Autodesk Inventor Student Design Competition 2012
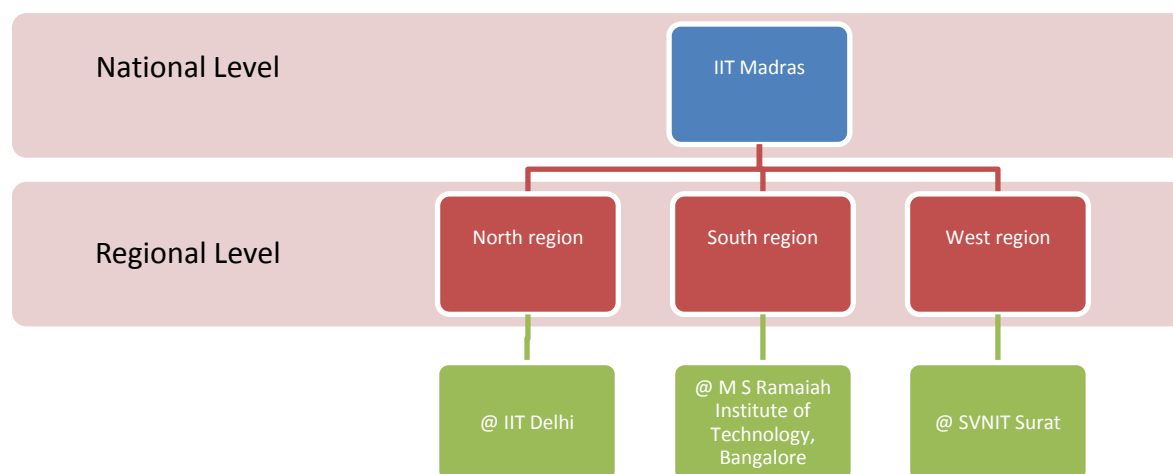
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About The Inventor Student Design Competition

Indian Institute of Technology, Madras, & National Skill Development Corporation in association with Autodesk, academic partners and industry sponsors strive to provide Mechanical Engineering, Automobile Engineering, Aeronautical Engineering students the skills and tools needed to succeed in their chosen profession. In an effort to inspire learning through a real-world situation, organizers are challenging students to design a vehicle, by using specifically Autodesk® Inventor and Autodesk® Showcase software. Student teams (2 or 3 student per team) from India are invited to submit their innovative and sustainable designs for judging by jury of professionals.

Winners will undergo practical Test project for WorldSkills International Competition selection at IIT Madras. Each individual candidate with one faculty Expert, well versed with rules, regulations, marking scheme, provides guidance/mentors the candidates as a coach during test. The candidate works independently; his skill is tested on the next subsequent day of national competition. Candidate will spend 6-8 hours of duration during the practical test. The Expert accompanying the candidates may be of any age group

Structure of the competition

Autodesk Inventor Student Design Competition 2012 will be conducted on regional level at IIT Delhi, SVNIT Surat and MSRIT Bangalore. National Level will be conducted at IIT Madras in India:

National Level	IIT Madras		
Regional Level	North region	South region	West region
	@ IIT Delhi	@ M S Ramaiah Institute of Technology, Bangalore	@ SVNIT Surat

The top four teams from each of the regional competition selected by the jury will then go on to participate in **National Competition to be held in IIT Madras First week of October, 2012.**

 Starting 25th May 2012, students can form their teams and register to participate in the event.

Team Registered teams will be invited for free workshops and webinars.

The student teams will have to upload their submissions using the secure website as per the submission guidelines provided in the Rules and Regulations page.

These submissions will be assessed by the jury members. On the selected date of the event, selected student teams will be invited to the respective campus of the regional host institution, where they will present their submissions to the jury. Winning submissions will be announced on the same day at the end of the event. At the regional level, a jury of industry professionals and academia will judge the competition entries and decide the three winners.

Regional winners will be invited to participate in the national level competition. Changes to student teams will not be allowed at this stage. No new entries will be allowed to participate in this stage of the competition

The national level competition will be conducted as follows:

Day 1

1. Twelve (top three teams from each region) winning teams will utilize the jury input received by them at the regional level competition, so as to improve and enhance their entries. These revised entries will be entered into the national competition through Inventor Student Design Competition as per the submission guidelines.

