

# **NU-Tech 2018**

## **Event and Workshop Details**

# **CODE-O-CRATS**

## **JIGSAW PUZZLE**

There will be 9 puzzles in the event. All the coders will get a key to one piece for each successful completion of the question. Depending upon the difficulty level, the pieces will be rated corresponding to it. This event will aim to develop participant's coding ability, puzzle solving ability to decode the final puzzle and quick thinking in the process. The final puzzle may also test participant's IQ and quizzing abilities.

### **TEAM:**

There can be a team of maximum 2 participants.

### **RULES:**

The fastest to solve the final puzzle after completing 9 puzzle pieces will win. In case of a rare tie, there will be a tie breaker round similar to the final puzzle. The final decision will be on the hands of the judges for checking the plagiarism of the code and any cheating cases.

## **CODZILLA**

There will be two rounds-one eliminations round and the finals. The event will consist of 5-6 questions testing the advanced programming concepts along with along implementation techniques.

### **TEAM:**

This will be an individual event.

**RULES:** The first few percent of the eliminations will be selected on the basis of the total participation strength. The final decision will be on the hands of the judges for checking the plagiarism of the code and any cheating cases.

## **CODE JAM**

A low-level coding event organized on an online platform where participants can code in any language of their choice. The topics included will be of very easy to solve. The participant will be self-dependent i.e. there will be no team.

## **Tech Hunt**

Team event of 4.

There will be clues given and these will lead them to different places in the university. The fastest to complete the hunt wins!

The clues will be technological i.e code, algorithms etc.

## **Enigma**

An intriguing and intuitive event that involves exploiting the vulnerabilities and deciphering the code in encrypted systems and real-life scenarios. This sprint of neurons and adrenaline rush is sure to leave you elated when you crack the code before the clock runs out. Do you have what it takes to be 'THE HACKER' ? Time to find out !

Specifications :

2 rounds - total of 2 hours (approx.)

Round A : The Rookie Round - Participants must go through a paper quiz that involves a certain mix of questions related to encryption and code. Top 12 move onto the next round. ( approx. 30 min )

Round B : The Black Hat Round - The selected participants are grouped into 4 teams and they are presented with a complex and comprehensive system description. The teams are supposed to come up with an action plan to hack into the system and first team to steal the 'Rabbit's Foot' wins. ( approx. 1 hour )

## **Web Designing**

This event will check the web designing abilities of the students and how well they can work at front end in a web development project.

Specifications :

2 rounds - total of 2 hours (approx.)

Round 1 : Participants will be given an image of a web page and they will have to create it using HTML and CSS ( approx. 45 mins )

Shortlisted: 20 participants

Round 2: Shortlisted participants will have to design an interactive web page on topic of their own choice using HTML, CSS and JavaScript ( approx. 1 hour )

## **Network Security & Ethical Hacking workshop**

A one-day workshop on the Ethical Hacking. This workshop is to be dedicated on Cyber Forensics & Crime Investigation. Computer Forensics is a detailed and scientific study, research and implementation of computer science subjects for the purpose of gathering digital evidence in cases of cyber-crimes or for other scientific research purposes also it introduces the needs of the current cyber security sector.

Trained & known professionals will be conducting the workshop and will start from the basics so that a layman can also learn and all kind of queries will be solved by the professional itself.

Workshop Registration fee: 600/-per participant.

## **Deep Learning workshop**

Deep Learning is a new area of Machine Learning research, which has been introduced with the objective of moving Machine Learning closer to one of its original goals: Artificial Intelligence.

This workshop will be extremely beneficial for students as they will get acquainted with a novel and an emerging field in computer science.

The specifications of this workshop are as follows.

Instructor:

Time duration: 6 hrs.

Approximate students: 120

Fee per student: Rs.700

Pre-requisites:

- 1) Acquaintance with any programming language preferably python.
- 2) Deep Learning tools installed (IDE, libraries etc. as specified by the instructor).

# CHEMOZALE

## **1. Chem-o-Wheels**

Objective: To test the design of the car with other competitors and to improve the efficiency and the design

About the Event: In this event the participants compete by building cars which solely run on chemical reactions. Here the cars do not run on mechanical principles. The participants are required to bring their pre-build cars to the event. Time would not be given for any team to build the car during the event.

