The

AC2022
QM Committee

Presents:

AstroChallenge 2022

Project Round Infosheet

For Participants

Contents

1. Project Round Rules and Regulations

Your team is to **choose and answer one challenging question in the field of astronomy, cosmology and astrophysics**. However, you are to convey the answer using a simple video format, aimed at educating a typical member of the public. As such, ensure that your explanation is as concise and accurate as possible, while also being extremely easy to understand.

You will be expected to give an exhibition and give a presentation lasting no longer than 120 seconds on Day 1 for your exhibition when the judges come to you. You are expected to answer questions for no longer than 60 seconds thereafter.

General Mandatory Instructions

Video Instructions:

1. Your task is to explain an astronomy/astrophysics concept simply in the form of a video submission.

2. You will first choose **1 out of the 20** questions to **explain in a video** of **no more than 6 minutes in duration**. If your school is fielding multiple teams for the respective age category, you should not pick the same question as other teams from the same school. Exceeding the time limit will result in your video being penalized by the percentage exceeded. For example, if you submit a 10-minute video, your video will be penalized by **66,7%** (4/6).

3. We are aware of methods to cheat the system by speeding the video up. If it is noticeable, we will determine the rate of speed up and thereafter penalize the video by 1,1 times that amount. For example, if you submit a video of length 6 minutes but speeded up by 1,25 times. Your video will be penalized by **27,5%**.

4. For the avoidance of doubt, credits (if within the video) are not considered part of your 6 minutes. However, introductions are.

5. You **may not** separate your submission into multiple parts. You are only allowed **one** video submission. If you submit more than one, the committee **will only mark the latest one**, subject to any late submission deductions or any other defect deductions.

6. Following which, you will then submit this video for assessment to be reviewed by the organisers of AC2022. The deadline of submission is on Sunday the **29th May 2022, 1900h** (**Day 0**). Late submissions will be penalized at a rate of **20%** for each day late or part thereof. For example, if you were to submit your video at **1901h** on **29th May 2022 (Day 0)**, you will be penalized **20%** of your **video score**. If you submit it on **30th May 2022 1901h**, you will be penalized **40%**.

7. The expected target audience for the video are members of the public, including students from secondary schools, polytechnics and junior colleges. Videos should thus be in an appropriate tone and mode of presentation.

8. In particular, the inclusion of excessive inside jokes that are not comprehensible to members of the public may lead to penalties.

9. Videos should not be excessively large. The committee will not watch any video with a size larger than 2GB or to which a 100% or more penalty is already applied.

10. Videos/presentations that are targeted to younger age-groups are more than welcome. Correspondingly, any features of inappropriate content will be heavily frowned upon and may be severely marked down.

11. It is compulsory for you to send in a transcript of your video if it is not subtitled. Failure to do so may incur a penalty of up to 20% from your scores.

12. It is compulsory for you to send in a list of all references which was referred to in the video. The format must be in a word document or pdf file. Failure to do so will result in the presumption that all work and research within the project is originally yours and as such any use of external resources may result in your team being disqualified.

13. Any video submitted must remain watchable by the committee up until 0001h on day 2. If we are unable to watch it at any time in between the date of your submission and day 2, it will be deemed as a non-submission. The committee will not chase you for your videos.

14. By submitting your video, you must consent to the committee, its agents, nominees, trustees and any other persons nominated by the committee using your video for any non-commercial purposes such as but not limited to publicity, teaching and/or criticism.

15. More information will be provided in the following sections below.

Exhibition Instructions:

16. You will be expected to set-up your presentation in the allocated space during lunchtime of Day 1. The exhibition time will then be held after the DRQ round for 2 hours.

17. Due to pandemic restrictions, the committee may impose limitations on the number of people present at their booth. The rest of the team members are expected to explore other presentations. More details on this will be released subsequently.

18. If anyone in the team does not appear or appears inactive at any point during the exhibition, the Committee may impose a **50% overall penalty** on your total project round score without notice. If you do not appear, suffice it to say that the marks allocated for the Exhibition will be 0 for you as well.