2. A jury of five nationally renowned industry experts will judge the national submissions provided by the student teams

3. On the National Competition Day, the teams will present their entries in front of the judging panel and other invitees

4. The judging panel will judge and announce the top three winning teams on the same day.

Day 2

Individual candidates from top three winning teams will appear for the WorldSkills Practical Test Project on next day. Each student will undergo the primarily test. Each student is guided by Expert, who is well versed with rules, regulations, marking scheme, provides guidance/mentors the candidates as a coach during the training period .The Faculty Expert accompanying the candidates may be of any age group.

The judging panel will judge and announce the top two individuals along with their Faculty expert for WorldSkills International Competition 2013 on the same day.

About WorldSkills Competition Test

This test is a demonstration and assessment of the competencies associated with this skill. The Test Project consists of practical work only

Practical work

Practical tasks will be given in the form of sketches, drawings and electronic data files, individual physical components and assemblies. Collection of information from these sources will require reading of prints, sketches, drawings, engineering tables, charts, and manuals. Additional information will be obtained from direct measurement of actual parts supplied and/or from scaled drawings. Problems will require solutions in the form of graphical and textual descriptions, sufficient to communicate successfully the information necessary for manufacturing of these components and assemblies in industry.

Competency specification

All of the following skills will be tested within one or more of the individual modules listed below

1. 3D modelling of parts

2. 3D modelling of assemblies

3. Create shaded views (rendering)

4. Creation of simulations

Test Project design requirements

The Competition is divided into 4 modules covering the following categories:

1.   Drawings from a physical model:

2. Assembly drawings:

3. Detail drawings:

4. Modification of product (design change):

Output format

Use of Autodesk Inventor Professional.

Prizes

Regional Level Competition Prizes

Three winning teams in each region will be awarded the following team prizes:

1. Regional level 1st prize of INR 20,000 with a certificate & Medal +1 unit of SpaceMouse Pro for each team member

2. Regional level 2nd prize of INR 15,000 with a certificate & Medal +1 unit of Space Navigator for Notebook for each team member

3. Regional level 3rd prize of INR 7,500 with a certificate & Medal + 1 unit of Space Navigator for Desktop for each team member

The three winning Regional teams will be invited to participate in the national level competition.

National Level Competition Prizes

Three Winning teams at the National level will receive the following team prizes:

1. National level 1st prize of INR 120,000 with a certificate + 1 unit of SpacePilot Pro for each team member

2. National level 2nd prize of INR 75,000 with a certificate
3. National level 3rd prize of INR 60,000 with a certificate

International Level Competition

First prize winners of the National Competition will win a free trip to participate the Autodesk Panorama 2012 in Singapore to be held in the first week of November 2012

Individual Winner along with Faculty Expert will also get chance to participate in **WorldSkills International Competition** scheduled in Leipzig, Germany in July 2013 and win 1 unit of SpacePilot Pro

Bonus Sustainable Design Prize

Bring sustainable design thinking into your innovative product design by learning .Visit the Autodesk Sustainability Workshop to learn how to use sustainable design strategies, then tell us how your product is enhanced and how its environmental impact and end-of-life is improved as a result. You can submit any relevant project or your current project.

Three Winning teams will receive the following team prizes for Sustainable Design:

1. National level 1st prize of INR 50,000 with a certificate
2. National level 2nd prize of INR 30,000 with a certificate
3. National level 3rd prize of INR 20,000 with a certificate

Entry & Submission

Important Dates

Registration closes	30th July 2012
Workshops & Webinars	1st July to 5th Aug
Submission closes	15th Sept 2012
Regional Events	26th Sept to 1st Oct 2012
Final Competition event	7th 8th 9th October

Judging Criteria

The jury members will use the following judging criteria:

1. Concept Design (Originality) 20 Marks

(Fulfilment of Design Brief, Usage of Design tools like Autodesk Alias, Autodesk SketchBook Designer etc.)

2. Designing Model (Use of Autodesk Inventor Professional) (15 Marks)

- ✓ Presence of part features in part Modeling
- ✓ Accuracy of dimensions
- ✓ Tolerances
- ✓ Surfaces
- ✓ Presentation
- ✓ Shaded views (rendering)

2. Mechanical Assemblies & Detail Drawing for Manufacture (Use Autodesk Inventor Professional (25 Marks)

- ✓ Part Modelling
- ✓ Assembly Modelling
- ✓ Dimensioning inc GDT (Geometric dimensioning and tolerancing)
- ✓ Drawing Views & Presentation of design

3. Product Design –Mechanical (Use of Autodesk Inventor Professional) (20 Marks)

- ✓ Sheet Metal Parts and Assemblies
- ✓ Frame Parts and Assemblies

- ✓ Fabrication Drawing Details
- ✓ Drawing Views & Presentation

4. Modification of the product (design change) (Use of Autodesk Inventor Professional) (10 Marks)

- ✓ Dynamic Simulation
- ✓ Exploded view (simulation)
- ✓ Photo Rendering
5. Clear and easily understood Project description and presentation (*.doc & *.ppt,*.Image files) (10 Marks)

Judging Criteria for Sustainable Design

Submit short responses to the following questions, along with any supporting design files or documentation.

