Lawrence Technological University

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LAWRENCE TECHNOLOGICAL UNIVERSITY ROBOFEST®

RoboMed

Intelligent and Interactive Medical Robotics/Device Projects

V 2.1 – Final Version for 2026 Season

This file can be found on the **RoboMed** page on the website

Coaches are responsible for communicating rules updates to participants

www.robofest.net **robofest@ltu.edu** 248-204-3568

Room J233 Taubman Complex, LTU **21000 West 10 Mile Road, Southfield, MI 48075, USA**

1. RoboMed Overview

Learning Objectives

- STEM subjects focusing on (bio) medical engineering and healthcare science
- Sensor technology and applications
- Computer programming
- Creativity and Problem solving skills
- Entrepreneurial skills

Synopsis

- **An Open Category competition** which will take place at the Robofest World Championship
- A unique STEM (Science, Technology, Engineering, and Mathematics) competition for intelligent and interactive (bio) medical robotics/device projects for healthcare science

2. Age Divisions and Team Size

- Age Divisions:
  - Junior Division (Grades 5-8)
  - Senior Division (Grades 9-12)
- Team Size: Maximum five (5) members
  - Recommend 2 or 3 students per robot controller used
- Team Registration Fee: $100 at the World Championship (may differ for international events)
- Teams must review and abide by: Robofest 2026 General Rules
- Each team member must bring the signed Robofest Consent and Release Form on the day of the event, if not completed on-line

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3. Project Requirements/Limitations (1/2)

- Prior to competition day, teams are required to provide:
  - Brief written project description on Robofest registration system
  - Preview video link (uploaded to the Robofest registration system)
  - Source code one week prior to competition for judge review. Coach will receive instructions as to where to send file
- Teams must bring all the necessary materials for their presentation
- The project must be related to (bio)medical and healthcare fields
- The project must include programming to use sensors and/or actuators
- All types of (micro)controllers and any programming language can be used
- Any material that is safe for humans can be used
- RoboMed competition promotes an entrepreneurial mindset. Therefore, sentences about “Opportunity Recognition” and “Value Creation” are encouraged in the project description. In addition “budget” could be mentioned too there

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3. Project Requirements/Limitations (2/2)

- The demonstration space for each team is limited to a maximum of 64 square ft. including 6ft or 8ft table that is provided by the host. Teams may choose to demonstrate robots/devices on the floor. Exceeding maximum space allowed may result in deduction of points
- Projects which have been entered in a previous competition category of any kind can be entered, but team must:
  - Add new features and/or “noticeably” improve or change one or more features
  - Describe the addition/changes in the project description text area of the team registration page
  - Inform judges during the official presentation that their project is a “continued” form of a previous project
- Preview Video requirements:
  - Approximately 4 minutes, maximum of 5 minutes
  - Includes the Team ID, Team Name and team member/role introduction
  - Video should be submitted one week prior to the competition
  - Video may be the same or have differences from the live demo
  - Editing of the robot demo is allowed

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4. Project Recommendations

- Visit www.robofest.net and click on the Prior Years link to view projects from previous years
- Use of advanced technologies, such as AI (artificial intelligence, machine learning), generative AI, and/or vision is encouraged. See Section 6b of judging rubric
- It is requested that teams bring poster boards or other visuals to describe their projects
- In addition to submitting the required 4 minute Preview Video, teams may set up a team website (*). Judges will use info to preview the team project prior to the competition day
- Teams should plan to bring a laptop to show their video and/or display their website during the competition

(*) There are many ways to create websites for free including “Google Sites”. Watch a video tutorial such as: https://youtu.be/0woNTtlcxgM?si=8S_1rPXyXfy5V9-N

5. Project Presentation

- Teams must present their project to the group of Judges with a formal presentation at a time specified by the Site Host
- Teams will have a maximum of 4 minutes to explain and demonstrate their project to the Judges
- Each team member must clearly state his/her roles
- Teams are encouraged to review the project budget during the presentation
- Teams are responsible for keeping track of their 4-minute time limit. Exceeding time limit may result in deduction of points
- Judges will then conduct a 2-minute Question/Answer session
- Teams are supposed to present & demonstrate their project to spectators (including Judges and secret judges) throughout the in-person event

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6. RoboMed Judging

- The Judges will use the rubric posted on the “RoboMed” page at robofest.net
- In addition to the formal presentation including 2 minute Q/A, Judges will pre-visit or re-visit the team tables individually to ask additional questions, evaluate robots, and inspect program code at any time within the Official Judging time blocks, as noted in the program
- “Secret Judges” may visit teams throughout the day to ask questions, check displays and observe interactions with spectators. These judges will not identify their roles
- Age-appropriate math and science applications will be judged
  - Advanced level skills are fine to use, however, they may not necessarily result in the highest scores in the STEM learning category on the rubric
- The 2026 Robofest World Championship plans to introduce a final public presentation round featuring the top-ranked teams on Sat, May 16, in the auditorium.