No of participants: 2 per team

## **2. Chemology**

Objective: To test the basic concepts of chemistry and chemical engineering

About the Event: This event is conducted in 2 rounds. The 1st round is a pen paper round where the participants are supposed to answer multiple choice questions in the given time. The 2nd round is like Charades but with a chemical twist. One member would be given an element and the other member has to guess the element.

No of participants: 2 per team

## **3. Chemical Housie**

Objective: To test the clarity of concepts related to chemistry

About the Event: This is the typical housie game where each participant would be given a housie card. Then a number would be called out, and if the participant has the number in his/her card, he/she would fold the number. The only twist is that the number called out would be in form of a question which a numerical answer. The number to be folded would be the numerical value.

No of participants: 1

#### **4. Industrial Safety Experience**

Objective: To make the participants realize how to cope with problems in the industry.

About the Event: This event is aimed at giving the participants a first-hand experience of how to deal with problems arising in an industry. The 4 members would divide roles amongst them such as CEO, Safety Manager etc. Each team would be given a safety issue or incident. The participants must make a complete analysis of the problem and give suggestions to prevent the same. The participants are allowed to use the internet for this particular event. This would be followed by a viva session by the panel.

No of participants: 4 per team

#### **5. Saponify**

Objective: To put the theoretical concepts into practical use

About the Event: In this event the participants are supposed to make soap in the college premises. They are prepared by saponification process. Participants should have to make soap by minimizing the use of chemicals by making soap from natural products like color, fragrance, additives etc. This is a 2 day event and sufficient time would be given to dry the product. The participants are supposed to bring the oil, fragrance, colour, additives etc. The organizers would provide NaOH, beakers etc.

Judging Criteria: The judging would be done based on both physical appearance, chemical properties and natural materials involved.

No of participants: 3 per team

# Workshops:

## 1. Advanced Excel

**Objective:** To explore Microsoft Excel

**About the Workshop:** Microsoft Excel is in great demand in industries. All calculations are generally done by Excel. Even though Excel has a host of various functions, a lot of people are generally unaware about its features. This workshop is aimed at removing all barriers to Excel and making all the participants aware about the various features that Microsoft Excel has to offer. A one-day workshop. Participants are requested to bring their laptops. The workshop would include features such as:

- Tables and Formatting
- Conditional Formatting
- Advanced Charting
- Pivot Tables
- Macros Etc.

**Expected Expert:** Prof Milind Joshipura

# **EC-TRONICS**

## **Make-a-Duino**

Micro-controllers are a basic and essential part of an EC engineer. One has to be sound with them to produce a good product and feasible solution for the day to day problems. Now-a-days we have many sophisticated development boards available such as Arduino, raspberry pi, orange pi and many others from Texas Instruments. But these development boards have reduced engineer's interest in how the Micro-controller on that works. The aim of this event will be to test the knowledge regarding the use of ICs for the purpose of solution development.

## **TEAM OF 3**

## **DigiMaker**

Digital India' is the trending mantra of our contemporary nation. Information worth millions of words is being conveyed by using merely two levels! All thanks to the miniature I.C.'s, available at a meager cost. But, to compete in an event solely dedicated to digital circuits, is no cakewalk! Accept the challenge of testing and applying the digi-skills requires passion for the binary arena.

## **TEAM OF 2**

## **V-Log Challenge**

This a design challenge where a participant will be given a problem based on verilog and the participant will have to solve the problem in a given time interval. The FPGA kits will be provided to participants to dump their code and test them in the real-time scenario. The winners will be announced based on the time taken for coding and the real-time implementation of the verilog code.

## **TEAM OF 2**

## **Digitalize (Idea Presentation)**

This is an idea presentation challenge where the participant will be given a problem based on problem in IOT and supporting the same in context to "Digital India", the problem would be grass root based problem that should be done in solution to IOT.

## **TEAM OF 3**

### **E-Crosshunt**

The challenge where a person needs to solve the crossword and then it needs to work on the treasure hunt inside the premises and thus the winner would be the maximum from the above two given things

### **TEAM OF 4**

### **Maze Solver/ Line follower/ Object avoidance**

The challenge that focus on the arithmetic skill set of the participant where they would focus on developing a bot that would be solving one of the above three problems. They have to bring their own bots to take part in the competition.

