



# DRONE ODYSSEY CHALLENGE 2022

## COMPETITION MANUAL

Main Organiser:



Co-Organiser:



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# DRONE ODYSSEY CHALLENGE 2022

## 1. INTRODUCTION

Drone Odyssey Challenge is an exciting game-based competition that promises plenty of fun while inculcating technical skillsets, critical thinking and an appreciation of new and disruptive technologies relevant to the modern world. Open to students from the Primary and Secondary levels, this competition will see participants working together in teams to code their programmable drones to transform them into Unmanned Aerial Vehicles (UAVs) capable of performing tasks under given scenarios.

A series of workshops and live demonstrations have been specially developed for both students and mentors to complement their learning journeys leading up to the competition proper. Drone Odyssey Challenge is organised by Science Centre Singapore and EP Tec Solutions PTE LTD with support from the Ministry of Education (MOE) and various partners.

DOC2022 will be held Onsite and will consist of the following Challenges:

1. Obstacle Challenge (Team)
2. Drone Swarming Challenge (Team)

Registration via this link: [www.stemacademy.sg/drone-odyssey-challenge](http://www.stemacademy.sg/drone-odyssey-challenge)

Challenge registrations will be open from 23rd May to 26 August 2022.

For international participants (not from Singapore), please contact Francis Li at [Francis\\_LI\\_from.TP@science.edu.sg](mailto:Francis_LI_from.TP@science.edu.sg) for registration and more information.

## Flying Safety and Flying Safely

All participating teams should adhere to the following during the flying of the challenges.

### 1. Flying Regulations in Singapore

All flying must be conducted

- a. In accordance with Civil Aviation Authority of Singapore's (CAAS) UA Safety Guidance (<https://www.caas.gov.sg/public-passengers/unmanned-aircraft/ua-safety-guidelines>). Participants who do not meet safety & regulatory requirements would be immediately disqualified from the competition.
- b. Only in permitted flying areas as advised in CAAS's site on "permitted fly and no-fly zones". (<https://www.caas.gov.sg/public-passengers/unmanned-aircraft/permitted-flying-areas-and-no-fly-zones>).
- c. Social distancing and relevant Safe Management Measures policies should also be followed during team events.

### 2. Guardian as Safety Supervisor

- a. Every individual/team should have a guardian during his/her attempt at flying. Guardian should be age 21 or above. Safety supervisor's duty is to ensure that Flying is conducted in a controlled environment and proper safety measures are in place to minimize injury or damage to property; and verify the participants' attempts to make sure flying regulations are complied with.

### 3. Checklist for Safety Supervisor

#### a. Pre-Flight Preparation of Space

Participants selected and prepared flying area, such that it complies with CAAS flying regulations and fly zones. (Refer to websites listed above) (Examples would be closing windows in an enclosed room, restricting entry during flight.)

#### b. Pre-Flight Planning & Communication

Participants do preflight planning and explain to the Safety Supervisor their Flight Plan, contingency Plans. (e.g., Fly away Drones, or crash) and procedure to Turn off drone, in event of emergency landing.

#### c. In-Flight Safety

1. Safety Officer & Participants to ensure no one is within 1m of the drone prior to drone take off.
2. Participants must announce “arming drone” to indicate flight test to surrounding.
3. Participants made appropriate measures to restrict entry into the flight zone during flight.
4. Participants should be ready to conduct drone emergency landing at all times.

d. Post-Flight Safety

Participants announce “disarming drone” to indicate end of flight and take actions to turn off drone.

## 2. CATEGORIES

The following are the main categories for Drone Odyssey Challenge 2022:

Main Category	Sub-category	Allowed Drone	Level
<b>Obstacles Challenge</b>	Category A1	Parrot Mambo / CoDrone Edu	Primary Schools (8 to 12 years old)
	Category A2	DJI Tello / Tello Edu	Primary Schools (8 to 12 years old)
	Category B1	Parrot Mambo / CoDrone Edu	Secondary Schools (13 to 16/17 years old)
	Category B2	DJI Tello / Tello Edu	Secondary Schools (13 to 16/17 years old)
<b>Drone Swarming Challenge</b>	Category C1	DJI Tello Edu	Open Category (9 to 16 years old)
	Drone Swarming Category C2		
	(Online) Terrain Mapping	DJI Tello Edu	Open Category (9 to 16 years old)

Note:

- All Participants will receive e-Certificate(s) of Participation upon submission of the challenge(s) if they are not recipients of any awards.
- International participants are not eligible for cash prizes.
- Cash prizes will be paid out to the winning schools/organisations or, if registered as a private participant, to the individual.
- The final number of awards given will be at the discretion of the organiser.
- All dates and times mentioned in this booklet refers to Singapore timing (GMT +8).

