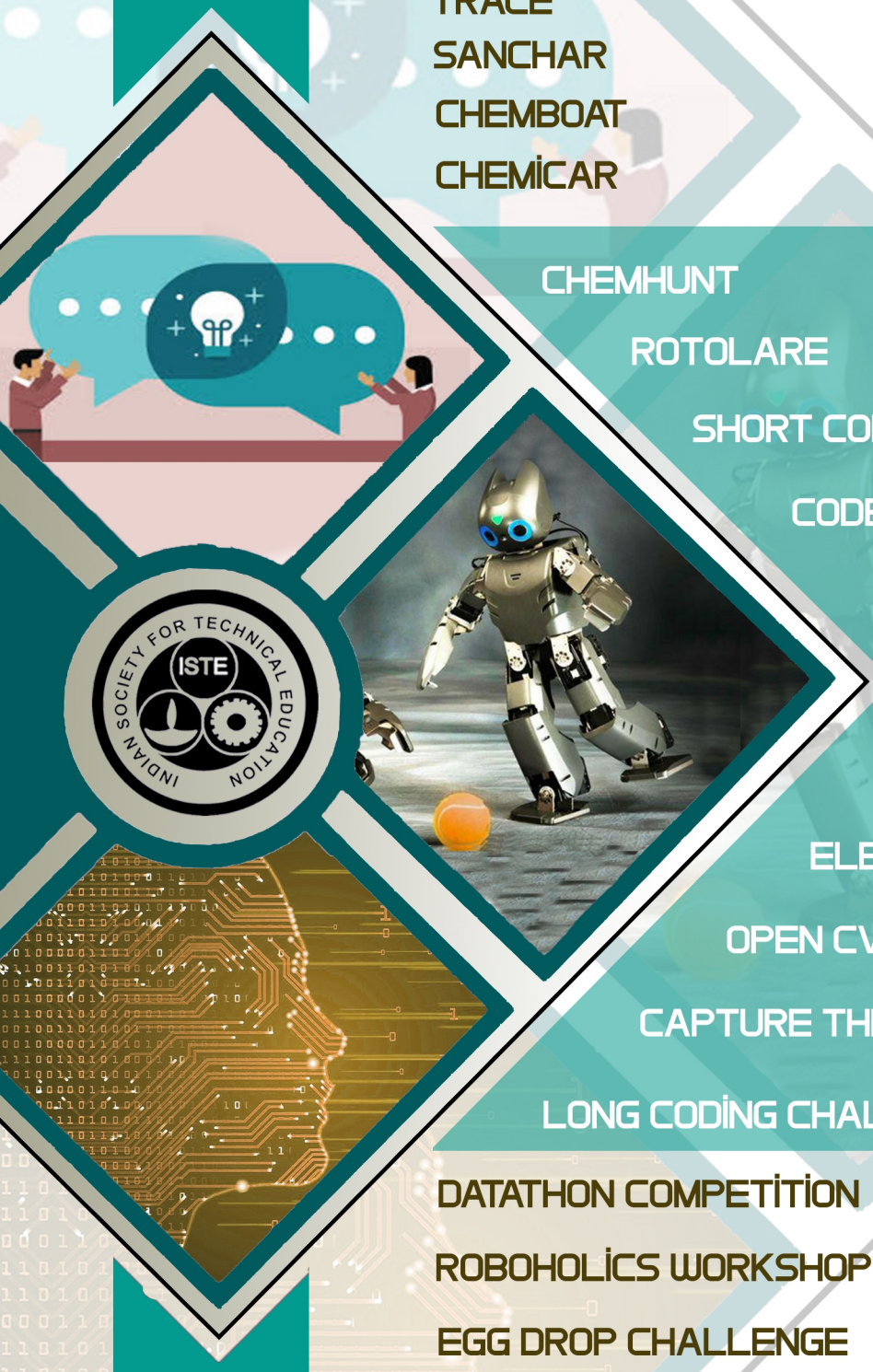
INDIAN SOCIETY
FOR
TECHNICAL EDUCATION
presents

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 Details:
Teams have to build a wooden plane which gives a very long flight when gently launched into the air, usually in the wind by a gentle throw of a catapult.

General Instructions:
Team of 4 participants

Model Description : A catapult glider is a 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

Dimension specifications : The total dimension of the plane including the launchpad and glider should be around 800 mm

Game Description : 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)

Judgement Criteria:
1) Time (30 Pts): Each model will be entitled to three runs. The longest time to go from the start position to the finish will be the official time for that model.