### **TEAM OF 3**

### **WORKSHOPS**

#### **Drone Workshop:**

A two day workshop on how to code the drones using different API and how to develop the algorithms for the Pluto V3 drone. Starting with assembly and ending the same at all the coding with software and showing the flight of the drone. No take away kits will be given (Software to be given to each participant). At end of workshop they will be able to code a drone and fly it. Also they will be able to know the very basics and essence of the drone making and flying.

Price: Rs.500 / person

#### **Smart City building using IOT workshop:**

A workshop solely based on the concept of smart city development and how the wireless and wired sensor networks integrate with each other to give the best output and how the data is acquired how it is processed and analyzed later to get the best outputs.

A small kit can be given in group of 5 people.

Price: 800 Rs/person.

# Electrocracy

## **1) Info-graffiti:**

Infographic designing event, in which students will be taught about making infographics related to technology in first hour and then they will be given a task after which they have to come up with their own infographics in the software Canva(Online Graphic designing software).

## **2) Nerdophilic Quiz:**

A Quiz event on DC, Marvel Superheroes and movies. In which, a quiz master will be asking questions related to electrical terms in comics and movies, and the participants will be answering it intelligently. There would be audio-visual round along with scenes from Dc Marvel movies.

## **3) Tech-Ludo:**

A tech treasure hunt event where groups need to go through certain technological challenges to reach the X mark. A treasure hunt event, where participants are needed to survive in worst technological disasters. Moreover, only few team will be able to complete the event first in given interval of time.

## **4) Kirchhoff's Kitchen:**

A circuit-making event where a couple of students need to make a complex circuit by helping each other, one will read out the recipe and one will cook the circuit on an open source software.

## **5) Hercules Grid:**

A power system event in which participants need to design a grid based on economic and physical constraints given by us. In this event, power system related, participants would be taught about how to design smart grid and what are the concepts of green integration in micro-grid & they will be explained about the concept of various tariff plans. Later on, a task will be given for participants to finish under a period.

## **Workshop:**

### **1) Circuit-Sense :**

A workshop based on online circuit simulation open source software. Participants will be made acknowledged about how to simulate electronics components in TinkerCAD, as well as they will be taught how to design their project prototype in TinkerCAD. Experts will take on session to programming Arduino also in TinkerCAD. At the end of workshop, participants will be given a challenge to design their own circuit based on smart application. We would like to access this website for the two days of Nutech.

### **2) Resume maker:**

A resume building workshop for amateurs by experts. Participants will be acknowledged about how to make resumes that can cast the best image of an individual. The software platform used for this purpose would be enhanCV & Canva.

### **3) Building ChatBot :**

This is workshop based on building chatbots using open-source software. Students will get to know how to build their own algorithms using machine learning or deep learning tools (if time permits).

# MECHATRIX

## ONE-ON-ONE

Round 1:

- Two robots will fight with each other for 3 minutes.
- If one robot is fallen out in the hole or dragged out of the arena by another robot then, that second robot will be selected for further rounds.
- Lost robots may be given WILDCARD entry in the second round.

Round 2:

- Two robots have to fight with each other.
- According to number of attack by each team points will be allocated.
- If any team will make opponent team inactive more than 20 seconds then, that team will earn extra bonus points.
- Points rules will be declared at the time of the event.

Round 3:

- Round 3 will be declared on the time of event.

## **Team of 4**

Size:

- At the start of a match the robot must fit into a square box of side 50 cm, with no height limitation. The design to stretch a robot's body or its parts shall be allowed after a match has started, but must remain a single centralized robot.

Weight:

- The robot must weigh 50 KG (excluding the controls/wires) or less.

Robot Classes:

- Remote Controlled or Manual (Wired Control).

Power Specifications:

- The robot must be self-powered, i.e., power supply must be on-board. AC power supply will not be provided, except for charging your batteries (in the breaks only). No limit for power supply.