Drone Odyssey Challenge 2022 schedule is as follows:

Date	Event	Venue
<b>23 May 2022</b>	Registration Opens Challenge Booklet Released	-
<b>27 June 2022</b>	Challenge Announcement	<b>Science Centre Singapore</b>
<b>15 July 2022</b>	Learning Journey <sup>1</sup>	<b>Science Centre Singapore</b>
<b>18 July 2022</b>	Learning Journey <sup>1</sup>	<b>Science Centre Singapore</b>
<b>20 July 2022</b>	Learning Journey <sup>1</sup>	<b>Science Centre Singapore</b>
<b>22 July 2022</b>	Learning Journey <sup>1</sup>	<b>Science Centre Singapore</b>
<b>27 July 2022</b>	Learning Journey <sup>1</sup>	<b>Science Centre Singapore</b>
<b>26 August 2022</b>	Registration closes	-
<b>1 September 2022</b>	Submission of Qualifying videos	-
<b>19 – 20 September 2022</b>	Category A Finals  Awards Presentation Ceremony	<b>Science Centre Singapore</b>
<b>21 – 22 September 2022</b>	Category B Finals  Awards Presentation Ceremony	<b>Science Centre Singapore</b>
<b>23 September 2022</b>	Cat C1 (Open) Category Finals  Awards Presentation Ceremony	<b>Science Centre Singapore</b>

<sup>1</sup>Learning Journeys are optional workshops designed to cover the basics of drone flying and how to code for the flying of the drones. Only registered participants will be able to attend the Learning Journey Workshops.

## GENERAL RULES

- Participants will be notified upon successful registration within one week of the registration deadline. The decision made by the Drone Odyssey Challenge organizing committee is FINAL and is subject to the competition schedule and logistics support availability.
- Each member can only participate in one team within their eligible category.
- Members and family members of the organising committee are not allowed to participate in the Drone Odyssey Challenge.
- The organisers reserve the right to amend the rules and regulations. In the event of any change, all teams will be informed at least **TWO (2)** weeks prior to the start of the competition.
- Prizes will be awarded to the designated recipient(s), as stated in the registration form.
- The organisers of Drone Odyssey Challenge 2022 will not be held responsible for any damage to, or the loss of, any drone(s) and associated equipment throughout the entire competition.
- All participants will be held responsible for the safe flying of their drone(s) throughout the entire competition. The organisers reserve the right to ground the flying machine(s) of any team.
- Information pertaining to the competition may be found on the event website: [www.science.edu.sg/events/Pages/dronechallenge.aspx](http://www.science.edu.sg/events/Pages/dronechallenge.aspx). For any specific queries regarding the competition, please send an email with the title addressed to the relevant category (e.g., <CAT A1> Clarification about General Rules & Regulations) to the following email address: [drone\\_odyssey@science.edu.sg](mailto:drone_odyssey@science.edu.sg)



### 3. FORMAT OF COMPETITION

Interested participants and mentors are invited for the formal announcement of the competition to be held at Science Centre Singapore on **27<sup>th</sup> Jun 2022 at 15:30pm**. Participants and mentors will be briefed on the rules and regulations as well as the mission tasks for the competition categories. They are also welcomed to clarify any queries they may have about the competition during the Questions & Answers session.

#### ***Obstacles Challenge (Primary & Secondary Schools)***

The Obstacle Challenge will enable participants to learn about the basics of Drone Flying and the different flight configurations they can explore with drones. This challenge is split into 4 subcategories:

- Primary – CoDrone Edu or Parrot Mambo
- Primary – DJI Tello
- Secondary – CoDrone Edu or Parrot Mambo
- Secondary – DJI Tello



1. Participants are to register for the Drone Obstacle Challenge.
  - a. Registration Period: 23<sup>rd</sup> May – 26<sup>th</sup> August 2022.
  - b. Please note that this is a group challenge.
2. Participants will receive the links to the tutorial videos, along with the tasks to complete, by 27<sup>th</sup> Jun 2022 through their emails.
  - a. These tutorial videos can be viewed at your own timing.
  - b. These tutorial videos will also contain the tasks that you should attempt.
    - i. The tasks that are also included in the video are shown in the table below.
    - ii. For the Primary Category, participants need to perform at least 4 out of the 5 basic tasks. Advanced tasks may be substituted for basic tasks.
    - iii. For the Secondary Category, participants need to perform at least 2 out of the 5 basic tasks, and at least 3 out of the 5 advanced tasks.

