only programming but also the study, design, development and application behind computational systems. Fields involving computer science include networking, algorithms, information security, software analysis and design, and artificial intelligence.
- *Statistics* - Involves collection, description, analysis, and inference of conclusions from quantitative data.
- *Mathematical Modeling* – This involves the use of mathematical structures and techniques to represent real world scenarios. Fields related to mathematical modeling include optimization, simulations, and dynamical systems.
- *Electrical and Electronics Engineering* – This involves the study, design, development, and application behind electrical and electronics systems such as electrical power, electronic devices and electronic communication systems. Fields involving electrical and electronics engineering include computer engineering, power and energy, electronic design automation, sensors and circuits, signal processing, semi-conductivity and superconductivity, and electrical transportation.
- *Energy and Transportation* – This involves technology that enables society to achieve efficiency, sustainability, safety and security in energy and transportation. Fields involving energy and transportation include aerospace and aeronautical engineering, aerodynamics, land and water transportation and development of fossil fuel, alternative, and renewable energies.
- *Environmental Engineering* – This involves engineering applications in solving environmental problems in water, land, air, and waste. Fields involving environmental engineering include pollution control, resource management, waste management, and technologies that help restore and protect the environment.
- *Materials Engineering* – This involves the design, development and application of a material to produce a predetermined set of properties, the creation of new products or systems using existing materials and the development of new material processing techniques. Fields involving materials engineering include processing and manufacturing of monolithic materials: metals, ceramics and plastics, composites and advanced materials such as biomaterials, self-healing materials, nanomaterials, superconductors, semiconductors, and refractories.



- *Mechanical Engineering* – This involves the design, manufacture and operation and application of heat and mechanical power with the use of machinery. Fields involving mechanical engineering include energy, mechanics, robotics, machine construction and design, and biomechanics.

Life Science

This category involves the natural sciences, such as biology and medicine, and deals with living organisms and life processes. Projects that involve systematic observation, experimentation, understanding, and development of living organisms and biological phenomena belong to this category.

Subcategories of the Life Science category include the following, but are not limited to:

- *Agricultural Sciences* – This involves the interdisciplinary science of agriculture, activities that use production of animals and plants for human use. Fields involving agricultural sciences include development of agricultural technology, biological and chemical pest control, environmental adaptability and sustainability, and crop production and management.
- *Animal Sciences* – This involves biological studies concerning animal life. Fields involving animal sciences include animal development, ecology, animal nutrition and growth, comparative animal anatomy and physiology, animal pathology, animal evolution, and animal taxonomy.
- *Behavioral and Cognitive Sciences* – This involves the study of the mind and the study of the behavior of animals and humans within themselves and the environment. Fields involving behavioral and cognitive sciences include neuroscience, cognitive and neuropsychology, and physiological psychology.
- *Biochemistry* – This involves application of chemical sciences in understanding biological processes and pathways relevant to living organisms. Fields involving biochemistry include chemical understanding of proteomics, metabolomics, genomics, microbiology, cancer, and genetics.
- *Cellular and Molecular Biology* – This involves biological studies in the molecular scale, such as cells, viruses, DNA, RNA and proteins. Fields involving cellular and molecular biology include disease molecular biology and epigenetics, functional genomics, plant molecular biology and virology, molecular toxicology, nanobiology and protein structure, and immunology.
- *Medicine and Health Sciences* – This involves biological studies concerning human health. Fields involving medicine and health sciences include disease diagnosis



and treatment, epidemiology, genetic understanding of diseases, disease molecular biology and physiology, and pathophysiology.

- *Microbiology* – This involves biological studies concerning microorganisms such as bacteria, protists, fungi, viruses and other pathogens. Fields involving microbiology include antibiotic resistance and antimicrobial agents, bacterial microbiology and genetics, and virology.
- *Plant Sciences* – This involves biological studies concerning plant life. Fields involving plant sciences include plant growth and development, ecology, plant genetics and breeding, plant pathology, comparative plant anatomy and physiology, plant evolution, and taxonomy.

Physical Science

This category involves natural sciences such as physics, chemistry, and earth and environmental science that deal primarily with the nature and properties of non-living or inanimate entities. Projects that involve systematic observation, experimentation, understanding, and development of non-living entities and phenomena belong to this category.

Subcategories of the Physical Science category include the following, but are not limited to:

- *Astronomy and Cosmology* – This involves the study of space and the universe. Fields involving astronomy and cosmology include planetary and space systems, computational astronomy, stellar astrophysics, extragalactic astrophysics, and cosmology.
- *Chemistry* – This involves the study of matter and its composition, structure, properties, and interaction with each other. Fields involving chemistry include analytical chemistry, environmental chemistry, inorganic chemistry, organic chemistry, and physical chemistry.
- *Earth Science* - This involves the sciences related to the planet Earth. Fields involving earth sciences include atmospheric sciences and meteorology, hydrospheric sciences, paleontology, geochemistry and mineralogy, geophysics, and plate tectonics.
- *Environmental Sciences* – This involves the study of the environment's living and non-living interactions and existing conditions caused by human impact. Fields involving environmental science include pollution prevention and analysis, treatment of water, land, and air quality, green chemistry, environmental ecology



and prevention and analysis of other environmental issues such as oil spills, deforestation, severe weather, ozone holes, and climate change.

- *Material Science* – This involves the investigation of relationships between structures and properties of materials, and the development and synthesis of new materials. Fields involving material science include ceramography, crystallography, metallography, nanoscience, rheology, polymer and glass science, condensed matter, electromagnetic and photonic materials, and material characterization and analysis.
- *Mapping* – This involves the analysis of maps and other topographical features in order to identify problems, observe trends, monitor change, and set priorities.
- *Physics* – This involves applied physics, the application of theories and laws governing physics, and theoretical physics, the study of the fundamental principles and laws governing physics using thought experiments: mathematical models and abstractions instead of experimental processes. Fields involving applied physics include instrumentation and electronics, optics and lasers, photonics, condensed matter, electromagnetism in the plasma phase, biological physics, and physics experimentation in the atomic, nuclear, and particle scale.