19. We will be setting up a form for participants to vote on their favourite project exhibition. This voting will only form the basis for the title of the "most popular project". The winner of the most popular project award will only be declared publicly during Day 2.

20. Do note that the Exhibition segment may be cancelled with notice due to pandemic restrictions imposed by, inter alia, the government, NUS, NTU, our venue sponsors and/or the AC Central Committee. If the Exhibition segment is cancelled without a replacement segment declared, the video will be the only segment graded.

21. Should you wish to seek any clarifications, you are more than welcome to write in to astrochallenge@gmail.com.

2. Guidelines for Attempting the Project Round

Here are some suggestions on how you can produce a submission of good quality.

How to start

- Begin with the end in mind. Choose a few interesting topics, and research widely to get an understanding of the key messages that you should include in your project. Ask yourself if you feel confident explaining these messages to others in a unique and easily accessible manner.

  This process of research should help you pick a single question to focus on.

- Know your target audience: you are expected to explain concepts to a member of a public/your schoolmates. They may not be aware of astronomical terms, so do explain yourselves!

- Be interesting! Like it or not, humans are easily distracted. Ensure that your project video is capable of holding the attention of your audience. This also means that you should be concise – do not beat around the bush.

- Plan your time wisely. Hastily submitted projects tend to lead to poor quality.

- Plan your content wisely. You should not squeeze everything about your topic into your video! Plan well and pick the most relevant to talk about.

Video Submission Guidelines

- Please ensure that your audio is clear. Accurate subtitles are always a plus.

- Ensure that your video does not contain distracting visuals. This includes watermarks or excessive special effects. As a rule of thumb, any special effects that you use should help the audience focus on your key messages.

- Free video editing software: The Photos App in Windows contains a free and simple video maker that does not leave watermarks. You may also try Windows Movie Maker / iMovie.

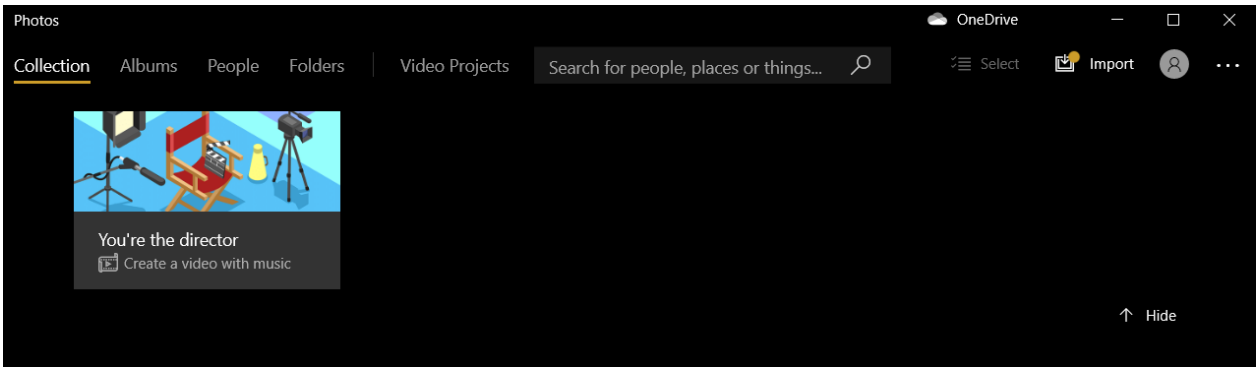

Figure 1: The Photo App in Windows 10.

Despite its name, did you know you can use it to make videos too?

- You can try other professional video editors if you so desire (e.g. DaVinci Resolve), but this is not required in order to create a good video for the Project Round.

- Show your video to a few friends who know nothing about astronomy. Gather feedback from them – did they like it? What did they hate? Use this feedback to improve upon your work.