## **ROBO RACE**

### **RULES**

Dimensions: MAX. 30\*30\*30 cm (any l b h) (Corresponding to Arena)

Voltage of Battery: MAX. 12 V

Point system:

- There are around 15 difficulties and 15 different checkpoints having different points in the range of 5 to 25.
- Total points of difficulties - Z
- In addition, we have decided one time constant (T sec) which is ideal for any run.
- If you are taking x sec to complete the arena, then
- Bonus points will be  $= (T/Z) * (T - x)$ ;  
i.e, Total points are 200. And ideal timing is 100 sec. And if participant completes it in 90 sec, then  $(10/2) = 5$  will be the bonus points.
- So total points earned = (Points you gained by overcoming difficulties) + Bonus Points.

Whoever is having highest points will be declared winner.

No points will be given based on design.

Skip and Technical Timeouts:

- If your bot cannot overcome any of the difficulties then you can skip it.
- Total 2 skips are allowed.
- In 1<sup>st</sup> skip there will be no minus points but for the 2<sup>nd</sup> skip points will be deducted.
- Total 2 technical timeouts are there. Each timeout is having 30 secs.
- Total 3 hand touches are allowed.
- In skips and technical timeout, there is no time penalty but in hand-touches time penalty is there. In any of the hand-touch, time penalty is up to the participant that how much fast he/she can use the hand touch.

**NOTE:** There will be difficulty in which the bot has to pass through/above a bath of water, so arrangements to protect the circuits and bot must be there.

If you find any difficulty in understanding the rules. Please contact:

Nikunj Patel,

Mobile Number: 9157773810    E-mail ID: [patel.nikunj9818@gmail.com](mailto:patel.nikunj9818@gmail.com)

## WATER ROCKET

### Description

A 1 litre bottle rocket with certain amount of water in it that has to be launched by actuating a foot pump.

Participants have to come with their rocket-model.

### Rules

- Rocket need to be manufactured before the event by the participants on their own.
- “STAND FOR LAUNCHING THE ROCKET” need to be prepared by participants.

### Judging Criteria

- Round 1 : 20 Points ( points would be given based on the design of the rocket)
- Round 2: 40 Points ( based on the length covered)
- Round 3: 40 Points ( based on the length covered)  
(round 2 & 3 both would measure the ability to travel length, but two rounds are kept to check the consistency)

### Instructions

- A 1 litre bottle (soft drink) rocket with certain amount of water in it that has to be launched by actuating a foot pump and compressing the fluid inside bottle.
- Based on the max length covered upon firing winner will be decided.
- The rocket should have the ability to be fired at different angles.
- Pressure limit 80 psi& design should withstand the applied pressure
- You have to manufacture the water rocket before the event on your own.
- Also, the “**STAND FOR LAUNCHING THE ROCKET**” need to be prepared by you. The **height of the stand** should be less than 0.75m
- Pump would be provided by us. However, it is recommended that if it is possible bring your own pump.

## Aeromobile Quiz

A 2-stage quiz to test general knowledge in the fields of aerospace and automobile.

## Automobile Workshop

A one-day workshop on all the basic components of an automobile giving insights into the suspension, drive train, wheel assembly and chasis design through interactive and practical session. For better understanding of the concepts and real life applications students will be shown a cut section of Maruti OMNI and will also interact with the SAE BAJA Team who

would demonstrate their ATV and provide them with some basic insights. To make it a two-way interaction a small quiz will also be arranged.

### **Aerospace Workshop**

A one-day workshop on the basics of Aero-modelling, stability analysis and high-lift devices will be conducted by Team Arrow which will also include the Introduction to analysis of flow and basic knowledge for the selection of electronics (i.e Propeller, Motor, ESC, Servomotor etc). The session will end with the demonstration of UAV(Unarmed Aerial Vehicle).

# **Civil Maniacs**

## **Plot the Plot**

This Event is about Surveying. In this event, There will be total 3 rounds. 1<sup>st</sup> round will be general quiz on Surveying. In 1<sup>st</sup> round question will ask from all basic concepts of surveying, instruments, etc. Then 2<sup>nd</sup> round will be of calculating RL (reduced level) of given different points (max 5 points) by centering and leveling theodolite. After completion of 2<sup>nd</sup> round few teams will be promoted to 3<sup>rd</sup> and final round. Final round will be of marking excavation line of given plan as per given time. (will give plan of load bearing structure.) Judging of 1<sup>st</sup> round would be (+1) for correct answer and (-0.5) for wrong answer. Then judging of 2<sup>nd</sup> and 3<sup>rd</sup> round would be done based on Time taken to complete the task and accuracy.