Category Selection

To prevent the misalignment of entries, reading and understanding descriptions of the categories and subcategories are recommended. Furthermore, it is also advised to use the category wizard.

Category Wizard

The Category Wizard asks several questions to assist participants in determining the correct category of their research project. The Category Wizard is available at <https://researchfair.upalchemes.org/category-wizard/>.

Selection Process

a. Pre-screening

Pre-screening would be performed to ensure that all submissions follow the guidelines and technical aspects of the paper.

b. Journal Entry Round and Exhibit Presentation

In the Research Competition, a Journal Entry Round to be concluded by an Exhibit Presentation would serve as the first stage. Participants who passed the pre-screening process would qualify for the Journal Entry Round - in which all submitted entries would be assessed by judges who specialize in their respective categories. In the case of similar acquired scores of multiple entries, ties would not be broken. Results of



the Journal Entry Round would be released one (1) month after the set deadline of entries. Non-qualifiers may opt to join the Youth Science Convention.

Out of the entries submitted for the Journal Entry Round, only the top 15 research entries per category would be able to participate in the Exhibit Presentation, which constitutes the face-to-face component of the stage, wherein the research's poster would be presented to a panel of at most (4) judges who are experts in the field pertaining to the poster's category. Of the 15 entries, only the Top 6 entries per category would proceed to the Closed-Door Defense Round. Ties would be broken by the Journal Entry Round score garnered by each of the teams.

c. Closed-Door Defense

The Closed-Door Defense Round would occur simultaneously per category. At most four (4) judges per category would be tasked to assess and evaluate the qualifying research entries. Of these entries, only the Top 2 teams per category would advance to the Final Defense Round. Ties would be broken by the Journal Entry Round and Exhibit score garnered by each of the teams. The finalists per category would be announced the night prior to the Final Defense.

d. Final Defense

For the Final Defense round, all qualifying research entries would be judged by the same set of judges composed of at least three (3) to four (4) individuals, wherein representatives from all three of the categories would be present. Winning entries would be based on the Closed-Door Defense Score (50%) and the Final Defense Score (50%).

Requirements

This section outlines the requirements to be submitted for the contest proper, on top of the registration requirements. Participants are allowed to resubmit these requirements until the intended deadlines stated in the registration.

a. Miscellaneous Requirements

- i. Scanned Copy of Participants' School IDs (S.Y. 2023-2024)
 1. Both the front and back sides of the ID must be included.
 2. The scanned copy of the School IDs must be colored, and must have good resolution.
 3. The content must be readable and recognizable.
 4. In the case of non-issuance of ID by the school, the participant's certificate of matriculation would be sufficient.



- ii. Journal Entry Round Payment
 - 1. A one-time payment for the journal entry round amounting to Php 150.00 per entry would be collected upon registration
- iii. Face-to-Face Participation Payment
 - 1. For the Top 15 teams to participate in the face-to-face exhibit component, each participant per journal entry must pay a Php 500.00 participation fee

b. Extended Abstract

- i. The extended abstract should have a word limit of 600 and should not exceed the given word count, excluding keywords and references
- ii. The Extended Abstract must contain the following:
 - 1. *Keywords* – Exactly three keywords pertaining to the main focus of the research should be provided. The keywords must also support the validity of the choice of category.
 - 2. *Introduction* – The introduction should consist of the following details of the study:
 - a. Background: provides a brief introduction to the topic concerning the problem being addressed and the scientific foundation of the solution to the problem
 - b. Objective/s of the study: contains the hypothesis and the research questions to be answered, research goals to be achieved, and expected outcomes at the end of the research
 - c. Relevance of the study: explanation of how will the research be scientifically important and socially impactful.
 - 3. *Methodology* - The methodology section provides brief details on risk and safety procedures, experimental methods and design, and data collection and analysis.
 - 4. *Results and Conclusion* – This section contains the major set data that were gathered and analyzed. This section must provide a conclusion of the



research parallel to its objective. Only important data is needed. Data charts, tables, and graphs are not allowed in the conclusion.

5. *References* - Major references used in the study must also be included in the submission

c. [OPTIONAL] Journal-type Research Paper

- i. The research paper must not exceed a total of ten (10) pages, excluding the following:
 1. Title Page
 2. Authors Page
 3. Abstract page
 4. Bibliography
 5. All appendices
 6. Figures (e.g. tables, charts, graphs, photographs)
- ii. Refer to the link for the format: <https://tinyurl.com/RCFormats>

d. Digital Poster and PowerPoint Presentations

1. The Digital Poster, alongside the PowerPoint Presentations, shall be submitted in anticipation of the face-to-face presentation segments.
2. *Digital Poster*
 - a. The digital poster to be submitted would serve as the digital poster to be presented in the exhibit stage, should the team qualify.
 - b. Soft copies of the digital posters shall be submitted in PDF format.
 - c. The poster for submission should NOT include the name of the team's school and representing DepEd Division.
 - d. The posters must be sized at 3 ft x 4 ft (width x height)
 - e. Digital posters should contain all the essential information about the research project.



- f. All of the submitted digital posters would be part of a Facebook Reaction and Sharing Contest, whose details would be posted by the official Facebook Page of the Research Fair along with the submissions.

3. PowerPoint Presentation

- a. The PowerPoint Presentation will be used in the Closed-Door Defense and Final Defense if the team qualifies.
- b. It should contain the most significant and essential part of the research project. The organizers will use the powerpoints for checking unannounced changes during the competition proper. For Continuing Projects, refer to Section C (Special Guidelines for Continuing Projects) for content restrictions. See Part II (Summary Notes) for name and file format.

The organizers reserve the right to request for resubmissions when necessary. No exemptions or irregularities (e.g. failure to submit requirements on time) will be accepted for the requirements. Failure to settle such issues may result in disqualification.

