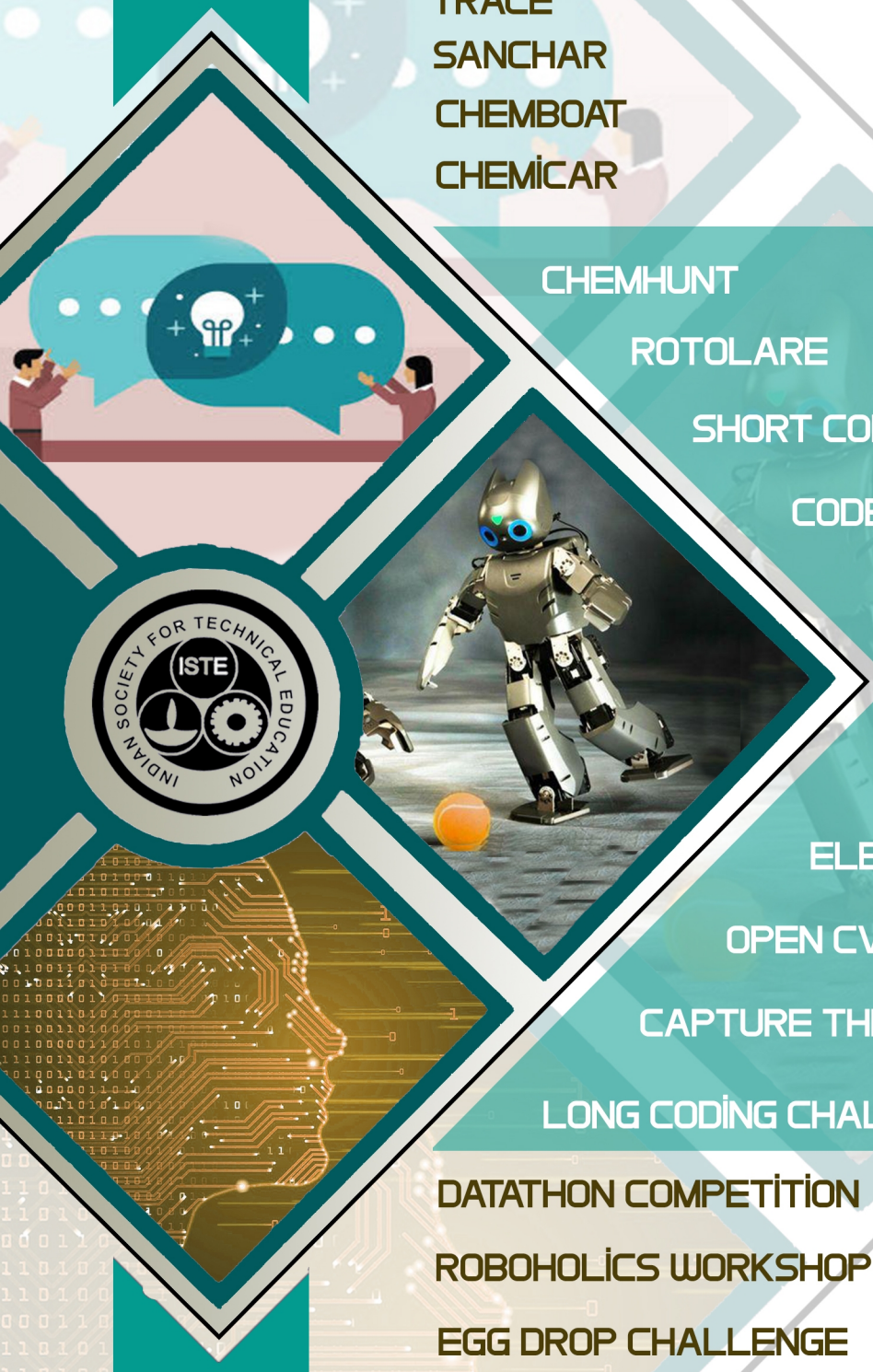
INDIAN SOCIETY
FOR
TECHNICAL EDUCATION
presents

PRODYOGIKI 2019

LIST OF EVENTS



TRACE

SANCHAR

CHEMBOAT

CHEMİCAR

CHEMHUNT

ROTOLARE

SHORT CODİNG

CODE RELAY

RUBE GOLDBERG

SAND TOWER

ROBO SOCCER

ELECTROVENTURE

OPEN CV WORKSHOP

CAPTURE THE FLAG

LONG CODİNG CHALLENGE

DATATHON COMPETİTİON

ROBOHOLİCS WORKSHOP

EGG DROP CHALLENGE

BASCULE BRİDGE

ROBO CLENCHER

PAPER PLANE

DATATHON WORKSHOP

CATAPLANE

ABOUT US

INDIAN SOCIETY FOR TECHNICAL EDUCATION

Indian Society for Technical Education (ISTE), NIT Hamirpur has been proactively working to provide students with a variety of opportunities for their social and professional development. We strive to build camaraderie among students and offer them avenue for a variety of skill development.