## **Team of 4**

### **The Big construction theory**

This Event is based on arranging the steps of given process in order to its correct position in minimum time. There will be Two Round. 1<sup>st</sup> round is arranging the blocks. Selected teams from 1<sup>st</sup> round will be go to the 2<sup>nd</sup> round. 2<sup>nd</sup> round will be same as 1<sup>st</sup> but level is increased compare to 1<sup>st</sup>. Processes will ask from basic civil engineering like process of cement manufacturing (dry, wet), tendering, construction activity etc.

## **Team of 2**

### **Absolute H2O**

This event is about making Filter using given material. A waste water sample will be provided to every group. They will have to prepare a filter using given materials like sand, gravel, charcoal etc. A bottle will be provided to each group. Water will be collected from outlet and volume will be noted down for particular interval of time. Turbidity of collected sample will be calculated. Judgment will be given based on turbidity of filtered water, number of filter used & collected discharge from given time.

## **Team of 3**

### **Civil-O-Thon**

This event is based on whole civil engineering This event has 3 rounds. 1<sup>st</sup> round is General Quiz related to various Civil Engineering Subjects like Survey, Geo-technology, Building Construction etc. would be prepared. 30 M.C.Q would be asked, 3marks would be for each correct answer and -1 for wrong answer and 0.0marks for not attempting the question.

Sixteen teams would be selected out of them, will go in second round. 2<sup>nd</sup> round consist in two parts. Part 1: - Design Bridge by ice Cream sticks of given specifications. Part 2:- Designing of building of given specification. Judging of part 1 is based on load carrying capacity of bridge & judging of part 2 is Design criteria as per by laws vastu sastra and other requirements of building designing. Selected team will be go to final round of this mega event. 3<sup>rd</sup> round is Personal Interview would be taken by panel for the 6 selected teams and finally 1 team would be selected as winning team.

### **Team of 3**

### **Civil Hunt**

#### Civil Treasure Hunt

Find the Treasure by clues. Clues will be connected with civil engineering by somehow.

### **Workshop:**

#### **Design of concrete mix study as per IS:10262-2009**

There will be different types of concrete mix design taught to you by experts and if time permits then casting of concrete will be taught to you of your mix design.

#### **Reinforcement Detailing and Practice**

There will be basic reinforcement detailing used on practice and binding.

# Project-O-Gram

## Event Description:

Participants are supposed to showcase their projects in a kind of Project Fair, where their projects shall be evaluated by a panel of judges in the competition. The event consists of 2 rounds each for 2 categories namely Circuit-based and Non Circuit-based projects.

In the 1st round, participants will showcase their projects to the judge who will evaluate the projects based on limited criteria. The 10 shortlisted projects of round 1 will then compete in round 2 where they will get a chance to display their project in the project fair during which evaluation will be done by the panel thoroughly considering various parameters.

## Who all can participate:

- o Students from any year from engineering branch can take part
  - o CE/IT/EC/EE/IC – Circuit Branches
  - o Mechanical / Civil/ Chemical – Non-circuit branches
- [ If any project has characteristic of both circuit as well as non-circuit project, it will be counted as non-circuit project.]

Team Size: Maximum 3 Participants per team

Registration fees: Rs.150/per team (team of max 3)

## Event Rules:

- Best projects will be rewarded based on the 'regulations for competition' given below.
- Project presented should be the original work of the presenter.
- This competition is open to all undergraduate students.
- Participants should bring all their requirements.
- Student should bring their own Laptop and electronic accessories like Junction box and cables needed for their projects.
- Electrical power supply will be provided.
- Internet connection / Wi – Fi services will not be provided.
- Theme of the project is not restricted.
- Students may register as an individual or as a team of up to 3 members.

- The Organizing Committee has the rights to modify / change any rules at any point of time and will do their best to inform the participants beforehand.
- Members should have a valid student ID card of their college/university.
- Teams will be given a space to set up their model/design at the venue for exhibition and for judging.
- Team shall bring their project with themselves.
- All selected participants will receive participation certificate.
- The decision of the Judges shall be final.

