TAR UMT STEAM COMBAT ROBOTICS

OFFICIAL COMPETITION RULEBOOK

Tunku Abdul Rahman University of Management and Technology

1. Competition Overview

TAR UMT STEAM Combat Robotics is a student combat-robotics competition designed to introduce lower and upper secondary school students to robotics, engineering, and piloting through hands-on 1lb pushbot battles. Participants will receive a standard pushbot kit and attend a guided assembly workshop before competing.

2. Competition Categories

Teams will compete in one of two age categories:

- Category A — Lower Secondary (Form 1 – 3) : 13–15 years old
- Category B — Upper Secondary (Form 4 – 5) : 16–17 years old

Teams will only compete against other teams within their own category. Age is determined by the participant's age at the time of the competition.

2.1 General Game Play

Each category will consist of sixteen (16) teams. The matches will involve one robot fighting against another in a one-on-one format. The competition will be conducted in a single round-robin format for the Group Stage, followed by a knockout format for the Quarter-final, Semi-final, and Final stages.

For the Group Stage, the sixteen (16) teams in each category will be divided into four (4) groups of four (4) teams. The grouping will be determined through a ballot or draw conducted by the Organiser. Each team will compete against every other team within its respective group.

Only the top two (2) teams from each group will qualify for the Quarter-final. The Quarter-final, Semi-final, and Final will be conducted in a knockout format. Match pairings for the knockout stages will be determined by the Organiser through a ballot or designated match draw.

3. Team Composition

Each team must consist of:

- 1 Advisor (teacher, mentor, or guardian — non-piloting role)
- 3 Students (competing members)

The Advisor may assist with logistics, guidance, and supervision but may not assemble, repair, or pilot the robot during competition. All hands-on robot operation is reserved for students only.

4. Equipment & Robot Specifications

4.1 Provided by the Host

- 1 standard 1lb pushbot robot kit per team, to be assembled by the contestants
- Preloaded control software on the robot
- A hands-on assembly workshop prior to competition
- Battery (robot) charging services throughout the event

4.2 To Be Brought by Contestants

- 1 Android smartphone per team (Android 6.0 or above) for robot control.

No other robot modifications, weapons, or components outside the provided kit may be added unless explicitly approved by the Head Judge/Organiser prior to the match.

4.3 Robot Kit Return

- The robot kit is provided on a loan basis for the competition.
- Teams MUST return the complete robot to the organiser once they are eliminated from the competition or after competition ends.

5. The Arena

- Matches are played in a 4ft x 4ft enclosed arena. Refer to **Appendix 1: Arena Layout**.
- The arena floor includes a pit; pushing an opponent robot into the pit results in an immediate win for that round.
- Any robot that exits the arena boundary by its own error (self-out) will be counted as a loss for that round, at judges' discretion.

6. Match Format & Duration

- Each match lasts a maximum of 3 minutes.
- A round ends immediately if one robot successfully pushes the opposing robot into the pit — that team wins the round.
- If the 3-minute timer expires with no robot pushed into the pit, the round proceeds to Judges' Decision (see Section 8).

7. Piloting Rules

- Robots must be piloted exclusively by students using the team's Android smartphone.
- Advisors are strictly prohibited from operating, touching, or assisting with the controls once a match begins.
- Only one student may actively pilot the robot at a time during a match; team members may rotate piloting duties between matches.
- Any advisor interference during an active match may result in disqualification of that round.

8. Judging & Scoring

The judges' decisions are final and not subject to challenge or appeal. The team will be declared as the winner once they have fulfilled one of the conditions stated below:

- Successfully pushes the opposing robot into the pit; the match will end immediately.
- The opposing robot commits a self-out by leaving the arena boundary.

If no team wins by pit-out before time expires, two (2) judges will determine the round winner based on the following criteria:

- Control — demonstrated ability to maneuver, position, and dominate the arena.
- Aggression — number of successful pins and offensive engagement against the opponent.

Judges' decisions are based on majority agreement. In the event the two judges disagree, a third tie-breaking judge (or the Head Judge) will cast the deciding vote.

9. Pinning Rule

- A "pin" is defined as immobilizing an opponent robot against the arena wall or floor such that it cannot move freely.
- A pin may be held for a maximum of 10 seconds.
- Once 10 seconds is reached, the pinning robot must disengage and allow the opponent a fair chance to reposition.
- Referees will actively count pin duration; repeated failure to release a pin after 10 seconds may result in a warning or point deduction, at the referee's discretion.

10. Code of Conduct

- All participants, advisors, and spectators must display good sportsmanship at all times.
- Unsafe behavior, tampering with another team's robot, or unsportsmanlike conduct may result in disqualification.
- The Head Judge/Organiser's decisions on all disputes are final.

11. Safety

- All matches take place within the enclosed 4x4ft arena for spectator and participant safety.
- Contestants must follow all safety instructions given during the assembly workshop and by event marshals.
- Any robot deemed unsafe by organisers may be withheld from competition until corrected.

Appendix 1

Arena Layout