PRODYOGIKI '19

Every technocrat's first hand at practical implementation of what has been learnt. Every nerd's passion. And the most fulfilling exploration of technology that any engineer can do. This is merely the glimpse of the show. The Prodyogiki of ISTE, NIT Hamirpur is designed to challenge and motivate the students at the same time, and bring out their best. The Prodyogiki is the best representative of the concept = "multi-disciplinary". The 7 days technical spree is filled with an interactive session, workshops, events and quizzes for students promise to be melting pots of different engineering and technical fields and will set new benchmarks in collaboration between different disciplines.

SCHEDULE

FEBRUARY 2019

2
- PYTHON WORKSHOP

3
- ROBOHOLIC WORKSHOP

4
- DATATHON WORKSHOP
- LONG CODING CHALLENGE

5
- DATATHON WORKSHOP II
- SHORT CODING CHALLENGE

6
- ELECTRO VENTURE
- BASCULE BRIDGE

7
- CODE RELAY
- CHEM BOAT
- ROTO LARE

8
- CHEMECAR
- RUBE GOLDBERG 2.0

9
- SAND TOWER
- CHEM HUNT 2.0
- OPEN CV WORKSHOP

X
- SAN CHAR
- PLANES
- ROBHOLICS & EGG DROP

SOFTWARE CORNER

EMBEDDED

CHEMIKRIYA

DESIGN

ROBOHOLICS

SHORT CODING COMPETITION

Event Details:
The event is a single round competition which will consist of 5 questions of varied difficulty level
The event will be held under the time restriction of 3 hours
Standard short competition rules apply

General Instructions:

Register at HackerEarth and the given google form link provided on the website
Participants have to login through their registered Email Ids.

Judgement Criteria:
HackerEarth leaderboard
Any kind of plagiarism, if found, will lead to disqualification

Frequently Asked Questions:

- **What is HackerEarth?**
  It is a competitive coding website, where people write code to win competitions.
- **What does TLE mean?**
  It stands for Time Limit Exceeded. Try to make your code faster and it might not show up again.
- **What does WA mean?**
  It means that your code is producing the wrong output. Make the right changes in your code and it might work.
- **What does NZEC mean?**
  Just add “return 0” to the end of your statement. You should know whether you have to add a semicolon at the end of the same or not.
- **Where’s the venue of the competition?**
  Your place. Not ours.

LONG CODING COMPETITION

Event Details:
An event for first year students
Total 8 questions will be given
Total 5 days will be given to solve these questions.

General Instructions:

Register at HackerEarth and the given google form link provided on the website
Only individual participation is allowed
Participants have to login through their registered Email IDs.

Judgement Criteria:
HackerEarth leaderboard
Any kind of plagiarism, if found, will lead to disqualification

Frequently Asked Questions:

- **What is HackerEarth?**
  It is a competitive coding website, where people write code to win competitions.
- **What does TLE mean?**
  It stands for Time Limit Exceeded. Try to make your code faster and it might not show up again.
- **What does WA mean?**
  It means that your code is producing the wrong output. Make the right changes in your code and it might work.
- **What does NZEC mean?**
  Just add “return 0” to the end of your statement. You should know whether you have to add a semicolon at the end of the same or not.
- **Where’s the venue of the competition?**
  Your place. Not ours.

DATATHON WORKSHOP

Workshop Overview:

DAY 1 – Python in Data Science
Basic python syntax, data structures
Pandas library for handling datasets
Numpy library for scientific calculations
Bokeh, matplotlib library for data visualization

DAY 2 – Data Science part 1 (PreProcessing)
Data Science part 2 (Data Models)

DATATHON COMPETITION

Event Details:
An online team event
Data sets will be given and data needs to be analyzed and interpreted accurately

General Instructions:
Participants can take part as individual or as a part of a team. Team should not contain more than 3 members.
Submissions should be in csv format and mailed to teamiste@gmaill.com
10 submissions are allowed per team
Datathon will be of 48 hours

Judgement Criteria:
RMSE/Accuracy will be used to score different teams based on their submission and ground truth data

CODE RELAY

Event Details:
A fast paced coding event with 3 rounds
The one who finishes all events with maximum points wins