#### Judging:

Key Evaluation Criteria would be

- Innovation
- Creativity
- Design
- Efficiency
- Relevance with practical need
- User Interface ( if applicable )

# **E-CELL**

## **Be an technopreneur**

This event will be the one where participant will design and make the model, objects or tools. Visualizing or imagining how an idea or a model will take place is a tricky thing. One of the things that can stand between your digital creative idea and making it come to life is how well you can explain and share it with your team mates.

You will be paired in team of 3-4 persons and the team will be provided a kit of some raw materials. Within given time the team has to make a product, prototype or a design using those. The prototype will be judged on the basis of design, stability, innovation and feasibility.

The winner will be awarded with exciting prizes and certificates as well.

Team : 3-4

Fees : Rs.50/- per participant

## **Mera startup mahan**

We will be organizing a business pitching and networking opportunities event for Start-UP ideas based on the vision of students studying engineering. The event is not only a great opportunity to present to the technology but also give unique ideas to the current leading companies. The value of rapid pitching and networking activities is of real value to help to support the growth of Start-UP. There should be a team of 2 maximum to participate in this event. One of the both will be pitching their idea in the given time. The time for the presentation is 10 minutes.

Participants wishing to pitch will have to cover the following points:

☐ Who are you?

☐ What is your Start-UP?

☐ What is your offer or technology?

☐ What do you need from the incubating companies?

Following the pitches there will be a chance for informal networking to further opportunities with interest.

Team : Max. 2

Fees : Rs.50/- per participant

# **NOESIS**

## **INDIA QUIZ**

### **GENERAL RULES:**

- Only team entries are eligible.
- A team shall consist of max two persons
- The decision of the quiz-master will be final and will not be subjected to any change.
- The participants shall not be allowed to use mobile or other electronic instruments.
- The questions shall be in the form of multiple choice, True / False statement, Specific-answer question etc.
- Audience shall not give any hints or clues to the competitors.
- Replacement of any participant of a team is not allowed after registration
- Teams selected for the final rounds will be allowed to give themselves an appropriate name related to the competition by which they may want to be known

### **ELIMINATION ROUND** – (In case more than 6 teams register)

- Each team would be given a set of question paper containing 25 multiple choice objective type questions
- Time limit - 15 minutes
- Only 6 Teams would be selected for STAGE ROUNDS
- In case of tie between 2 or more teams, further 5 questions would be asked for final selection
- The selected teams shall have to appear for the final round

### **Round 2: Rapid Fire Round** : -

- Each team will be asked 10 questions one after another in one minutes time- : 60 questions
- 10 marks for the correct answer and negative 5 marks for the wrong answer
- Answering time is only 3 seconds
- Team discussion is allowed

- If a team cannot answer the question, they can say pass for the next question. The question will not be forwarded to the next team.

## **YOUTH PARLIAMENT**

### **About:**

The law-making bodies are required to discuss various local, national and international issues and then make suitable laws on them. The members of these bodies present all points of views and try to represent all kinds of interests related to a problem. Eventually there is accommodation of various interests and a compromise decision is taken. An effort is always made to take such a decision as would please most and antagonize least.

Such decisions are frequently taken by Parliament. The decisions of Parliament are important since they affect the whole country. Each one of us is affected by the decisions of Parliament. The decisions are the result of long drawn debates. For conducting debates in Parliament a detailed procedure of rules is followed. The rules are based on democratic principles. By these rules it is ensured that everybody gets a chance to be heard and a proper decorum is maintained in the course of discussion that goes on in Parliament.

Extemporaneous discussion has to be made on the topic defined at the time of event.

Example- a bill needs to be discussed replicating the atmosphere of the parliament

Jury will judge participants on various parameters

### **Task**

**Round 1:-** The participants will be given a general topic for discussion as mentioned in the above example. The judges will judge them on the basis of their content and linguistic skills and the extemporaneous discussion skills.

**Round 2:-** After scrutinizing the finalist from the round 1 now the participants will be provided a final topic for discussion and the winners will be selected

## **WHOSE LINE IS IT ANYWAY?**

### **About:**

This is a presentation event where the participant will share his/her writings (like poem, stories etc.) it will be a platform for people who want to share their thoughts and ideas.

### **Rules:**

Time duration

Minimum: 1-2min

Maximum: 4-5min

Audience will be the judges.