Contest Proper

a. Journal Entry Round and Exhibit

- i. Journal Entry Round (JER)
 1. The JER would occur asynchronously online. It involves the evaluation of the online submission of the extended abstract, with the journal-type research papers serving as supplemental materials for judging.
- ii. Exhibit
 1. The Top 15 scorers from the JER who complied with all guidelines would proceed to the Exhibit phase, which would occur on-site in a face-to-face setting.
 2. The Research Competition Team would be responsible for the exhibit room set-up. Participants would be given time to familiarize themselves with the venue. However, the following should be observed:
 - a. The team must only occupy a 4x4 feet area in which all the needed materials in the project presentation will be accommodated.



- b. Failure to comply would result in a 5% deduction for the exhibit score.
3. The exhibit would occur simultaneously across the three (3) categories. The presentation batches would be split into two (2) batches per category to give time for the participants to attend the YSC talks. Batches would be released on the day of the event during the briefing segment.
4. During the presentation proper, the following rules and guidelines must be followed:
 - a. Advisers are not allowed to be inside the Exhibit and Project Presentation.
 - b. RC participants are expected to be at their designated area at all times. They are not allowed to leave their booths unattended and roam around the Project Exhibit.
 - c. RC participants are strictly prohibited to do the following, and doing so would result to disqualification:
 - i. Remove tags for continuing projects
 - ii. Give handouts (specified by the Guidelines for Project and Exhibit Booth) to be distributed to judges or the public. Such items will be confiscated by the organizers.
 - iii. Violate any of the specified Guidelines for Project and Exhibit Booth outlined in the section below.
 - d. Guidelines for Project Exhibit Booth:
 - i. Participants would be given 5 minutes to present their posters, and another 4 minutes to answer questions from the judges.
 - ii. The following materials are NOT allowed to be displayed, distributed, or used in the exhibit:
 - Living organisms, including plants



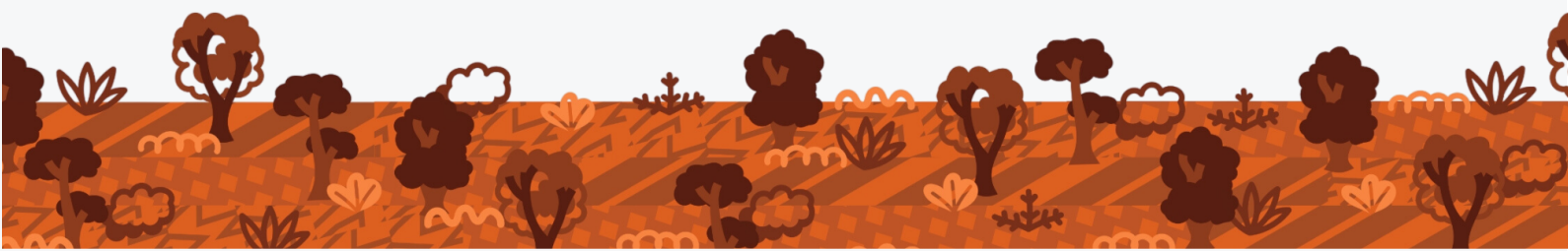
- Soil, sand, rock, and/or waste samples, even if permanently encased (e.g. by acrylic, plastic, etc.)
- Taxidermy specimens or parts
- Preserved vertebrate or invertebrate animals
- Human or animal food as part of the exhibitor demonstration of the project
- Human/animal parts or body fluids (e.g. blood, urine)
- Plant materials (living, dead, or preserved) in their raw, unprocessed, or non-manufactured state (Exception: manufactured construction materials used in building the project or display)
- All chemicals (organic and inorganic)
- All hazardous substances or devices (e.g. poisons, drugs, firearms, weapons, ammunitions, reloading devices, lasers)
- Dry ice or other sublimating solids
- Sharp items (e.g. syringes, needles, pipettes, knives)
- Flames or highly flammable materials
- Batteries with open top-cells
- Desktop computer units and peripherals (Exception: Laptop computer but no charging)
- Any apparatus deemed unsafe by the organizers (e.g. devices emitting nuclear radiation, pressurized tanks, etc.)
- Any form of endorsements such as awards, business cards, logos, CDs, DVDs, Flash Drives, brochures, etc. (Exception: Flash drives, CDs, DVDs that are an integral part of the project and used for judging only with prior approval given during inspection.)
- Endorsement addresses such as postal addresses, World Wide Web sites, email and/or social media addresses, telephone, and/or fax numbers of the student



- Give-away items (e.g. pens, key chains, etc.) will be confiscated by the organizers.
- *For Continuation Projects and Multi-Year Longitudinal Projects:* Prior years' written material, raw data, or visual depictions on the panel board are not allowed. These projects will be tagged accordingly. [Exception: For multi-year longitudinal projects, summary of prior years' data is allowed.]
- Photographs, visual images, charts, tables and/or graphs that are deemed offensive or inappropriate (e.g. *images/photographs showing invertebrate or vertebrate animals/humans in surgical, necrotizing, or dissection situations, improper chemical handling, etc.*) by the organizers are NOT allowed for display in the exhibit.

b. Closed-Door Defense

1. The Closed-Door Defense would occur simultaneously across the three (3) categories in different rooms. There will be no advisers or audiences allowed in the closed-door defense.
2. The PowerPoint Presentation submitted prior to the event would be used in the Closed-Door Defense and Final Defense rounds for qualifying teams. This will serve as their primary presentation when presenting to the judges.
 - a. Animations or complicated transitions should be kept at a minimum. A submission notice will be announced one (1) week prior to the competition proper to allow participants to make the appropriate changes to their presentations.
 - b. See Part II (Summary Notes) for name and file format.
3. Upon registration, a draw lots system would be utilized to determine the presentation order. Participants are expected to be at the venue thirty (30) minutes prior to the start of the event.