- **Design Process** – *100 words max*
- o   Describe if and how you set goals around sustainable design criteria. What was most important? How did you structure your team and your work to meet these goals?
- **Use of Sustainable Design Strategies** – *500 words max*
- o   Explain how you have incorporated any of the following design strategies taught at http://sustainabilityworkshop.autodesk.com/. You may choose to focus on one or describe several.
  - ▪ Whole Systems and Lifecycle Thinking: Looking at the big picture to understand how products or buildings are made, used and disposed of so these considerations are included from the start.
  - ▪ Green Materials Selection: Ensuring your using the most sustainable materials
  - ▪ Materials Use/Lightweighting: Factoring in the types of materials you're using, the manufacturing processes required for your design, and the geometry of your design to minimize material use.
  - ▪ Energy Efficient Design: Ensuring the design addresses optimal energy efficiency.
  - ▪ Design for Durability: Ensuring your device will not break prematurely.
  - ▪ Design for Maintenance, Repair, or Upgrade: Ensuring your device can be serviced and kept in good working order.
  - ▪ Design for Recyclability: Ensuring your device can be properly recycled or disposed of at the end of its life.
- **Use of Software for Analysis and Communication** - *150 words max*
- o   Explain if and how you used Autodesk software to achieve the sustainable design strategies listed above.

Submission Details for Sustainable Design

Respond to the questions in one combined document (MSWord or PDF).

Include related sketches, images, technical drawings, schematics, system maps, or CAD files. Clearly reference any attached files.

Eligibility Requirements

The competition is open to fulltime students enrolled in All India Council for Technical Education (AICTE) and Ministry of Human Resource Development (MHRD) approved Mechanical Engineering, Automobile engineering, Aerospace engineering and related fields.

This Contest is open to students with 18 and over or over the age of majority in their jurisdiction or residence, whichever is older in the year 2012, in India Entrants who are residents of a country, state, province or jurisdiction that (1) prohibits any aspect of this Contest or (2) prohibits unregistered contests or (3) requires the contest sponsor to post a bond, are ineligible. Autodesk expressly disclaims any responsibility or liability for any entrant who enters when it is illegal for them to do so. Autodesk reserves the right to disqualify any participant if Autodesk suspects, in its sole discretion, that participant did not follow these official rules, or if participant's participation in the Contest or receipt of prize would violate applicable laws of the jurisdiction in which the participant resides. Employees of Autodesk, Inc. ("Sponsor"), their partners, their suppliers and respective advertising and promotional agencies, members of their household, and their immediate family members are not eligible for this Contest. Family members of Judges and those living in the same household are not eligible to enter. Sponsor reserves the right to verify eligibility qualifications of winner. Sponsor will only accept entries that have been completed and submitted as described below. Participants may be required to submit proof of their eligibility. Autodesk reserves the right, in its sole discretion, to determine whether eligibility requirements have been met.

Multi-disciplinary teams may be formed comprising students from various disciplines, even electrical, chemical, computer science. Students from 2nd Year 3-year and 4-year degree programs along with post-graduate students are eligible to form teams and participate in this competition. Teams of 2 or 3 students are eligible to participate in the competition (individual submissions or different team compositions are not allowed). It is highly encouraged but not required that teams are cross-disciplinary from the same institution. Team members should be from the same institution. Individual students are considered for World skill Competition after winning Inventor Student Design Competition 2012.

Submission Guidelines

Each submission must meet the following submission guidelines:

- Participants should use the provided design theme.
- Participants should refer Judging Criteria
- Entries must include the name of the institution, name, email address, and phone number of all student team members, in addition to all other information required on the Autodesk Inventor Student Design Student Design Challenge submittal form.
- Entries should be submitted electronically. Log on into Autodesk Inventor Student Design Competition and upload your submission files.
- Entries must include all of the requested files listed below.

In case students team is unable to upload their design electronically can either courier the complete submission (Burn to CD/DVD) or can deliver CD/DVD in person at the Autodesk office.

Mail/courier the CD/DVD to:

Autodesk Inventor Student Design Competition

Autodesk India Pvt Ltd.

