



FACTSHEET ON IGNITE SKILLS CHALLENGE 2018

The ignITE Skills Challenge is a national-level skills competition organised by the Institute of Technical Education, Singapore, with support from the Ministry of Education and Singapore Science Centre. As the only national competition for 'N' Level students in Singapore, the aim is to excite secondary school students about the value of vocational and skills education. This year, students can participate in 13 Challenges (Information on the Skills Challenges is in **Annex A**).

This year marks the third edition of ignITE Skills Challenge. Challenges are designed to be engaging and fun, so as to make learning enjoyable and memorable. Once students sign up for a competition challenge, they will learn the necessary skills required for the competition during the training workshops. Workshops participants qualify for the preliminary rounds of each Challenge.

This year, many challenges have been linked to MOE's Category A elective modules. These elective modules were introduced by MOE to give Normal stream students in secondary schools a glimpse into what they would learn at ITE, to better prepare them.

After the preliminary rounds, the finalists were shortlisted to compete in the finals on 23 May 2018. The top three teams from each Challenge will win trophies and medals. The school which wins the most challenges will receive the Champion Trophy, which is being presented for the first time in 2018.

	Participation in 2017	Participation in 2018
Workshops	1,388 students from 63 MOE Schools	1,569 students from 66 MOE Schools
Finals	360 students from 43 MOE Schools	390 students from 48 MOE Schools (Each Challenge has 10 teams of 3 pax)

Skills Challenges

CIRCUIT TINKERING CHALLENGE

Objective of challenge

Participants will demonstrate their skills in creating basic electronics circuit with LED on paper using copper tape. The participants will have to ignite their creativity incorporating the circuit to design and create a 2D/3D art work.

What will they do during the Challenge?

Teams are to create either a 2D or 3D tinkle circuit on the A2-sized canvas before the finals. During the finals, they have to set up their A2-sized tinkle circuit and mount it on a tripod display. A *Surprise circuit tinkering task* will be announced for them to complete within the stipulated time.

What skills the students have learnt/will learn?

Skill Level 1: Able to identify the electronics components and understand their functions

Skill Level 2: Able to understand the functions of the circuit connections

Skill Level 3: Able to create basic electronics circuit with LED

What are they scored for?

1. Visual Impact
2. Interpretation & Creativity
3. Composition/Design/Skill
4. On The Spot Circuit Tinkering

Related ITE Course(s):

Nitec in Electronics, Computer Networking & Communications, *Higher Nitec* in Electronics Engineering

COLOURFUL HANDS, COLOURFUL MINDS

Objective of challenge

Students apply knowledge of balancing and colour separation technique to create two art pieces: mobile sculpture and painting.

What will they do during the Challenge?

During the preliminary competition, teams submitted their art pieces known as 'Colourful hands'. During the finals, they will showcase their 'Colourful minds' by exhibiting their chromatography art. Each team will prepare their painting on a B5-sized chromatography paper, using the skills they have learnt in the workshop.

What skills the students have learnt/will learn?

Skill level 1: Understand the principle of colour separation using paper chromatography and balancing of forces in lever system.

Skill Level 2: Able to perform chromatography technique using paper chromatography with coloured dyes and carry out balancing of force in lever system.

Skill Level 3: Able to create a balanced mobile sculpture and painting using the knowledge of chromatography separation and balancing of force in lever system which they have learnt from workshop.

What are they scored for?

1. Workmanship
2. Creativity
3. Oral presentation skill
4. Team work

Related ITE Course(s):

Nitec in Applied Food Science, *Higher Nitec* in Chemical Technology, *Higher Nitec* in Biotechnology

CREATE YOUR OWN 3D LIGHT BULB

Objective of challenge

Participants will learn the basic techniques of using a 3D pen and get to try their hand at creating miniature sculptures, structures or art works with this technology.

What will they do during the Challenge?

They will use the 3D pen to create and draw geometrical shapes in three planes (e.g. 3D boxes, stars & other fun things) using templates. They will also have to incorporate LED fairy lights into their design to create an exquisite light bulb or lamp.

What skills the students have learnt/will learn?

Skill Level 1: Mechanism of a 3D pen, such as how to load and navigate the filaments;

Skill Level 2: Basic techniques of handling a 3D pen, such as how to control the flow and speed of ejection of the filament, the amount of pressure to apply during usage, how to make little pieces and then bind them together using the tip of their 3D pen;

Skill Level 3: Designing and creating the most creative and beautiful 3D “light bulbs”

What are they scored for?

1. Consistency of the print
2. Design consideration (colours, feel, etc)

Related ITE Course(s):

Nitec in Mechanical Technology, *Nitec* in Electrical Technology, *Higher Nitec* in Mechanical Engineering, *Higher Nitec* in Electrical Engineering

DREAM GLIDER

Objective of challenge

Participants will demonstrate their skills in creating a Glider with balsa wood and apply their knowledge of principles of flight to compete.