4. Participants are expected to stay in their respective holding room/s before and after their presentation.
 - a. Holding room attendance checks would be performed.
 - b. Teams with incomplete members shall incur a 5% deduction in the score for the Closed-Door Defense.
 - c. Participants are not allowed to leave their respective holding room without permission from the organizers. They are also not allowed to meet with their respective advisers. Such actions may result in disqualification.
5. All participating members in a research entry excluding member/s who are competing at another research competition must be present during their presentation. If a team is incomplete at the start of their timeslot, they will be given two (2) minutes to complete the team. Failure to do so will result in a deduction of 2% per minute (or a fraction thereof) to their Pre-final score (Closed-Door Defense score). Same rules apply to individual research.
6. Each team will be given ten (10) minutes to present their research study using their submitted PowerPoint Presentation file and seven (7) minutes to answer the questions from the panel of judges.
 - a. A deduction of 2% per minute excess in the presentation (or a fraction thereof) will incur to their pre-final score (Closed-Door Defense score)
7. The participants could show their prototypes/finished products during the presentation. However, prohibited items/materials from the exhibit are also not allowed to be displayed during the CDD presentation.

c. Final Defense

1. The order of teams will be determined by draw lots.
2. All members in a research entry excluding member/s who are competing at another research competition must be present during their presentation. If it's



the team's turn and at least one of them is missing, they will be given two (2) minutes to complete themselves. Failure to do so will result in a deduction of 2% per minute (or a fraction thereof) to their final defense score. Same rules apply to individual research.

3. Each team will be given a maximum of ten (10) minutes to present and ten (10) minutes to answer questions from the judges.
4. A deduction of 2% per minute excess in the presentation (or a fraction thereof) will incur to their pre-final score (Final Defense score)
5. The participants could show their prototypes/finished products during the presentation. However, prohibited items/materials from the exhibit are also not allowed to be displayed during the CDD presentation.
6. Audiences are allowed to watch the Final Defense.

Judging and Criteria

a. Overview of Judges and Their Roles

- ❑ *Journal Entry Round and Exhibit Judges* – Journal Entry Round Judges will assess the technical qualities of the research by evaluating the study's Extended Abstract. Exhibit and Project Presentation Judges will test the ability of the researcher to defend and support the research project and the quality and presentation of the poster.
- ❑ *Closed-Door Defense Judge* – Closed-Door Defense Judges will focus on evaluating the field knowledge of the researcher/s and the technical and analytical aspect of the research project.
- ❑ *Final Defense Judge* – Final Defense Judges will focus on evaluating the scientific importance, economic and social relevance, ingenuity, and the potentiality for marketability and future development of the research project.

b. Journal Entry Round and Exhibit Stage

The Journal Entry Round (JER) and Exhibit Stage scores would have the following breakdown:



Component	Stage 1 Score Component
Journal Entry Round	40%
Exhibit	60%

1. Journal Entry Round:

Component	Subcomponent	Percentage
Introduction	Pertinent Literature Specific Objectives/Hypothesis Scope and Limitations Scientific Importance Societal Relevance	20
Methodology	Clarity and Organization Experimental Design (Data Collection Technique, Variables, Sample Sizes, etc.) Post hoc/Statistical Tests	25
Results and Conclusions	Consistency Correlation with Statistical Test Results Clarity and Conciseness Feasibility and Specificity	30
References	Citation and Listing Format Validity and Quality	10
Overall Quality	Organization and Cohesivity Spelling and Grammar Graphics Labeling Originality	15

2. Poster:

Component	Subcomponent	Percentage
Purpose	Research Problem/Objectives	20
	Hypothesis	



	Originality and Creativity	
	Scientific Importance	
Research Analysis	Method	30
	Experimental Design	
	Validity of Conclusion	
	Practical Implications	
Subject Knowledge	Mastery	15
	Explanation and Elaboration	
	Answers to Questions	
Organization	Logical Order of Presentation	15
	Flow of Presentation	
Delivery	Elocution	10
	Poise	
	Eye Contact	
Poster Content	Comprehensiveness	10
	Relevance of Data Shown	

c. Closed- Door Defense

Component	Subcomponent	Percentage
Background of the Study	Pertinent Literature Specific Objectives/Hypothesis Scientific Relevance Scope and Limitations	10



Methodology	Organization Clarity and Appropriateness Post Hoc/Statistical Test	15
Results and Discussion	Graphics Consistency Interpretation and Justification of Data	25
Innovative Idea	Ingenuity Novelty/Originality Feasibility Economic and Social Impact	15
Overall Research Quality and Analytical Approach	Organization Creativity and Skill Analysis and Comprehensivity Subject Mastery and Answers to Questions Teamwork	25
Oral and Visual Presentation	Delivery Clarity Visual Aid Quality Overall Impact	10

d. Final Defense

Component	Subcomponent	Percentage
Background and Purpose	Pertinent Literature Attainability of Objectives Scientific Relevance	15
Experimental Design	Scope and Limitations Organization Clarity and Appropriateness Post Hoc/Statistical Test	10



Research Analysis	Graphics Comprehensiveness Interpretation of Data Subject Mastery and Answers to Questions	20
Ingenuity	Novelty Creativity Skill	20
Overall Research Significance and Impact	Economic and Social Impact Relevance and Feasibility of Recommendations Potential for Marketability/Future Development	25
Oral and Visual Presentation	Delivery Clarity Visual Aid Quality Overall Impact	10

e. Basis for Awarding

Round	Percentage
Journal Entry Round	20
Closed-Door Defense	30
Final Defense	50

Awards and Prizes

a. Major Awards

The qualifiers for the Final Defense, which are the Top 2 entries per category, will receive cash and/or medals and certificates as prizes. The Category Champion and Category Runner-up will be awarded based on the scores of their Journal Entry, Closed-Door Defense, and Final Defense.