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7. Code Submission Instructions

- Site host will email the code uploading instructions to the Coach **10** days prior to the competition
- Teams must submit their source code **one week** prior to the competition
- Site Host will provide team's code documents to Judges to be reviewed prior to the event
- Judges will assess how well the code is designed, structured and commented
- Guidelines:
  - One PDF file per team
    - Text files can be printed into a PDF file.
    - If you are using a graphical block-based language, you can print screens and paste program images onto PowerPoint or Word. Then save the file as PDF
  - Arrange code to help make it easy to understand
  - If needed, add comments to help explain
  - Highlight aspects of code that are important
  - Include team number and team name in file name (ex: 2913-4_teamName.pdf)

8. Judging Rubric (1/2)

https://www.robofest.net/images/2526/RoboMed2026Rubric.pdf

Judging Score

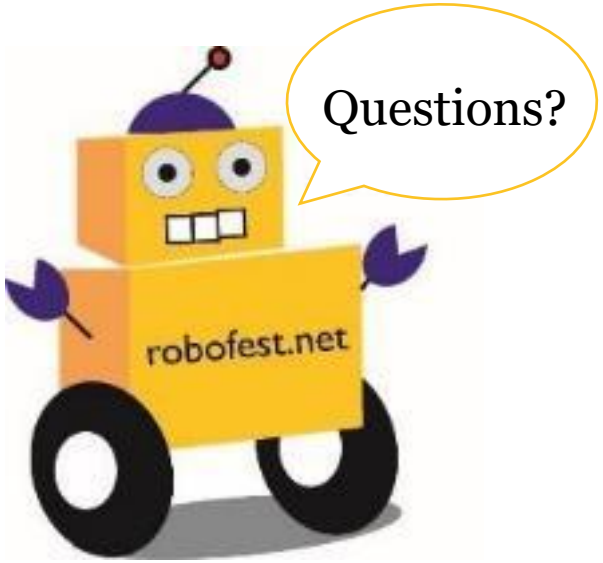
5: Strongly Agree	Excellent, outstanding, advanced, exemplary, or amazing
4: Agree	Good, accomplished, or proficient
3: Neutral	Average, intermediate level, or acceptable
2: Somewhat Disagree	Attempted but needs work
1: Disagree	Little attempted or needs lots of help

Judging Category	Sub Categories	Weight	1 - 5 Score
1. STEM learning	This project truly demonstrates applications of science, technology, engineering, and math for (bio) medical & healthcare related projects.	7%	
	Students have an age appropriate understanding of the science, technology, engineering, math, coding, and artificial intelligence (AI) concepts they applied to the medical robotics project.	7%	
2. Project idea and originality	The project idea is very original & unique and showed impressive creative thinking and creative problem-solving skills.	9%	
3. Project demo performance (robot)	The official live robot demo is free from problems and very impressive.	9%	
4. Project presentation	Project presentation is clear, well organized, and delivered effectively within the allowed time. Each team member must clearly state his/her roles.	9%	
	Information on the team poster, brochure and signage is clear, well designed, and able to be understood even by robotic novices. Project remained within allowed size parameters (max 64 ft^2 or 5.95 m^2 including a table).	3%	

8. Judging Rubric (2/2)

5. Solution design	The solution design is creative, effective, user-friendly, and sturdy.	8%	
6. Project complexity & intelligence	The project is complex with multiple intelligent & interactive features/functions, sensors, and components.	7%	
	Project uses advanced emerging technologies such as AI (artificial intelligence, machine learning), generative AI, computer vision, XR, etc.	2%	
7. Practicality & Entrepreneurship	The demonstrated project shows potential as a useful and practical application of robotics technology for real-world (bio) medical applications.	8%	
	Team members have the entrepreneurship mindset. They presented budget and business plans on how to commercialize their systems.	8%	
8. Programming	Students are able to explain clearly their programming code (during live presentation and Judge's pre/post visit)	4%	
	(Code document in PDF has been submitted) *and* (programs are well designed, structured, and commented).	9%	
9.Team independence	Based on my observations and interaction with the team, I believe the project was mostly designed, developed, and programmed by students, not by adult coaches, parents, or mentors. The students were able to clearly and confidently explain each part of their project.	5%	
10. Preview Video	The video gives a clear explanation of features of the project, including the Team ID, Team Name and Introduction of each team member with roles (min. 4 minutes, max. 5 minutes).	5%	

Little Robots, Big Missions



Send questions to: robofest@LTU.edu

RoboMed 2025 Committee

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- Hao Jiang, PhD
- CJ Chung, PhD *

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