General Instructions:
Round 1 – Debugger involves debugging a program
Round 2 – TranslateMyLanguage involves comprehending a code from a new language and converting it
Round 3 – Solve Problem involves solving few programming based questions

Judgement Criteria:
Scoring most points in the least time possible will ensure win

SOFTWARE CORNER

EMBEDDED

CHEMIKRIYA

DESIGN

ROBOHOLICS

SANCHAR

Event Details:
The teams will be required to make a wireless communication apparatus (transmitter and receiver) operating in range of 80-120MHz (FM radio range) so as not to interfere with other **necessary communication frequencies.**

General Instructions:
Maximum team of 4 participants (Minimum 2)
Design and build a transmitter as well as the reciever to commumnicate a specific message which will be given on the spot

Judgement Criteria:

The devices will be judged according to
- **Design**
- **Functionality**

The testing process will be **steady state** process thus no significant translation/movement will be performed during testing.

Marking System will be of relative type **i.e.** The team that performs best in a criteria will be awarded maximum points and others will be rewarded accordingly

ELECTROVENTURE

Event Details:
Team ISTE provides a riveting platform, Electroventure to line such experiences again in a technical atmosphere along with your friend.

General Instructions:
Team of 2 participants
Round 1 – Pen paper test to earn P-Bucks, a virtual currency
Round 2 – Buy ciruit components to create a circuit in a given period of time

Judgement Criteria:
1. Correct working circuit
2. P-Bucks left with them
3. Time taken

SOFTWARE CORNER

EMBEDDED

CHEMIKRIYA

DESIGN

ROBOHOLICS

CHEMHUNT 2.0

Event Details:
A team of 4 members will play the treasure hunt game with a dose of chemistry in it

General Instructions:
Team of 3 participants
The event will consist of 2 rounds -
Round 1 – A Quiz round of 20 mins which will determine which teams will qualify for the next round
Round 2 – The qualifying teams will get chits for the treasure hunt which will contain normal chemistry and science related questions. Top 5 teams will qualify for the final round which will be revealed on the spot...

CHEMBOAT

Event Details:
Marangoni effect is the mass transfer along an interface between two fluids due to a gradient of the surface tension. Using the same effect, the participants need to make a boat and make it move by using chemicals

General Instructions:
Team of 3 participants
The event will consist of 2 rounds -
Round 1 – A short quiz round which will help earn teams P-Bucks
Round 2 – Use P-Bucks to buy materials and chemicals to build a boat and boost it.

Judgement Criteria:
Team whose boat will cover the given distance in shortest time will win

CHEM-E-CAR

Event Details:
An all out event for all the chemical enthusiasts which will test their presence of mind by powering a car by the thrust produced by a chemical reaction.

General Instructions:
Team of 3 members will be formed
Chemicals will be provided to the teams and these chemicals will be used to power the chem-e-car.
There is a specific distance upto which the car needs to travel.
Round 1: A short quiz will be conducted to shortlist teams for the next round
Round 2: A race is to held between the 10 teams in 2 sets

Rules:
The chemicals provided to the teams are in limited amount
The teams will be given two chances to perform the reaction.
The distance up to which the car travels would be noted at the time of competition
The objective should be to maximize the distance travelled by the car

Judgement Criteria:
After the competition, individual scores will be added and final scores will be checked.
The team with the highest score, that is the team which maximizes the distance traveled wins the competition.

SOFTWARE CORNER

EMBEDDED

CHEMIKRIYA

DESIGN

ROBOHOLICS

ROTOLARE

Event Details:
Teams shall design and build a “roller coaster” meeting the requirements of below rules. The “roller coaster” shall mean the entire structure, including the roller coaster track and the base, but not the actual vehicle.

General Instructions:
Teams need to make model of a roller coaster track using the basic hardware material like plastic tubes, rubber tubes (transparent) and paper. (Participating teams are free to design their roller coaster as per their discretion)

Maximum Team size is limited to 5 members per team

Items provided by Team ISTE:
Stand support
Cardboard Paper
Glue Gun
Thread/Rope
Vehicle (Marbles, Toy car)
Participating teams are free to use any other necessary stationary required for their roller track.

Judgement Criteria:
Time, Vertical Loop and Angle turns are the main parameters for the gaining points

CATA-PLANE

Event Description:

A glider is an unpowered aircraft that uses natural occurring currents of rising air in atmosphere to remain airborne. A catapult is a ballistic used to launch a projectile for a great distance without the aid of explosive devices.