Title	Team Prizes	Individual Prizes
Category Champion (Applied Science, Life Science, Physical Science)	₱7,500	Medals + Certificates



Category Runner-up (Applied Science, Life Science, Physical Science)	₱5,000	Medals + Certificates
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b. Special Awards

1. *JER and Exhibit Top Scorer* – This award is for the research entry with the highest average score in the JER and Exhibit Round across the three categories.
2. *People's Choice Award* – This award will go to the digital poster with the highest number of reactions and shares after being posted online by the official Facebook Page of Research Fair.
3. *Best Oral Presentation* – This award is for the research entry that garnered the highest score during the Final Defense Round

Title	Team Prizes	Individual Prizes
JER and Exhibit Top Scorer	₱1000	Certificates
People's Choice Award		
Best Oral Presentation		

Research Integrity

Scientific research is a disciplined practice, and it must uphold high standards of integrity. Thus, all science fairs must uphold high standards of research integrity, and any dishonest acts will not be condoned or tolerated.

Fraudulent research projects will fail to qualify for RC. The organizers reserve the right to revoke recognition of a project subsequently found to have been fraudulent.

a. Research Misconduct

Research misconduct is defined as “fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results.” Research misconduct does not include honest error or differences of opinion. Any research misconduct committed before, during, and after the competition will not be condoned or tolerated. These acts include, but are not limited to:

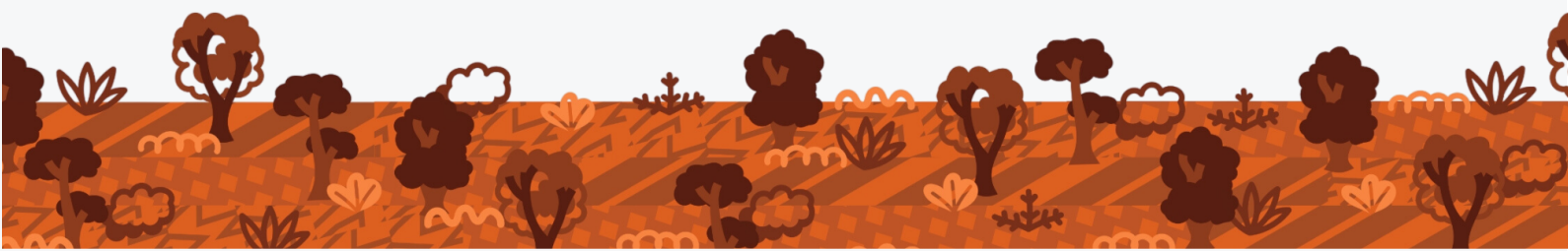
- ❑ *Fabrication* – making up data and results and recording or reporting them. Including false references (references that are added for the sake of supporting an argument even though it's fake or non-supportive) is also considered as fabrication.



- ❑ *Falsification* – manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record (record of data or results that embody the facts resulting from scientific inquiry, and includes, but is not limited to, research proposals, laboratory records, both physical and electronic, progress reports, abstracts, theses, oral presentations, internal reports, and journal articles).
- ❑ *Plagiarism* – appropriation of another person’s ideas, processes, results, or words without giving them credit. Intended or unintended, failure to credit sources or other discoverers is also considered as plagiarism.
- ❑ *Non-disclosure* from coaches or RC participants of knowingly committed research misconduct.
- ❑ Any actions deemed as research misconduct by the organizers.

b. Sources

- ❑ Federal Register. (2000, December 6). Federal Research Misconduct Policy. Retrieved from ORI - The Office of Research Integrity: <http://ori.hhs.gov/federal-research-misconduct-policy>. 2015, August 1.
- ❑ National Academy of Science and Technology. (2009, August 14). Ethical Principles and Guidelines for Filipino Scientists. Retrieved from Philippines NAST: <http://goo.gl/tNbwTu>. 2015, August 1.





Objectives

The National Science Conquest (NSC) aims to:

1. Distinguish students with scientific proficiency
2. Recognize emerging scientific discoveries and fields
3. Promote science and technology to students and general public

Student Eligibility Guidelines

1. Participants must be bona fide **junior and/or senior high school students** of his/her/their institution.
2. A school may send up to three (3) teams composed of at most three (3) eligible students each to join the competition.

Requirements

1. The school must fill out the NSC Application Form which can be found at <http://researchfair.upalchemes.org/forms/nsc-form/>.
2. The school shall send a copy of participants' proof of enrollment for the school year 2023-2024 such as, but not limited to:
 - a. School ID - The scanned copy must include the front and back of each student's ID in one (1) PDF file,
 - b. Certificate of matriculation or enrollment, if no ID
3. PDFs must be colored and must have good resolution (clearly scanned) for content to be readable and recognizable.
4. A registration fee of **Php 350** shall be paid **per participant**. Contest participants may participate in the Youth Science Convention Talks for free. This will be held on the first day of the Research Fair.
5. The organizers reserve the right to request for resubmissions when the need arises. No exemptions or irregularities will be accepted for the requirements. Failure to settle such issues may result in disqualification. Such exemptions or irregularities include, but are not limited to, the following:



- a. Incomplete or late submission of requirements

General Guidelines

1. Each contestant must wear their **complete school uniform** during the competition and bring their respective IDs throughout the duration of the Research Fair.
2. If a contestant is caught in the act, and proven guilty of cheating or dishonesty, their team shall be **automatically disqualified** from the competition.
3. Every team member is required to bring **at least two (2) sharpened pencils** and a **non-programmable scientific calculator** during the contest proper. All calculators must undergo factory reset before the start of the competition.
4. Answer sheets, scratch papers and other pertinent resources will be provided by the organizers. Contestants are required to turn over their scratch papers after the contest proper.
5. Usage of electronic devices other than a scientific calculator (e.g laptop, smartphone, tablet) is strictly prohibited during all rounds of the competition.
6. In case a registered participant fails to be present on the competition date due to valid reasons (sickness, death in the immediate family, etc.), an alternate member from the same school will be allowed to compete, provided that:
 - a. The alternative satisfies the eligibility guidelines, and provides the requirements.
 - i. In the case that the alternate does not satisfy the eligibility guidelines and requirements, he/she will not be allowed to participate in the competition.
 - b. Proof validating the excuse is to be submitted during registration before the Opening Program. The following may be used as proof:
 - i. Documents (medical certificate, death certificate, etc.)
 - ii. A letter from the school administration (principal, registrar, etc.)
 - iii. Other forms of evidence that validate the excuse
7. Coaches are not allowed in the exam venues except during the championship round, which is open to the audience.