<b>Sample Tasks</b>	
<b>Basic Tasks (B)</b>	<b>Advanced Tasks (A)</b>
B1. Flip TWO (2) times.	A1. Fly through THREE (3) hoops at varying heights
B2. Take off from one location, land in another location.	A2. Land the drone at the correct mission Pad. Note: A minimum of 4 mission Pads are to be used for the challenge.
B3. Measure the highest point of the play field.	A3. Take measurements of 2 different heights and land on the tallest one. Using the XYZ functions.
B4. Perform a "S" path  Or  Perform a Figure "6" path	A4. Scan a QR code and initiate the command written.  Or  Detect a colour and initiate the command written.
B5. Flying in a square flight path, with the drone always facing in the direction of the flight path.	A5. Fly a circle around the landing pad while facing it.

3. Participants may prepare and film their attempt once they have planned out their tasks.
  - a. Please adhere to the following rules for your video:
    - i. The attempt should not exceed FIVE (5) minutes.
    - ii. Tasks completed should be clearly seen in the video for it to be considered.
    - iii. The drones are to be pre-programmed and must NOT be controlled manually.
    - iv. Participants are to introduce themselves with their safety supervisor, indicate the flight path and tasks that they are attempting before their attempt.
    - v. Participants are to explain their codes in the video.
  
4. Submit your performance (video weblink and code file) by 26<sup>th</sup> AUG 2022, 2359 hours, in accordance to the following guidelines:
  - a. Upload your video file on YouTube (can be an unlisted video).
    - i. Video duration must not exceed FIVE (5) minutes.
    - ii. Video resolution must be at least 720p.
    - iii. Video layout must be in landscape.
    - iv. Only royalty-free music is allowed in the video (strictly no usage of copyright music/footages from artists, records companies, or movies)
  - b. Prepare your program code document.
    - i. The program code used should be screen captured and included in a Word document.
    - ii. Teams should include notes to explain what each segment of the code does.
  - c. Include the YouTube weblink and document file of the program code used

to be sent to the Drone Odyssey email.

- i. Drone Odyssey submission Link: <https://www.stemacademy.sg/drone-odyssey-submission>
  - ii. Please include your name, School/Organization and Level (Pri/Sec) in the email with the subject 'DOC Obstacle Submission'.
5. Judging for the qualification round will commence according to the rubric guide below.
- a. Video duration is not a criterion for scoring.
  - b. Unique entries may stand at an advantage for scoring.
  - c. Tasks completed beyond the basic requirements may stand at an advantage for scoring.
  - d. All submissions received before the deadline will receive an e-Certificate of Participation.

<b>Judging Criteria</b>
Creative Course Design
Unusual Resources
Coding
Creative Flying

6. Top teams of each subcategory, i.e., Category A1 and Category A2, from the qualifying rounds will take part in the finals at the Science Centre Singapore. These finalist teams will be required to prepare for and perform additional mission tasks that will be announced only on the actual day.

**Disclaimer:**

- The Organizer reserves the right to disqualify any submission if it does not comply with the submission rules.
- In the case of copyright infringement, the teams will be held solely responsible should the video be removed before judging.
- Participants should ensure that videos remain online for judging until the results are out.
- Late submissions will not be eligible for any prizes or awards.
- By submitting the videos, you acknowledge that Science Centre Singapore is free to use the videos in any form for any post event publicity related to DOC2022.

## Drone Swarming Challenge

The Drone Swarming Challenge will enable participants to apply innovative ways to use unmanned aerial systems (UAS) to perform flight routine or geo surveying.

Teams of up to FOUR (4) individuals, in Primary and Secondary levels, can register to compete in the challenge. The flight routine should consist of a minimum of TWO (2) and up to EIGHT (8) programmable drones.