Unit A4, "A" Wing

Divyasree Chambers

2nd floor, Langford Road

Bangalore 560025, India

Please make sure, you write your team name, email id, mobile number and college name on the CD/DVD

IITM, NSDC, Autodesk & Academic Partners will not be responsible for any postal/courier delays. Material received after submission date will not be considered for short listing.

Submission Requirements

1. File #1 (ZIP file with a 10 MB limit)— conceptual design diagram, Specification, Mechanism etc in*.doc format

2. File #2 (ZIP file with a 50 MB limit)—Autodesk® Inventor model that formed the basis of the mechanical Design Complete Inventor model files including parts, assembly, drawings etc. created using product backup/ pack and go (functions in Autodesk Inventor)

3. File #3 .jpegs/pdf of different design stages, one must be the final design. High-resolution presentation quality screen capture from Autodesk Inventor. Screen captures in .BMP or .TIFF or pdf format with a minimum screen resolution of 1024x768 pixels.

4. A project presentation done in power point of up to 10 slides. Include short synopsis with images of final design with jpeg of top and side view.

5. Photorealistic Renderings and Animations created with Inventor Studio (optional)

Software Requirements

Use of the following Autodesk® software products is required:

- Autodesk® Inventor software
- Autodesk® Showcase software (optional)

Students can download free* versions of the software at the Autodesk Education Community.

*Free products are subject to the terms and conditions of the end-user license agreement that accompanies download of the software. The software is for personal use for education purposes and is not intended for classroom or lab use. *[Put the terms clause at the end of the page]*

Rules

Rules and Regulations: Autodesk Inventor Student Design Competition.

The following rules will govern the Autodesk Inventor Student Design Competition:

- The competition is open to fulltime students enrolled in All India Council for Technical Education (AICTE) and Ministry of Human Resource Development (MHRD) approved Mechanical Engineering, Automobile engineering, Aerospace engineering and related fields. Students from 2nd year 3-year and 4-year degree programs along with post-graduate students are eligible to form teams and participate in this competition. Teams of minimum 2 students are eligible to participate in the competition (individual submissions or different team compositions are not allowed). It is highly encouraged but not required that teams are Multi-disciplinary teams comprising students from various disciplines, even electrical, chemical, computer science from the same institution. Team members should be from the same institution. Individual students are eligible as for World Skill International after shortlisting their teams.
- The competitor must be 18 years old and above but not be older than 22 Years, i.e. born not before 01 Jan 1991.
- There is no limit on the number of teams from an Institution.
- A team should comprise for minimum 2 and maximum 3 students.
- Before Registration, please ensure you have your team members ready.
- The Products can be downloaded from the Autodesk Education Community (http://students.autodesk.com/). Please feel free to register and download the free products available.
- The Judging Panel will check all the submissions done and then 15 teams for the competition would be selected and the team members would be notified.
- Judges have the right to reject a submission, if they believe it does not fit in with the competition's selected theme.
- In oral Presentation finalist will present a twenty (15) minute oral report followed by a five (5) minute question/answer period.

- The project presentation must be done in PowerPoint of up to 10 slides. Include short synopsis with images of final design with jpeg as mentioned in the submission guidelines.
- The travel expense for the selected teams would be borne by Organizer.
- Each of top three winning teams will be awarded with a cash prize and a certificate.
- All the shortlisted teams will be awarded with participation certificate.
- All decisions regarding the competition will be made solely at the discretion of the Technology Partner & Academia partner & Industry Partner. These partners reserve the right to change or amend procedures during the competition so as to ensure its viability. All decisions made by the partners are final.
- All parts of the competition will be conducted in English.

Any failure to follow the rules and regulations stated below may make an entry ineligible to enter the competition and ineligible to win prizes associated with the competition.

Downloads

Visit the Autodesk Education Community to download our Free* software http://students.autodesk.com/

Products for the Competition:

Autodesk Inventor Professional Free* Download
Autodesk® Inventor® mechanical design software takes engineers beyond 3D to Digital Prototyping by enabling them to design, visualize, and simulate products before they are ever built..

Autodesk Showcase Free* Download

Autodesk® Showcase is real-time 3D presentation and rendering software enables designers, engineers, and managers to easily transform 3D CAD data into compelling imagery, movies, and real-time presentations.

*Free products are subject to the terms and conditions of the end-user license agreement that accompanies download of the software. The software is for personal use for education purposes and is not intended for classroom or lab use. *[Put the terms clause at the end of the page]*

Registration and Support details

- contact@caddesigncontest.com