8. The organizing committee's decision is final and irrevocable. The organizers reserve a right to change the rules/mechanics when deemed necessary. Participants will be duly notified regarding the said change.

Contest Mechanics

1. National Science Conquest is divided into two parts: **The Qualifying Round** and **The Championship Round**.
2. All registered teams will participate in the Qualifying Round, held during the 2nd day of the Research Fair.
3. The Qualifying Round will be composed of two parts: the **Situational Exam** and the **Individual Exam**.
4. The Championship Round will be held during the 3rd day of the Research Fair.
5. In the iteration of the championship round, there will be two phases: The **Preliminary Phase** and the **Final Phase**.

I. Qualifying Round

- a. The Qualifying Round is the elimination phase of the National Science Conquest.
- b. The participants will compete in a closed-door round where only the participants will be allowed in the venue.
- c. The team score for the Qualifying Round will be used to determine those who will move on to the Championship Round.
- d. If there are less than 25 participating teams, the **top 40% teams** with the highest score will move on to the championship round. If there are 25 or more participating teams, the **top 10 teams** with the highest score will move on to the championship round.
- e. In case of a tie, the team with the **higher Situational Exam score** among the tied teams will move on to the championship round. If the tie is still not broken,



all teams tied that share equal Situational Exam scores will move to the championship round.

Situational Exam

- a. The Situational Exam will commence on **Day 2 (Morning)**.
- b. Throughout this part of the round, the main three (3) representatives are to accomplish this phase with their teammates.
- c. Each team will be receiving a questionnaire where **worded problems** under any of the scientific disciplines will be given. They shall be given **2 hours and 30 minutes** to answer.
- d. Participating teams will be required to **submit their answers along with their solutions** to the problems before the time ends. Specific rubrics shall be implemented per problem to provide partial and full points whenever necessary.
- e. In calculating the scores, a specific rubric will be followed.
- f. Constants needed for a certain question will be provided.
- g. For computational problems, the entire and comprehensive solutions must be written completely for full credits.
- h. Rules on significant figures will apply for Earth Science, Biology, Chemistry, and Physics exams. For Mathematics, exact answers should be given, except for answers with decimal places (must only have 2 decimal places).
- i. Answers beyond the submission time, a **maximum of 15 minutes**, will still be accepted but with deduction. A **50-point deduction** will be applied to the **total score** after the submission time. Submissions beyond the maximum allowable extension will not be recognized.
- j. Scores in the percentage of each team will be computed by dividing the sum of scores of the team members over the maximum total score:

$$\text{Situational Exam Component Score} = \frac{\text{Sum of item scores}}{\text{Maximum total score}} \times 100\%$$



Individual Exam

- a. The individual exam will be held on **Day 2 (Afternoon)**.
- b. The main three (3) representatives will individually take a **multiple-choice exam** under any of the given scientific disciplines. They shall be given **1 hour and 30 minutes** to answer and submit the exam.
- c. The participants must properly shade the letter that corresponds to their answer. The participants are also free to leave blank answers.
- d. Each correct answer will merit **1 point**. There shall be a **0.25-point** deduction for each wrong answer and no deduction for unanswered questions.
- e. Any form of erasure on the answer sheet is strictly prohibited. A **0.25-point** deduction shall be implemented for every erasure done on the answer sheet.
- f. If needed in calculations, constants needed for a certain question will be provided.
- g. Rules on significant figures will apply for Earth Science, Biology, Chemistry, and Physics exams. For Mathematics, exact answers should be given, except for answers with decimal places (must be having 2 decimal places).
- h. Answers beyond the submission time, a **maximum of 10 minutes**, will still be accepted but with deduction. A **10-point deduction** will be applied to the **individual score** after the submission time. Submissions beyond the maximum allowable extension will not be recognized.
- i. Scores in the percentage of each team will be computed by dividing the sum of scores of the main 3 representatives over the maximum total team score:

$$\text{Individual Exam Component Score} = \frac{\text{Sum of individual scores}}{\text{Maximum total team score}} \times 100\%$$

Qualifying Round Team Score

Each participating team's score will be computed by the following:



Component	Weight
Team Challenge	50%
Individual Exam	50%
Qualifying Round Team Score	100%

The top scorers for both components of the Qualifying Round shall be announced along with the qualifiers.

II. Championship Round

- a. The championship round will be a quiz bee type of contest open to the audience.
- b. Answer boards, markers, and scratch papers will be provided by the organizers. However, participants must bring their own writing materials for computations and the like.
- c. For multiple-choice type of questions, each finalist must write the letter of their answer in **UPPER CASE**. Correct answers written in lowercase will be considered incorrect. For identification questions, misspelled answers will be considered incorrect. Rules on proper units and significant figures are to be observed for the problem solving questions. Improper units or wrong significant figures will be considered incorrect.
- d. A **buzzer** will indicate that the time is up. Upon hearing the buzzer and the cue from the quizmaster, the teams shall raise their answer boards and stop writing. If a participant continues writing after the time is up, they will be considered to have given no answer regardless of their final answer. The answer written on the answer board is considered the final answer.
- e. If needed in calculations, constants needed for a certain question will be provided.



- f. Rules on significant figures should be followed unless otherwise stated.
- g. Participants will not be allowed to exit the premises once the competition proper has started.
- h. Participants may request for extra scratch papers and the like before the reading of the next question.
- i. A protest may be raised **only by the contestants**, which will be referred to the Board of Judges.
 - The contestant shall give a signal to the person-in-charge near them.
 - During the protest, the contestant has the privilege of consulting any reference, provided they are relevant to the subject of the protest.
 - The Board of Judges shall be given full jurisdiction over the validity of the protest.
 - The Board of Judges will act on any concerns regarding the questions and answers only.
- j. **The decision of the Board of Judges is final and irrevocable.**
- k. Protests may only be raised before the next question is read. **Once the next question is presented, no protests about the previous question may be raised.**
- l. In case of a tie for both phases, clincher questions will be answered by the tied teams. This will be an elimination round.
 - Questions used for clincher rounds will not be flashed on the screen.
 - The questions shall be read TWICE.
 - The clincher round is not a race; all answers will be acknowledged after the time runs out.
 - The participants may begin writing as soon as the question is being read.
 - If both or no teams got the correct answer, the question will be replaced until the tie is broken.