What will they do during the Challenge?

Teams are to design the major parts of the Glider using balsa wood and assemble them together.

What skills the students have learnt/will learn?

Skill Level 1: Able to Identify the major parts of an airplane and their functions.

Skill Level 2: Able to understand the concept of flight stability.

Skill Level 3: Able to identify and describe the different types of wing shapes and aspect ratio.

What are they scored for?

The competition area is separated into different scoring zones, and the numbers indicated in the zones are the scores that will be awarded. All teams will launch their gliders in 3 rounds. Scores will be awarded for each round based on the landing spot of the glider on the demarcated zones.

Related ITE Course(s):

Nitec in Aerospace Avionics, *Nitec* in Aerospace Technology

FLOWER POWER

Objective of challenge

Participants will demonstrate skills in creating floral arrangements, using leaf manipulation techniques to enhance their creations.

What will they do during the Challenge?

Teams are to create a structure, vase or container with recycled, eco-friendly materials before the finals. They will be given 1 hour during the finals to arrange fresh flowers and perform at least one leaf manipulation technique.

What skills the students have learnt/will learn?

Skill Level 1: Able to identify flowers and leaves, and their purposes in an arrangement

Skill Level 2: Able to create leaf manipulations with 3 types of leaves

Skill Level 3: Able to arrange flowers in an aesthetic manner

What are they scored for?

1. Quality of leaf manipulation
2. Creativity
3. Workmanship
4. Innovative use of recycled materials

Related ITE Course(s):

Nitec in Floristry

FLYING SAUCER

Objective of challenge

Participants need to construct an electronics circuit that propels the “Flying Saucer” as accurate as possible. They also learn how to use Digital Protractor powered by Micro:bit to guide them during the launch.

What will they do during the Challenge?

Teams will be building a working electronics flying saucer and taking electrical measurements with Digital Multimeter. All teams will then demonstrate launching and landing of their flying saucers accurately to win the competition.

What skills the students have learnt/will learn?

Skill Level 1: Able to identify the electronics components and their functions.

Skill Level 2: Able to interpret circuit diagram.

Skill Level 3: Able to connect up an electronics circuit with blinking LED and motor.

What are they scored for?

1. Speed of assembly
2. Circuit functionality
3. Accuracy of measurements
4. Landing accuracy

Related ITE Course(s):

Nitec in Electronics, Computer Networking & Communications, *Nitec* in Microelectronics, *Higher Nitec* in Electronics Engineering

FUN WHEELS

Objective of challenge

Fun Wheels is a competition where a racing robot runs through a designated path, competing in speed and reliability.

What will they do during the Challenge?

Students are required to tune the car and set parameters in programming their fun wheels to achieve the optimal speed and reliability, during the race.

What skills the students have learnt/will learn?

Skill Level 1: Able to appreciate the basics of an autonomous robot and the importance of programming the controller, input and output devices.

Skill Level 2: Able to programme and make changes to their projects.

Skill Level 3: Able to apply their scientific knowledge to impact acceleration, speed and reliability.

What are they scored for?

- Ability of the Fun Wheels to run autonomously
- Race Finish Time
- Ability of the Fun Wheels to stop at the goal

Related ITE Course(s):

- *Nitec* in Electronics, Computer Networking & Communications

GAME CREATION

Objective of challenge

Participants will demonstrate their design skills, teamwork and problem-solving skills while creating 2D games.

What will they do during the Challenge?

Teams will create a 2D game based on the game design requirement document. They need to strategise and build the game features such as game play, collision, score and UI design within one hour.

What skills the students have learnt/will learn?

Skill Level 1: Able to identify the game type/genre

Skill Level 2: Able to understand the game design requirements

Skill Level 3: Able to strategise and collaborate to complete the game creation within one hour

What are they scored for?

1. Game design
2. Creativity
3. Analytical skills
4. Teamwork
5. Time management

Related ITE Course(s):

Higher Nitec in Games Art & Design, *Higher Nitec* in Games Programming & Development

GEL POWER

Objective of challenge

Teams will create their own energy gel (sports drink) based on the recipe they have developed.

What will they do during the challenge?

Teams will prepare and package their energy gel during the allocated time.

What skills the students have learnt/will learn?

Skill Level 1: Identify essential nutrients in energy gel

Skill Level 2: Calculate nutritional content

Skill Level 3: Design a food nutrition label

What the students scored for?