1. Drone Swarming (Online Performance + Actual)
2. Terrain Mapping (Online Challenge)

### Category C1 – Drone Swarming



1. Participants are to register for the Drone Swarming Challenge.
  - a. Registration Period: 23<sup>rd</sup> May – 26<sup>th</sup> August 2022.
  - b. Please note that this is a group challenge.
2. Participants may prepare and film their performance once their registration is accepted.
  - a. As there are limited slots for this challenge, each School/Organization can only register TWO (2) teams. There are no limits to the number of private teams.
  - b. There are no restrictions on the presentation of the performance (e.g., short story, choreographed dance with drones, etc.). However, please adhere to the following rules for your performance:
  - c. The performance should not exceed FIVE (5) minutes.
  - d. A minimum of TWO (2) or a maximum of EIGHT (8) programmable drones are to be used.
  - e. The drones can be pre-programmed or controlled manually; however pre-programmed drones will have a scoring advantage than manual control under the technical merit component.
  - f. Attachments/payloads/props may be added to the drones as part of the choreography.
  - g. Any number of team members may be included as part of the choreography.
  - h. The area for the choreography should not exceed 6m x 6m. The maximum height of the flight should be in accordance with CAAS regulations.
  - i. Participants are to introduce themselves with their safety supervisor. These tutorial videos will also contain the tasks that you should attempt.
3. Submit your performance (video file and code file) by 26<sup>th</sup> August 2022, 2359 hours, in accordance to the following guidelines:
  - a. Upload your video file on YouTube.
    - i. Video duration must not exceed FIVE (5) minutes.
    - ii. Video resolution must be at least 720p.
    - iii. Video layout must be in landscape.
    - iv. Only royalty-free music is allowed in the video (strictly no usage of

- copyright music/footages from artists, record companies or movies)
  - v. The video is to be taken in one continuous shot.
  - b. No video editing of the performance is allowed.
  - c. Editing of sound/music or volume is allowed. Subtitles may also be added.
  - d. The camera can pan and change position any time during the performance if desired.
  - e. Prepare your program code document.
    - i. The program code used should be screen captured and included in a Word document.
    - ii. Teams should include notes to explain what each segment of the code does.
    - iii. Submission without the program code will be taken as manually controlled.
  - f. Include the YouTube weblink and document file of the program code used to be sent to the Drone Odyssey email.
    - i. Drone Odyssey submission Link: <https://www.stemacademy.sg/drone-odyssey-submission>
    - ii. Please include your name, School/Organization and Level (Pri/Sec) in the email with the subject 'DOC Swarming Submission'.
4. Qualification will commence according to the rubric guide in Annex 1.
- a. All submissions received before the deadline will receive an e-Certificate of Participation.
  - b. The top 5 entries will be shortlisted for online voting. The Top 5 teams will be notified by email.
  - c. Public voting will commence from 5th to 15th September 2022. The voting link will be up on Drone Odyssey Challenge event page at the Science Centre Singapore website.

Top teams of subcategory C1 from the qualifying rounds will take part in the finals at the Science Centre Singapore. The finalist will be informed through email. These finalist teams will be required to prepare for and perform secret mission tasks that will be announced only on the actual day.

## Category C2 – Terrain Mapping (Online)

Terrain Mapping is the new category for Drone Odyssey 2022. The challenge is held online. Participants are required to set up the challenge at their school, record their attempts at the tasks and present the research topic. Their videos recorded will then be submitted to a portal for judging.



1. Participants are to register for the Drone Terrain Mapping Challenge.
  - a. Registration Period: 23<sup>rd</sup> May – 26<sup>th</sup> August 2022.
  - b. Please note that this is a group challenge.
  - c. There are no limits to the number of School and private teams in this online challenge.
2. Teams are to submit 2 videos for the Drone Terrain Mapping Challenge.
  - a. Terrain Mapping video
  - b. Research Video: Application of Drone Swarming
3. Terrain Mapping video

Participants will receive the links to the tutorial videos, along with the tasks to complete, by 27<sup>th</sup> June 2022 through their emails.

  - a. These tutorial videos can be viewed at your own timing.
  - b. These tutorial videos will also contain the tasks that you should attempt.
    - i. The tasks that are also included in the video are shown in the table below.
    - ii. Participants need to perform at least 7 out of the 10 tasks.
    - iii. The following are the sample tasks.

Sample Tasks	
1	Drones must perform simultaneous site survey.
2	Drones are only to take off at the takeoff zone.
3	Application of minimum of 2 mission pads and maximum of 8 mission pads during the site survey.
4	Display evidence of Application of Mission Pad as no-fly zone.
5	No flying in the No-Fly zone
6	Set the LEDs of the drone to Red at the highest point of the playfield during surveying. Note: The highest point of the playfield should be at least 80cm.
7	Record sensor reading of the drones.
8	Display evidence of application of sensor reading to determine the correct landing point of prime drone.
9	Land the prime drone at the correct coordinates.
10	Land the surveying drones at the base.