Preliminary Phase

- a. The preliminary phase of the championship round will be a quiz bee on different topics concerning science and technology, composed of **5 easy, 5 average, and 5 difficult** questions for a total of **15 questions**.
- b. Questions will have different time durations allotted to answer. The time allotted for each question will depend on its degree of difficulty. The time limit for each question shall be announced before the question is read.
- c. The question will be shown as it is being read. Questions in the preliminary phase will only be read ONCE. The participants may start writing their answers as soon as the question is projected.
- d. Each question of varying difficulty under the preliminary phase will garner a score depending if the answer is correct, incorrect, or if a participant did not answer. **For no answers, the team must write "N/A" or "No Answer"**. Otherwise, the answer will be acknowledged as incorrect.

Difficulty	Correct	No Answer	Incorrect
Easy	5	0	-2
Average	10	0	-3
Difficult	15	0	-5

- e. The preliminary phase of the championship round ends once all questions are finished.
- f. After the preliminary phase, the **top three teams** will then proceed to the Final Phase.

Final Phase

- a. The final phase of the championship round will be a quiz bee on different topics concerning science and technology, composed of **10 questions of equal difficulty**.



- b. Points accumulated from the preliminary phase will not carry over to this round.
- c. Questions will have different time durations allotted to answer. The time allotted for each question will depend on its degree of difficulty. The time limit for each question shall be announced before the question is read.
- d. Questions will **NOT** be projected on the screen. Questions in the final phase will be **read TWICE**. The participants may start writing their answers as soon as the question is being read.
- e. Each question under the final phase will garner a score depending if the answer is correct, incorrect, or if a participant did not answer. **For no answers, the team must write "N/A" or "No Answer"**. Otherwise, the answer will be acknowledged as incorrect.

Difficulty	Correct	No Answer	Incorrect
Final Phase	20	0	-8

- f. The final phase of the championship round ends once all questions are finished.
- g. The **top three (3) teams** shall be awarded depending on their placement in the final phase of the championship round.

Coverage of Topics

- a. Earth Science
 - i. Geology
 - ii. Astronomy
 - iii. Meteorology
 - iv. Paleontology
 - v. Archaeology
 - vi. Environmental Science and Ecology
- b. Biology
 - i. Anatomy and Physiology
 - ii. Cell Biology and Histology
 - iii. Botany, Zoology, and Taxonomy
 - iv. Genetics
 - v. Microbiology
- c. Chemistry
 - i. General Chemistry
 - ii. Thermochemistry
 - iii. Electrochemistry
 - iv. Inorganic Chemistry
 - v. Organic Chemistry
 - vi. Biochemistry



- d. Physics
 - i. Classical Mechanics
 - ii. Electricity and Magnetism
 - iii. Thermodynamics
 - iv. Relativity
 - v. Quantum Physics
- e. Mathematics
 - i. General Mathematics
 - ii. Business Mathematics
 - iii. Statistics and Probability
 - iv. Geometry and Trigonometry
 - v. Pre-calculus
 - vi. Calculus
- f. Current Events in Science and Technology

Awards and Prizes*

a. Major Awards

Title	Team Prizes	Individual Prizes
National Science Conquerors (determined by the scores in the Final Round)	₱7,500	Medals + Certificates
NSC 1st Runner Up (determined by the scores in the Final Round)	₱5,000	
NSC 2nd Runner Up (determined by the scores in the Final Round)	₱3,000	

b. Special Awards

Situational Exam Top Scorer (awarded to the team with the highest score in the Team Challenge)	₱1,000	Certificates
Individual Exam Top Scorer (awarded to the individual with the highest score in the Individual Exam)	₱1,000	

*Cash prizes are subject to change.





Objectives

The Youth Science Convention (YSC) is a series of TALKS, CASE STUDIES, and WORKSHOP designed to enrich the experience of the participants of the Research Fair. This event aims to:

1. Enkindle a love and passion for research and science into the participants.
2. Explore the significance of conducting research and its application in the industry and in different scientific fields.
3. Help the youth develop practical skills that will not only aid them in future research, but in many facets of their daily lives.

Student Eligibility Guidelines

YSC is open to **all high schools (Grade 7 to Grade 12)** in the Philippines. However, it is highly **recommended for students of the grades 9, 10, 11, and 12** in preparation for their research subjects, investigatory projects, and future submissions to the Research Competition.

A school may send **at most fifteen (15) students to attend YSC, excluding the participants of the Research Competition (RC)**, who may sit-in at the convention during their free time subject to the availability of seats. Schools shall be informed if there are remaining slots for the convention, should they wish to send more students.

Requirements

1. Accomplished YSC Form
2. Clear scanned copy of participants' proof of enrollment for the school year 2023-2024 such as, but not limited to:
 - a. School ID - The scanned copy must include the front and back of each student's ID in one (1) PDF file.
 - b. Certificate of Matriculation or Enrollment, if no ID
3. Registration fee of **Php 450 (per participant, YSC Case Study Competition) or Php 125 (per participant, YSC Talks only)**.

The organizers reserve the right to request for resubmissions when the need arises. No exemptions or irregularities will be accepted for the requirements. Failure to settle such issues may result in disqualification.