1. Creative use of Ingredients
2. Hygiene & Safety Practices
3. Presentation of final product
4. Nutritional information
5. Ability to answer questions about product

Related ITE Course(s):

Nitec in Fitness Training, *Higher Nitec* in Sport Management

GOODBYE TO PAIN

Objective of challenge

The objective of the challenge is for students to understand the benefits of sports taping and video analysis of sports movements to enhance performance.

What will they do during the Challenge?

All teams are required to perform the correct ankle-taping technique and explain the benefits of video analysis in the sport movements.

What skills the students have learnt/will learn?

Skill Level 1: Able to identify common sports injuries.

Skill Level 2: Able to understand the importance of correct postures, techniques and muscular systems.

Skill Level 3: Able to apply the correct techniques to rectify the injuries via sports taping.

What are they scored for?

- Tape Preparation
- 5-Step Ankle Taping
- Final Appearance of Taping
- Functionality of Body Parts
- Angle of Video Shooting
- Video Analysis of Chosen Sport Movement
- Accuracy of Video Analysis
- Correct Interpretation of Results

Related ITE Course(s):

Higher Nitec in Sports Management

MAD MOCKTAIL STRIKES AGAIN!

Objective of challenge

Students have to create a tasty and attractive mocktail using an assortment of juices and syrups, and apply knowledge of layering liquids (syrups and juices) with different densities.

What will they do during the Challenge?

Students will create their own mocktails using a selection of juices, syrups, glassware and equipment provided.

What skills the students have learnt/will learn?

Skill Level 1: Able to appreciate the various types of liquids used in making mocktails.

Skill Level 2: Able to understand the basics of densities of liquids and the concepts behind layering them.

Skill Level 3: Able to conceptualise a deliciously looking mocktail utilising the knowledge attained.

What are they scored for?

- Liquid Portioning
- Sequence of Liquid Portioning
- Creativity Approach
- Density Effect
- Overall Timing for Mocktail Preparation
- Neatness & Orderliness
- Presentation
- Combination of Taste
- Visual Appeal of Drink
- Name Association & Link to Drink

Related ITE Course(s):

Nitec in Food & Beverage Operations

PIXEL MAGIX

Objective of Challenge

Participants will learn the sciences of primary paint colours (Red, Blue, Yellow) and acquire skills in mixing and matching only primary colours to produce all the different shades of colours of the visible spectrum.

What will they do during the Challenge?

They will mix and match all colours in the reference pixel art with only the primary colours (Red, Blue, Yellow) and (Black & White) for shading to paint on the individual geometric pixel squares to replicate the pixel art.

What skills the students have learnt/will learn?

Skill Level 1: Learn the science of colour.

Skill Level 2: Able to mix and reproduce the other visible spectrum of colours.

Skill Level 3: Able to work and coordinate as a team to complete the task.

What are they scored for?

1. Colour mixing techniques
2. Quality of colour replication on paper
3. Quality of paintwork
4. Coordination and teamwork
5. Visual appeal

Related ITE Course(s):

Nitec in Visual Communications, *Nitec* in Space Design, *Higher Nitec* in Visual Merchandising

ROBOMECH CHALLENGE

Objective of challenge

Students will be tested on their ability to assemble components on a functional robot and navigate it using remote control.

What will they do during the Challenge?

Students will be tasked to assemble a robot according to the drawings given. They will then control the robot to push as many balls as possible into the holders at 2 different heights. They will also manoeuvre a Humanoid to accomplish several tasks.

What skills the students have learnt/will learn?

Skill Level 1: Able to learn the different parts of robotic components, their uses and assembly skills.

Skill Level 2: Able to control the robots, determining where they can or cannot move to.

Skill Level 3: Able to achieve pre-determined tasks using the robot and testing their control skills.

What are they scored for?

- All the parts are assembled correctly and firmly according to the drawings given.
- The assembled robot is able to function according to the specifications given.
- Time taken to complete the robot assembly.
- Time taken to control the robot into completing all the given tasks.
- Marks may be deducted for any faults committed.