4. Participants may prepare and film their attempt once they have planned out their tasks.
  - a. Please adhere to the following rules for your video:
    - i. Tasks completed should be clearly seen in the video for it to be considered.
    - ii. The drones are to be pre-programmed and must NOT be controlled

manually.

- iii. Participants are to introduce themselves with their safety supervisor, indicate the flight path and tasks that they are attempting before their attempt.
- iv. Participants are to explain their codes in the video.

5. Research Video

- a. Participants are to record a video on the following topic:
  - **Application of Drone Swarming.**
- b. The following are some of the examples of the Research Topic.
  - Drone Swarming in Delivery
  - Drone Swarming in Advertising
  - The Challenges of Drone Swarming

6. Submission

- a. Students are to upload their videos on google drive and share the link to the submission portal
  - i. Drone Odyssey submission Link:  
<https://www.stemacademy.sg/drone-odyssey-submission>
  - ii. Please include your name, School/Organization and Level (Pri/Sec) in the email with the subject 'DOC Swarming Submission'.
- b. Submission deadline: 2<sup>nd</sup> Sept 2022, 2359 hours
- c. Judging for the qualification will commence according to the Judging Criteria.
- d. Video duration is not a criterion for scoring.
- e. Unique entries may stand at an advantage for scoring.
- f. All submissions received before the deadline will receive an e-Certificate of Participation.

<b>Judging Criteria</b>
Creative Course Design
Tasks attempted
Unusual Resources
Coding
Creative Flying

- g. Top teams will be invited through email to take part in the prize ceremony at the Science Centre Singapore.

## 4. FINALS

### TASKS AND CHALLENGES

Tasks and challenges for the finals will be made known to the shortlisted teams on the day of the challenge itself. The tasks for Category A and B will be similar to what the teams have done for their qualification videos. For Category C1, the mission will be a technical Challenge on Drone Swarming.

### CATEGORY A, CATEGORY B

The finals will take place on **19<sup>th</sup>-22<sup>nd</sup> September 2022** at Science Centre Singapore. All finalist teams should expect the following during the course of the finals on that day:

- The competition hall will open at 8:30 am. Only registered team members of the finalist teams can enter the competition zone from 8:30 am to 5:30 pm.
- All finalist teams will report to the venue by 8:00 am for registration.
- Teams are advised to arrive early to prevent potential delays or bottlenecks. Teams reporting for registration later than this stipulated timing without extenuating reasons may be barred from competition at the discretion of the Drone Odyssey Challenge 2022 organising committee.
- Following registration, teams will be ushered to the Competition Hall/ Holding Rooms. All teams must stay within these competition areas and follow instructions from the officials. No team is allowed to venture beyond these areas without informing the officials.
- As for spectators, they are not permitted within the competition zone (playing field and student work areas).
- Flying will only be done within the designated flying space. Teams violating this may be barred from competition at the discretion of the Drone Odyssey Challenge 2022 organising committee.
- Teams are advised to bring chargers and sufficient spare batteries for the competition. Teams are allowed to charge their batteries within the competition hall. Only official battery packs are allowed and to be charged according to the manufacturer's recommendations. Teams are required to bring sufficient batteries for all the missions.
- Likewise, teams need to ensure that there is sufficient charge for their smart devices to last through the competition. Else, they are advised to bring a suitable charger for the smart device.
- Teams are to bring their own drones and accessories. However, there will be limited spare drones and iPads provided to teams in the event of technical difficulties.
- Teams will be briefed on the proceedings on the day and issued specific instructions pertaining to the final challenge during the Mission Briefing. Following which, teams will be given time to practice for their mission runs during the trial session.



- The Trial/Practice session will be conducted as a free practice session when teams are allowed access to the playfields on a first come firstserve basis. However, teams will not be able to spend more than 5 minutes on a playfield at any one time. Officials will ensure that no team is allowed to hog any playfield.
- Teams will commence with the Final Mission after their lunch break. Each team will be allowed reasonable preparation time before their **ONE (1)** Final Mission run. The scores obtained for that **ONE (1)** Final Mission Run will be used to determine the final rankings for the finals. In the case of a tie in scores, the faster timing for that **ONE (1)** Final Mission Run will be used as a tie-breaker.
- The winners of the Challenge and Merit Awards will be notified by the end of the competition.