Calculation of Points for Time = (Your time/max time of the 3 runs) * 30
For example, if your time is 27 seconds and max time = 39 sec, then you will get marks = (27/39)*30

2) Vertical Loop (15 Pts): Vertical loop is defined as, the loop of track where the 'rider' is upside down. If the vertical loop is a portion of a corkscrew (helix), it counts as a vertical loop.
For, 1 loop= 10 Pts

3) For, 90° turn of the track
Points: for 1 turn= 2 Pts, for 2 turns= 5 Pts
For, 180° turn of the track
Points: for 1 turn= 4 Pts, for 2 turn= 10 Pts

4) Time taken to assemble the coaster at the allotted time: -1 will be awarded for each exceeding minute the team takes more than 60 minutes.

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:
1. Team of 4 or 5 participants
2. The span of hydraulic bridge must be of Popsicle sticks only and MDF sticks be can used at base, abutment & hinge point.
3. Span length should be of at least 30cm.
4. Lifting Syringe should be placed at least 5 cm away from hinge point.
5. Width of the span should be appropriate so as to provide a proper loading platform.

Materials Provided:
- Popsicle sticks & MDF sticks
- Glue Gun & Glue sticks
- Lead Pencil
- Two syringe with fitted pipe system
- Measuring Scale

Judgement Criteria:
Teams not fulfilling 2, 3 & 4 criteria will be disqualified immediately.
Gradual weights will be applied onto the platform and lifted to check the weight handling capacity of the bridge.
Points = 2[Vertical Lift] + 0.5[Weight Lifted]
Team having maximum points will be declared winner.

FAQ:
What is a hydraulic bridge?
A hydraulic bridge is basically any folding/movable bridge which uses hydraulic mechanism to lift the weight of the deck to make way for the passing ship/water vessel. These movable bridges are commonly known as Bascule bridges among Civil Engineers worldwide.
What is span?
Span is the distance between two intermediate supports for a structure.

PAPER PLANE

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:
1. Team of 4 or 5 participants
2. The span of hydraulic bridge must be of Popsicle sticks only and MDF sticks be can used at base, abutment & hinge point.
3. Span length should be of at least 30cm.
4. Lifting Syringe should be placed at least 5 cm away from hinge point.
5. Width of the span should be appropriate so as to provide a proper loading platform.

Materials Provided:
- Popsicle sticks & MDF sticks
- Glue Gun & Glue sticks
- Lead Pencil
- Two syringe with fitted pipe system
- Measuring Scale

Judgement Criteria:
Teams not fulfilling 2, 3 & 4 criteria will be disqualified immediately.
Gradual weights will be applied onto the platform and lifted to check the weight handling capacity of the bridge.
Points = 2[Vertical Lift] + 0.5[Weight Lifted]
Team having maximum points will be declared winner.

FAQ:
What is a hydraulic bridge?
A hydraulic bridge is basically any folding/movable bridge which uses hydraulic mechanism to lift the weight of the deck to make way for the passing ship/water vessel. These movable bridges are commonly known as Bascule bridges among Civil Engineers worldwide.
What is span?
Span is the distance between two intermediate supports for a structure.

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.

Materials Provided:

- Popsicle sticks & MDF sticks
- Glue Gun & Glue sticks
- Lead Pencil
- Two syringe with fitted pipe system
- Measuring Scale

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:
Team of 2 participants.
There will be 2 Rounds -
Round 1 – Short quiz which will shortlist top 8 teams
Round 2 – Capture the flag battles will take place to decide the winner
The battle is timed and aggressive behaviour will lead to penalty of time
If flag falls off the bot while carrying it back, the flag will be sent back to the opponent's base and the bot has to bring it back.

Judgement Criteria:

The points have been divided as follows:

1. Capturing the flag scores 10pts (can be scored only once)
2. Carrying the flag back to starting point scores 10pts
3. Collecting the Gold Coin in the arena scores 5pts
4. If the whole task is done under the time limit, then the time difference left from the maximum time limit(in minutes) is directly added to the total score.

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:
Team of 2 Participants -

- The field will be (L X B) in size.
- The robot found pushing or damaging other bots shall be disqualified.
- In case the robot moves out of the arena the robot will result in foul. A free kick will be given to other bot in case of such fouls.
- Each match will last for 15 minutes and will be knockout event
- Cosco tennis ball will be used.
- Decision of the referee will be final and binding.

Judgement Criteria:

The team/bot which scores the most goals after a set period of time wins

ROBOCLENCH

Event Details:
The team has to build a wireless 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:
Team of 2 Participants -

1. Only one team member is allowed to handle the bot. No other team member is allowed to enter the arena.
2. Any cause of damage to any object will lead to disqualification
3. **Maximum of 6 minutes** will be given for each team

Judgement Criteria:

There are many point scoring criteria like successfully crossing checkpoints, clearing obstacles etc. Total score of a team will be calculated by the following parameters

A = Points scored

P = Penalties

T = (360 – Time taken in seconds)

Total points scored = A + T – P