Use of assets/materials

- Provide credits for all resources used, including credits for your own team members! Note that the time limit imposed on your video submission excludes time spent on credits.

- Ensure fair use of copyrighted resources. To put simply, avoid lifting substantial chunks wholesale from whatever materials you find online even if it's Copylefted or has a Creative Commons License.

3. Questions

No.	Question Title
1	Advertise your astronomy/science club to your schoolmates*
2	A member of the public asks what is astronomy about. Give an introductory talk on the topic.
3	Describe how an ancient civilization understood the sky and celestial objects. What are some of their key constellations/asterisms and their cultural significance?
4	Discuss some of the methods of generating power in space.
5	Explain some of the key methods of detecting exoplanets.
6	Find and explain a piece of space technology that is developed in Singapore.**
7	Give an introduction to an upcoming or existing space telescope.
8	How do astronomers accurately measure long distances in space?
9	How do you know the identity of a moving but unidentified light in the night sky?
10	How were the elements we know created?
11	How would one learn astrophotography from scratch and what could he expect to take?
12	In your opinion, what is the most interesting place in the Milky Way that we know of? Explain your answer.
13	Introduce one potential future mission to search for extra-terrestrial life in our Solar System.
14	Show how you would use only the stars to find your way around.
15	What are neutron stars and what do we know about them?
16	What are some common features of galaxies that we can identify in the cosmos?
17	What are stars and how do they work? What happens to them in the far future?
18	What are Trojan asteroids and what is their significance?
19	What is the cosmic microwave background and what can we infer from it?
20	What roles did astronomy play in the history of science? How do advances in science and technology benefit astronomy?

If your question has asterisk(s) on it, please refer to Section 4 for further instructions or guidance.

4. Footnotes for Questions

*: If your school does not have an Astronomy Club, you may promote your Science Club (or similar) on what the club does relating to Astronomy. Feel free to email us should you have any queries especially on cases where your school does not have an Astronomy Club but you would still wish to attempt this question.

**: To further aid you in attempting this question, a directory of parties involved in the Singapore Space Industry is provided here: https://www.space.org.sg/contact-us/space-directory/. Participants attempting this question are encouraged to look through this directory and research on the local parties involved in the space industry.

5. Project Round Weightage

Video (80%)

Communication (Language and Ease of Understanding)	30%
Content	40%
Visual Aid/Presentation	20%
Teamwork	10%

Exhibition (20%) of which half will be allocated to Q&A

Communication (Language and Ease of Understanding)	30%
Content	40%
Visual Aid/Presentation	20%
Teamwork	10%

6. Project Round Grading Rubrics

Criterion	Weightage	Approaching Expectations 0 - 3	Meeting Expectations 4 - 7	Exceeding Expectations 8 - 10
Accuracy and Depth of content	40%	Content of video or exhibition is inaccurate with grave conceptual error; content fails to go beyond the superficial or is plagiarized from source materials. Narrow scope with limited variety of concepts and ideas.	Content of video or exhibition is somewhat accurate with few factual errors; Analysis of topic is limited or paraphrased from source materials, with a fair variety of concepts and ideas.	Content of video or exhibition is largely accurate with negligible factual error; Analysis of content boasts originality with an excellent presentation portraying a large variety of concepts and ideas.
Communication	30%	Viewers of the video or exhibition are unfortunately unable to comprehend.	Participants speak clearly and intelligibly most of the time; engages viewers to a certain degree.	Participants speak clearly and fluently throughout at a suitable pace; deeply engages viewers.
Creativity and Originality	20%	Method of video or exhibition presentation is overused or cliché.	Method of video or exhibition presentation is refreshing but uninspiring.	Method of video or exhibition presentation is novel and innovative.
Teamwork	10%	The judges wonders where all the other members of the team had gone...	Only some members are actively involved in the video or exhibition presentation. There is a certain degree of disproportion in work allocation amongst members.	All members are actively involved in the video or exhibition presentation. There is fair allocation of work amongst all members.