General Instruction:
Teams have to build a glider plane which gives a very long flight when gently launched into the air, usually in the wind by a gentle throw of a catapult.
Participants will be provided with some materials at the time of competition.
They will have to use those materials to make a catapult glider in the allotted time .
(NOTE: Catapult for testing of plane will be provided by team ISTE)

Rules:
1. Maximum of 4 members in a team.
2. Use of any material that is not provided on spot is not allowed.
3. Each time will get a maximum of 3 attempts to launch their plane.
4. The minimum wing span of the plane should be 36 cm and the minimum length should be 30 cm
5. The participants will be provided 1 hour to build the plane

Judgement Criteria:
1. Range of plane
2. Time of flight
3. Design of plane

BASCULE BRIDGE

Event Details:
ISTE takes you to a different level of engineering this year with BASCULE BRIDGE! Design your own hydraulic bridge and give it a physical shape just like a bascule bridge.

General Instructions:
You have to design a one-fold Hydraulic bridge by using the provided material. The span length should be appropriate so as to carry load and should lift it up to some height.

Rules:
1. No. of participants in a team must not exceed 4 members.
2. The span of hydraulic bridge must be of Popsicle sticks only and MDF sticks be can used at base, abutment & hinge point.
3. Width of the span should be appropriate so as to provide a proper loading platform
4. The specifications of the bridge should be as follows:
13 cm – clearance width
33 cm – clearance height
Span (excluding tower width) – 46 cm
Height of bridge when closed 23 ± 2cm

Materials Provided:
Popsicle sticks & MDF sticks
Glue Gun & Glue sticks
Lead Pencil
Four syringes with fitted pipe system
Measuring Scale

Judgement Criteria:
1. Gradual weights will be applied onto the platform and lifted to check the weight handling capacity of the bridge.
2. Points = 2[Vertical Lift] + 0.5[Weight Lifted]
Team having maximum points will be declared winner.

PAPER PLANE

Event Details:
In this event, you'll get to build a paper plane and change its basic design to see how this affects its flight. There's a lot of cool science in this activity, such as how forces act on a plane so it can fly.

General Rules:

1. Paper planes must be made on spot with the provided paper (International A4 Size).
2. Only one piece of paper per plane may be used.
3. Cheating or tampering with paper will warrant immediate disqualification.

Judging criteria:

1. Each student will get 4 throws. Students may use the same plane for each throw or construct a new plane for the consecutive throw.
2. Students must not overstep the marked 'throwing line/mark', if a thrower steps over the line the throw will not be counted or measured.
3. Distance will be measured in a straight line from the throwing mark to where the plane first hits the ground or an object (whichever first).
4. Time will be measured from the moment the plane leaves the hand to when it hits the ground or an object (whichever first).

SAND TOWER

Event Details:
Teams need to make model of sand tower using the basic sand, water and simple wood sticks.
Note: Material for sand tower will be provided (Team ISTE will provide all the materials required to make a sand tower)

General Instructions:
Team of 4 participants
Participants can form teams from different branches.
No two teams must have any common member.
Teams are not allowed to touch their model one judging criteria started .
Size restrictions: the diameter of the tower should not be more than 25 cm.
Only wooden sticks are allowed for reinforcement of the tower.
Only water is allowed for the binding of sand. You can not get any only lubricant for the binding of sand.
Team can use maximum only 6 sticks for the reinforcement of the tower.
No extra sticks will be provided.
Note: If any team found violating any of the above terms and conditions, ISTE has all the rights to disqualify them.

Judgement Criteria:
Time (15 points) : Time given to make the tower is 30 minutes .
Height(30 points) : The minimum height of tower should be 45 cm. no max. limit for height.
Shear force(35 points): A amount of weight will be put on the tower to check the shear force.
Diameter (20 points): The diameter of the tower should not be more than 25 cm.

EGG DROP CHALLENGE

Event Details:
In this activity, participants are challenged to protect an egg from breaking after it is dropped from a set height.

General Instructions:
There will be teams of 2-3. Their aim would be to design a contraption to protect their raw egg. The idea of egg drop project is to use as few materials as possible to make the packaging strong enough to withstand the fall.

Materials Provided:
All the materials required for making the contraption would be provided to the participants on the spot.
These would include straws

- Hay
- Cotton
- Disposable cups
- Masking tape
- Balloons
- Plastic Bags
- Newspaper
- Cardboard
- Threads
- Egg box

Judgement Criteria:
1. The apparatus must allow for the egg provided to be unbroken and uncracked upon completion of the drop test. Participants will remove the egg from the apparatus and show it to the judge for verification. Only the judge determines whether the egg survived the drop test.

