
INNOVATION
NATIONAL STUDENT
MANUFACTURING
INNOVATION
CHALLENGE
sme
Purdue University S006

NSMIC Guide 2026-2027

Innovate the Future

A Better Tomorrow is a Better Today

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Theme Summary

Through manufacturing, people can come together to create something greater than themselves. Student-organized teams will work together to design and manufacture a device that will make **College Campuses** more accessible within **Residence Halls**. This competition will serve as an annual student-led engineering and design competition that challenges academic teams to develop innovative **manufacturing solutions** for real-world problems.

The Theme "**Innovate the Future**" will remain the same throughout the years; the focus of the Theme will change annually. Judges will decide on how to grade teams based on how well the team's innovation improves the capability of their chosen device.

Problem Statement

Teams of 4 to 6 students must design and manufacture a working prototype that innovates current devices and objects in College Residence Halls to make them more accessible.

Innovative Challenge

Design and Prototype a device that will make residence halls more accessible.

- Residence Halls (included but not limited to)
    - Dorm Room
        - Bed
        - Drawers
        - Closet
        - Desk
        - Etc..
    - Bathrooms
        - Shower
        - Toilets
        - Sinks
        - Etc…
    - Common Space
        - Tables
        - Couches
        - Desk
        - Etc…

Registration Rules

- No less than 4 students per team, and no more than 6 per team (multiple teams are allowed)
- Must have 1 Faculty Advisor to oversee the safety of the project and attend the competition
- Universities can register as many teams as they can support
- Every team MUST have a physical and functional prototype
- All members of the Team and the Faculty Advisor MUST complete the safety waiver before attending the competition

Eligibility

- Teams must be affiliated with their university's SME Student Chapters, **OR** 100% of your team must be SME National Members
    - You must provide your student chapter name or national chapter membership number
    - Find out more about a national membership here: https://www.sme.org/sme-membership/join-sme/
- Teams must consist of 4 to 6 students.
- You must be a full-time or part-time College student
    - Graduate students are welcome to participate
- Each College represented must have an advisor
    - If your College has multiple teams and an SME Student Chapter, your current student advisor satisfies this requirement
    - If you are applying from a College that does not have an SME Student Chapter, you may find a professor representing engineering, engineering technology, or a related field.
    - You must state your advisor's name and College email in the registration form

Technical Rules

1. You must use at least one of the following manufacturing technologies when creating your prototype and must visually show this while presenting (through pictures, CAD Drawings, etc...)

    - Additive Manufacturing (3D Printing) – Rapid prototyping, complex geometry integration
    - CNC Machining – Precision manufacturing using subtractive methods
    - Green Manufacturing – Eco-conscious material use, lifecycle impact
    - Automation & Robotics – Sensor-driven control, automation of manufacturing steps
    - Product Lifecycle Management (PLM) – Workflow, design iteration, data organization
    - Welding & Fabrication – Structural assembly and custom component integration
    - Smart Materials Integration – Responsive, adaptive, or embedded-material technologies
    - Forming & Molding Processes - High volume shaping using molds or thermal forming methods (Injection molding, vacuum forming, blow molding)

2. Must present a poster with the necessary information on your project

    - A labeled diagram or CAD drawing showing all major components
    - Bill of materials (materials, components, technologies used)
    - Budget, Cost Estimation of Market Model
    - Short description of key manufacturing steps
    - Justification for the innovation done toward your chosen device

3. Prototype Requirements
    - The prototype must be an innovation of a current product that resides in the Residence Halls that has been changed for better accessibility
    - The prototype must physically demonstrate **at least one core function** related to its intended real-world purpose. This can be mechanical, electrical, or structural
    - The prototype must include components that were **physically manufactured** using one or more of the distinct manufacturing technologies or processes. Teams must clearly identify and label these parts on their poster or during their presentation
    - Prototypes do not have a size requirement, but schools are in charge of their own shipping and/or transport. Travel stipend from SME Nationals may be used for this purpose if needed

Competition Structure and Timeline

- *Prototype Presentation*
  - Gallery Walk format
  - Be prepared to discuss manufacturing processes used, lessons learned, etc.
  - Use the rubric to prepare a presentation
  - Be prepared for questions
  - Prepare your presentation to be 5-10 minutes (5-8 minutes for presenting, 2-5 minutes for questions)
  - You will likely have to present once to each of the five judges, so plan accordingly.
- *Timeline*
  - Registration Closes: Nov 1, 2026
  - Submit Project Idea & Bill of Materials: Jan. 15, 2027
  - Competition Date: April 17-18, 2027
  - Competition Location: Stewart Center (128 Memorial Mall Dr, West Lafayette, IN 47907)

NSMIC Judge Score Sheet

Judges will use this score sheet as the official guideline for evaluating teams participating in NSMIC. The rubric totals 100 possible points, including 10 discretionary points that judges may award based on their overall impression of a team's project.

Judges may assign any score within the range listed for each category, up to the maximum number of points available. All judges must complete scoring for a team before evaluations begin for the next team. Final scores will be announced following the conclusion of the awards ceremony.
(SUBJECT TO CHANGE - until November 1)

Accessibility Impact (20 Points)

Criteria	Points
The team's project shows clear and practical uses for making an aspect of the Residence Halls more accessible	**20**
The team's project shows practical use to make residence halls more accessible, but it is not instantly clear	**15**
The team's project shows potential aspects to make residence halls more accessible	**10**
The team's project does not show signs of making residence halls more accessible	**0**

Innovation and Creativity (10 Points)

Criteria	Points
The team's project clearly shows vast innovation from a current product in the market to support accessibility in residence halls	**10**
The team's project shows little innovation or creativity to improve accessibility in residence halls	**5**
The team's project fails to create an innovative solution to improve accessibility in the residence halls	**0**

Prototype Functionality (20 Points)

Criteria	Points
The team's project works to its fullest extent	**20**
The team's project functions but has some issues limiting its full extent	**15**
The team's project has many issues and has limited functionality	**10**
The team's project does not function	**0**

Engineering Design and Technical Quality (20 Points)

Criteria	Points
The team utilizes proper design techniques to ensure the project succeeds at its job. Ex. CAD modeling and Finite Element Analysis	**20**
The team's design techniques are incomplete, with improper constraints or impossible manufacturing geometry	**10**
The team fails to utilize proper engineering design techniques to create a device for accessibility in residence halls	**0**

Presentation Content (10 Points)

Criteria	Points
The posterboard is neat and organized. The posterboard meets all requirements outlined in the guidebook, i.e. "Technical Rules"	**10**
The posterboard meets the majority of the requirements outlined	**5**
The posterboard does not include any of the required information	**0**

Presentation and Team Communication (10 Points)

Criteria	Points
All team members participated in presenting their project and showed a clear understanding of how it functions and what manufacturing techniques were used. Clearly shows their use of a manufacturing process	**10**
The team gave a properly structured presentation of their project, but not all members seemed to fully understand its functions	**5**
The team was unable to give a clear description of their project, and not all members understood how it functions	**0**

Judges' Discretion (10 Points)

Criteria	Points
The judge may add points to a team's score based on their personal belief in the quality and complexity of a team's project	**10**

Awards

- **Gold Manufacturing Excellence Award** – Highest Score Overall, $2,000 cash prize
- **Silver Manufacturing Excellence Award** – Second Highest Score, $1,000 cash prize
- **Bronze Manufacturing Excellence Award** – Third Highest Score, $500 cash prize