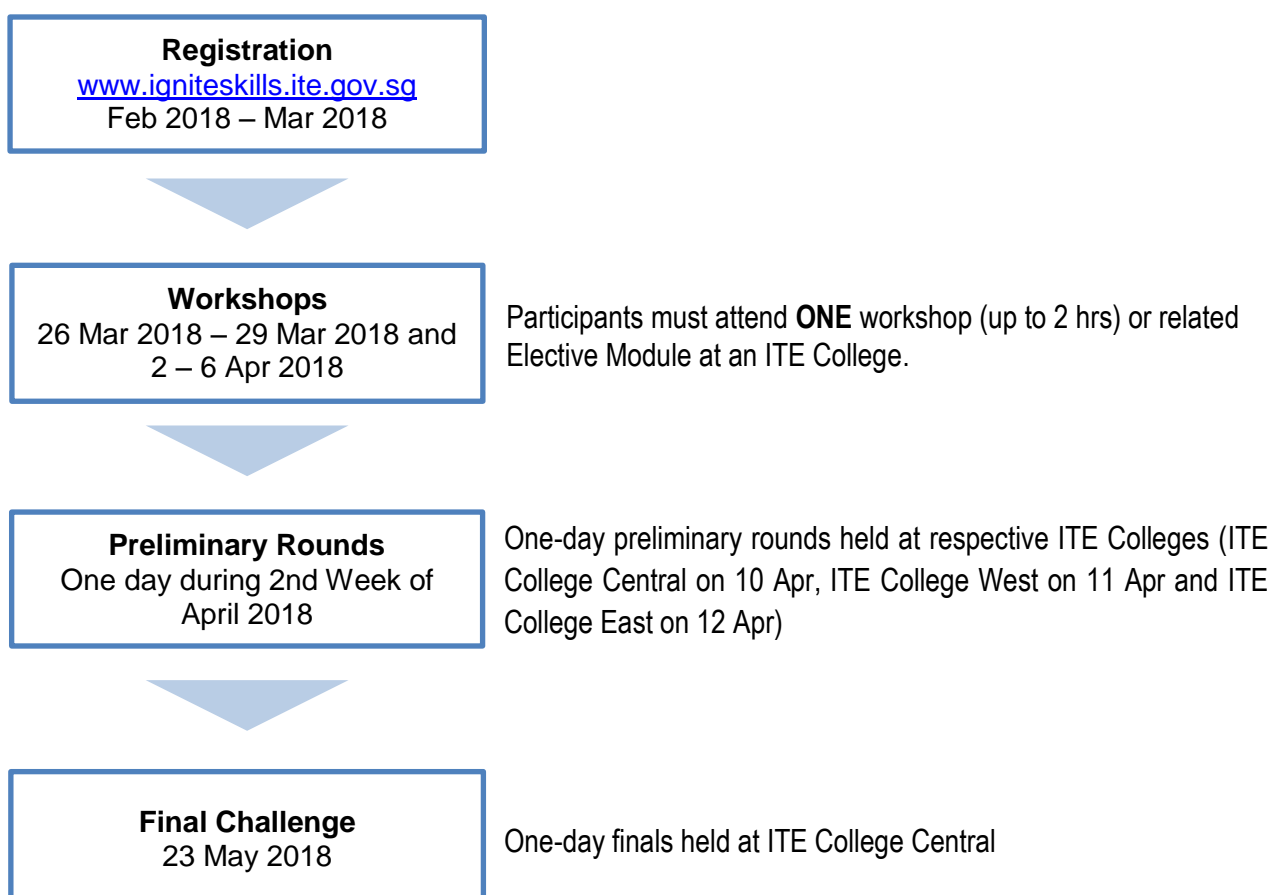
Related ITE Course(s):

Nitec in Mechatronics

Eligibility and Rules

1. ignITE Skills Challenge 2018 is open to Normal (Technical) or Normal (Academic) students.
2. Each team must be made up of 3 members (2 main participants and 1 reserve, at least 2 members must see through till end of the Final Challenge).
3. Each student may join only 1 team.
4. Participants must attend **ONE** workshop (up to 2 hrs) at the respective ITE College between 26-29 Mar and 2-6 Apr 2018 (for one Challenge), or a related Elective Module between 19-22 Mar and 26-29 Mar 2018.
5. Up to 10 teams for each challenge will be selected during the preliminary round to advance to the Final Challenge (capped at a maximum of 2 teams per school).

Key Dates



Prizes for each Challenge

- 3rd Prize: Medals, Trophy and \$150 worth of vouchers
- 2nd Prize: Medals, Trophy and \$225 worth of vouchers
- 1st Prize: Medals, Trophy and \$300 worth of vouchers
- Champion Trophy for the top-performing secondary school

Sponsors

Name of Challenge	Sponsor	Gift-In-kind
Gel Power	CrossPoint Telecom Pte Ltd	<ul style="list-style-type: none"> • \$500 in Nike Vouchers
Flying Saucer	Fluke South East Asia Pte Ltd	<ul style="list-style-type: none"> • Loaning 15 units of DMM • 30 sets of Fluke note book and pens for the 30 participants in the Finals • 9 sets of sport bags and towels for winning teams in the Final.
	Infocomm Media Development Authority	<ul style="list-style-type: none"> • 20 sets of micro:bit used as competition kits • 9 micro:bit DIY project kits <p>1st Prize - Explorer Pack x 3 2nd Prize - Fun Fair Fever kit x 3 3rd Prize - Kitchen Caper kit x 3</p>



Organised by:



Supported by:



Ministry of Education
SINGAPORE