### Category C1 – Drone Swarming

Category C1 will take place on **23<sup>rd</sup> September 2022** at Science Centre Singapore. All finalist teams should expect the following during the course of the finals on that day:

- The competition hall will open at 8:30 am. Only registered team members of the finalist teams can enter the competition zone from 8:30 am to 5:30 pm.
- All finalist teams will report to the venue by 8:00 am for registration. Teams reporting for registration later than this stipulated timing without extenuating reasons may be barred from competition at the discretion of the Drone Odyssey Challenge 2022 organising committee.
- As for spectators, they are not permitted within the competition zone (playing field and student work areas).
- Flying will only be done within the designated flying space. Teams violating this may be barred from competition at the discretion of the Drone Odyssey Challenge 2022 organising committee.
- Teams are advised to prepare all necessary equipment, i.e., routers, laptops, drones and accessories. Teams are allowed to charge their batteries within the competition hall. Only official battery packs are allowed and to be charged according to the manufacturer's recommendations. Teams are required to bring sufficient batteries for all the missions. In the event of technical difficulties, teams are expected to be able to troubleshoot their own equipment.
- Teams will commence with the challenge. Each team will be allowed reasonable preparation time before **ONE (1)** challenge run. The scores obtained for that **ONE (1)** challenge run will be used to determine the final rankings.
- The winners of the Challenge Awards will be notified by the end of the competition.

## 5. AWARDS

Drone Odyssey Challenge judges and officials make all scoring decisions, and their decision is FINAL. For arbitrary cases, the Drone Odyssey Challenge organising

committee will have the FINAL say.

There is no limit to the number of awards that a team can win, but there may not be a winner for every award. Awards may not be given out if the team do not meet the minimum standard determined by the Drone Odyssey Challenge organising committee.

## 6. CHALLENGE AWARDS

Challenge Awards are presented to the best performing teams in their respective categories based on their mission runs. Prizes associated with these awards are summarised below:

### ***CATEGORY A AND B (A1, A2, B1, B2)***

Awards	Prizes
<b>Champion</b>	\$500 Cash or Championship Trophy, Winner Medals/ Sponsored Products
<b>1<sup>ST</sup> Runner-up</b>	\$400 Cash or Winner Medals/ Sponsored Products
<b>2<sup>nd</sup> Runner-up</b>	\$300 Cash or Winner Medals/ Sponsored Products

### ***CATEGORY C (C1, C2)***

Awards	Prizes
<b>Champion</b>	\$500 Cash or Championship Trophy, Winner Medals/ Sponsored Products
<b>1<sup>ST</sup> Runner-up</b>	\$400 Cash or Winner Medals/ Sponsored Products
<b>2<sup>nd</sup> Runner-up</b>	\$300 Cash or Winner Medals/ Sponsored Products

## **MERIT AWARDS**

Merit Awards are presented to finalist teams in each category by a panel of judges in recognition of outstanding attributes displayed. Teams may strategise and scope their presentations to specifically vie for a particular Merit Award. Merit Awards may include the following awards and/or more:

Awards	Awarded to	How to win
<b>Best Video</b>	Team that creates the video that invokes the most viewer response. Repeat viewing or visiting.	Video that demonstrates the overall experience encompasses content, visual design, functionality, interactivity, and structure.
<b>Best Presentation</b>	Team that best exhibit creativity, fluency, confidence and flair in its presentation, and demonstrates that “WOW” factor to the panel of judges during the interview session.	Present the challenge topic and impress the judges with your flair in delivery or come up with the most unique and captivating presentation.
<b>Best Knowledge</b>	Team that best exhibit in-depth knowledge on subjects relevant to the theme, programming, mechanical design and unmanned aerial systems in general.	Present the challenge topic of choice and impress our judges with your in-depth knowledge and understanding
<b>Best Strategy</b>	Team that takes the initiative to achieve its mission objectives through intelligent and well calculated risk management skills and strategies, as well as a willingness to plan and execute risky maneuvers.	Do you have a unique strategy that you will be employing for the final mission run? Or an original risk management strategy? Share with the judges and impress them.
<b>Judge’s Commendation</b>	Team that demonstrates exceptional skills or qualities as recognized by the Judges	Showcase exceptional skills or qualities.

All teams presented with a Merit Award shall receive the following prizes:

<b>Merit Award Prizes</b>
<b>\$200 Cash or Merit Award Medals/ Sponsored Products</b>

Any of the above awards may not be given out if no team is deemed to have met the minimum standard as determined by the Drone Odyssey Challenge organising committee's panel of judges. Merit awards beyond what has been specified above may also be awarded to teams at the discretion of the Drone Odyssey Challenge organising committee's panel of judges.