Registration Guidelines

1. Registration forms must be duly accomplished and sent online via email. Registration must have also been confirmed by the organizers prior to the Research Fair.
2. A registration fee of Php 450 must be paid per participant, which includes a Certificate of Participation, a Certificate of Appearance (for advisers), a Registration Kit (including an RF Eco Bag, a Souvenir Program, a Personalized ID for participants, or a Generic ID for advisers), and guaranteed seats to YSC Talks. Alternatively, there is a registration fee of Php 150 for YSC Talks only.
3. Each participating school may only be accompanied by one (1) YSC adviser who may or may not be the same adviser for RC.
4. **Walk-in participants will be accommodated for the YSC Talks ONLY.** Only registered and paid participants may participate in the convention.

Event Proper Guidelines

1. The doors to the venue will be closed during the event. Participants are therefore advised to go to the comfort room before the seminar starts or during the break.
2. Participants will be given YSC nametags before entering the venue. These must be worn within the venue at all times.
3. Participants are urged to pay strict attention and show utmost respect to the speakers. Unnecessary noise must be avoided.
4. There shall be an open forum at the end of every seminar and workshop. Participants and advisers are free to raise questions and/or concerns with the speaker.
5. Mobile phones must be turned off or kept in silent mode.

Research Fair 2024 Case Study Showcase

The Research Fair 2024 Case Study Showcase aims to foster ingenuity and creativity by allowing the participants to provide their own solutions to real-world problems. Highlighting both teamwork and the ability to think of unique solutions, the Case Study Showcase is a stepping stone for the participants as they look towards the future. Its goal is to bring into perspective the problems that the various fields of science encounter today, with the students' output being possible future solutions that can be implemented. From the selected students that will attend YSC, each school may then form two (2) groups, composed of a maximum of three (3) students each. These groups will represent the school in the Case Study Showcase.



Mechanics

1. Preliminary Phase

- On **October 20, 2023**, the rubrics and guidelines will be released in the registration form. Moreover, the case study problem will be sent via email right after the deadline for the CSC registration.
- The participants will then have SIX (6) weeks to send their papers on their proposed solutions to the case study. These will then be evaluated by the judges.
- Few weeks before the Research Fair, the top 5 teams will be announced and will participate in the final phase of the Case Study Showcase on the second day of the Research Fair.

2. Final Phase

- On the second day, the top 5 teams will participate in a workshop wherein they will finalize their ideas and presentations.
- The afternoon session of the second day will be devoted to the presentations, wherein each team will be given 10 minutes to present their ideas to the panel of judges. Afterwards, a period of 7 minutes will be allotted for questions from the judges.
- Culminating the Youth Science Convention, the team with the best presentation will be awarded after the judges have finished deliberating.

The mechanics of the Case Study Showcase are subject to change. Any deviations from the aforementioned mechanics will be immediately reported to all participants.

Judging and Criteria

CSC 2024 (PHYLUM) Phase I Rubrics

Component	Subcomponent	Subcomponent Percentage	Overall Percentage
Introduction	Background	10	20
	Rationale	10	
Way of Production	Methodology	15	15
Creativity	Ingenuity	15	15
Feasibility	Practicability	10	15



	Economics	5	
Implications	Environment	5	20
	Health	5	
	Community Involvement	10	
Writing	Organization	5	10
	Grammar and Word Choice	5	
References	Quality of Sources	5	5
Total			100

CSC 2024 (PHYLUM) Phase II Rubrics

Component	Subcomponent	Subcomponent Percentage	Overall Percentage
Introduction	Background	5	12.5
	Rationale	7.5	
Creativity	Ingenuity	7.5	7.5
Plan of Action	Methodology	15	15
Feasibility	Practicability	10	15
	Economic Analysis	5	
Implications	Environment	7.5	25
	Health	7.5	
	Community Involvement	10	
Presentation	Delivery	15	20



	Visual Aids	5	
References	Quality of Sources	5	5
Total			100%

Awards And Prizes*

1. Major Awards

Title	Team Prizes	Individual Prizes
CSC Champion	P7500.00	Medals + Certificates
CSC 1st Runner Up	P5000.00	
CSC 2nd Runner Up	P3000.00	

2. Special Awards

Title	Description	Team Prizes	Individual Prizes
<i>Best in Digital Poster</i>	Case Study entry with the highest average Digital Poster score	1000	Certificates
<i>People's Choice Award</i>	Digital Poster with the highest number of reactions and shares after being posted online by the official Research Fair Facebook Page	1000	Certificates
<i>Best in Presentation</i>	Case Study entry that garnered the highest presentation score	1000	Certificates



	during the Phase II of the Case Study Competition		
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*Cash prizes are subject to change

Line-Up of Sub-Events

Research Fair 2024 brings four (4) talks in order to hone the skills of its participants. There is one main focus per talk.

1. **Equipping** - This talk will equip the YSC 2024 participants with the knowledge of preserving scientific and cultural diversity.



SALIO - A talk on animal care and preserving wildlife. The students will learn their role as humans about scientific and cultural diversity in animal welfare to ensure that their approaches to animal care and protection are informed by a wide range of perspectives and scientific knowledge, promoting more effective and culturally sensitive practices.

2. **Expanding** - This talk will help expand the YSC 2024 participants with regards to their perception on the moral and scientific significance of wildlife.



FEROX - A talk on animal developments in the new age. The students will be taught about some animals' advances with the latest technology of the new age.

3. **Enhancing** - This talk will enhance the YSC 2024 participants' knowledge about growing topics in the field of science and technology.



ELYTRA - A talk on animal research and ethics. This will improve the student's knowledge with regard to incorporating animals in their future research or studies.



4. **Enabling** - This talk will enable the YSC 2024 participants to see the value of wildlife and animal rights both inside and outside of the industry.



PANTHERA - A talk on animal rights and value of wildlife. This will help the students to engage in animal protection issues and to be fully aware of the general welfare of the society.

PHYLUM: The Research Fair 2024 Case Study Showcase

This sub-event marks the culmination of YSC, where participants demonstrate not only their creative thinking and adaptability but also share their unique perspectives on significant challenges and issues within the country. Initially, a workshop will precede the final presentation of the case study for the CSC Phase II Finalists.





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ACADEMIC LEAGUE OF CHEMICAL
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