2. The apparatus will be judged based on the following equation, with the highest score winning:
SCORE = Integrity / (Mass + Height)
Integrity = 2010 if the egg is not broken; 0 if it is broken
Mass = Mass (in grams) of the container without the egg (must not exceed 250 grams)
Height = Height (in centimeters) of the container's "minimum dimension"

RUBE GOLDBERG 2.0

Event Details:
The teams have to design-build-and-execute a Rube Goldberg Machine in a confined space

General Instructions:

1. Teams will be given a region (space restriction) and a team number (space number).
2. There will be an input channel and an output channel which will be the START and the END of their Rube Goldberg Machine.
3. Teams will be provided with a ping pong ball at the START point. They have to make that ball (or any substitute of the ball) to reach the END point via a plethora of intermediate channels.
4. The END of every team will be connected with the START of their respective successive team. (So at the end if everything goes right then it would look spectacular)
5. All teams will be provided with some definite materials that will be same for all.
6. Other junk or random stuff would be available in the room for their use (NO RESTRICTION FOR CREATIVITY!) which the teams can include in their RUBE GOLDBERG MACHINE.

Judgement Criteria:
Teams will be judged on the basis of the complexity of the design of their Rube Goldberg Machine.
Score will be proportional to the amount of time taken in each section of their Rube Goldberg Machine.

SOFTWARE CORNER

EMBEDDED

CHEMIKRIYA

DESIGN

ROBOHOLICS

CAPTURE THE FLAG

Event Details:
Capture the Flag is a simple game where two teams have a flag and the objective is to capture the other team's flag, located at the team's base and bring it safely back to their own base. However the twist here is that there will be bots doing the match and you will be controlling them!

General Instructions:

1. Capture the Flag will be played by two bots and there will be a one on one match in an arena.
2. A series of capture the flag knockout rounds will be conducted.
3. Two bots will be pit against each other in their respective bases.
4. As the match begins, they will go to their opponent's base and carry the flag using magnetic attachments on their bots.
5. The flag has to be brought back to their base to the starting point.

Judgement Criteria:

The points have been divided as follows:

1. **1.** Capturing the flag scores 10pts (can be scored only once)
2. **2.** Carrying the flag back to starting point scores 10pts
3. **3.** Collecting the Gold Coin in the arena scores 5pts

ROBOSOCCER

Event Details:
Bots created by the participants will compete against each other in the one on one soccer/football match. The bot that scores the most goals in the given time limit wins. Its as simple as that!

General Instructions:
1. The robot found pushing or damaging other bots shall be disqualified.
2. Each match will last for 10 minutes and will be knockout event
3. The organizers reserve the right to change any or all of the above rules as they deem fit. Change in rules, if any will be highlighted on the website and notified to the registered teams.

TRACE

Event Details:
Teams are required build an autonomous robot which follow a white line and keep track of directions while going through the maze.

General Instructions:
1. A team may consist of maximum of 5 participants
2. In the run, the bot must start from the 'Start' and find its way to reach the 'End' (A White Square) of the arena. The bot has to give a signal by glowing a LED as soon as it senses the white square below it at the end. The bot has to follow an algorithm to find its path to reach 'End'. There are no restricitons to cover all the checkpoints.
3. A total of 5 minutes will be provided to complete the run.

Judgement Criteria:
1. 25 points will be awarded as it crosses any of the checkpoints but it will be counted only once for each checkpoint.
2. 30 points will be provided if the bot successfully completes the Run. 5 points will be awarded if the bot glows the LED.
3. The team will be awarded extra points for completing the maze before the time limit(i.e. 300 – time taken to complete the maze for dry run)
4. 10 points will be deducted for any penalties or damaging the arena.

ROBOCLENCH

Event Details:
The competition is an extension of the robotics workshop conducted by the team ISTE. The team has to build a wirelessly controlled robot which can do simple tasks of gripping blocks and putting them in different places so that it can complete the route by overcoming the obstacles in its path.

General Instructions:
1. The dimensions of the bot should be less than or equal to **200 mm X 200mm X 300mm (lxbxh)** failing which the team will be **disqualified** from the competition. The bot can however extend its dimension once the run starts. An error of **(+5%/-5%)** is Permitted.
2. The bot must be controlled wirelessly.
3. Irrespective of the mechanism used, only one person will be allowed to control the bot.
4. Failing to meet any of the above specifications will lead to immediate disqualification.

Judgement Criteria:
Scoring is done in the following manner
A = Points scored
P = Penalties
T = (360 – Time taken in seconds)
Total points scored = A + T – P