ASTROCAD ASSEMBLY CHALLENGE 2026

Proposal field	Details
Organizer	Kumaraguru SEDS
Event type	AstroCAD Assembly Challenge 2026
Date	29 October 2026
Mode	Offline
Duration	3 hours
Team size	2 members
Prize pool	₹5,000
Maximum Teams	Up to 30
Venue	M-GATE
Proposed time	10 a.m to 1 p.m

PROPOSAL SUMMARY

Kumaraguru SEDS proposes to conduct the AstroCAD Assembly Challenge 2026 on 29 October 2026 as a half-day, offline engineering competition. The event tests parallel CAD modelling, design interpretation, assembly discipline and teamwork through one common space-component assembly problem. Every team receives the same reference package and works under identical conditions.

Each team consists of two members using separate laptops. Member 1 models Parts A, B and C etc.. while Member 2 models Parts D, E and F etc. After completing the assigned parts, both members collaborate to produce a fully constrained, interference-free final assembly that demonstrates the prescribed motion. The proposal seeks approval to conduct the event, allocate the venue and technical facilities, and disburse the ₹5,000 prize pool.

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EVENT OVERVIEW

Item	Confirmed plan
Event name	AstroCAD Assembly Challenge 2026
Organizer	Kumaraguru SEDS
Date	29 October 2026
Format	One competitive round
Duration	10 a.m – 1 p.m
Participation	Teams of 2
Reference	Common orthographic views, dimensions and task instructions
Software	Any approved parametric CAD software capable of native parts, assemblies and STEP export
Prize pool	₹5,000
Venue and reporting time	**M-GATE** & report at **9.30 A.M**

PURPOSE AND RATIONALE

The competition is designed around a realistic engineering workflow in which a larger product is divided into individually owned components and later integrated. This makes the challenge more substantial than a single-part speed-modelling contest while remaining feasible within a half-day schedule. Using one common reference package ensures that all teams face the same difficulty and can be evaluated through a consistent marking scheme.

OBJECTIVES

- Develop accurate 3D parts from dimensioned engineering references.
- Practice parallel design work and controlled file exchange between team members.
- Apply appropriate assembly mates or constraints and demonstrate the required degree of freedom.
- Verify manufacturability through interference checking and dimensional consistency.
- Promote CAD proficiency through a space-engineering context.
- Recognize accuracy, completeness, functionality and disciplined teamwork.

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Competition Architecture

CHALLENGE PACKAGE

At the start of the competition, every team will receive the same verified challenge package. The package will be prepared from a master CAD assembly so that all dimensions, interfaces and expected motion are technically consistent.

- Dimensioned orthographic views for Parts .
- Assembly layout or exploded reference identifying part relationships.
- Part allocation sheet showing A–C etc for Member 1 and D–F etc for Member 2.
- Required units, tolerances, file naming convention and submission checklist.

- Definition of the prescribed assembly motion and permitted degree of freedom.
- Clarification sheet for any official correction issued equally to all teams.

TEAM WORKFLOW

Stage	Member 1	Member 2	Joint output
Part modelling	Models Parts A, B and C etc	Models Parts D, E and F etc	native part files
Verification	Checks dimensions and interfaces	Checks dimensions and interfaces	Correctly named and editable files
Integration	Supports assembly constraints	Supports assembly constraints	Fully constrained assembly
Validation	Reviews interference and motion	Reviews interference and motion	Interference-free mechanism with prescribed motion
Submission	Confirms assigned files	Confirms assigned files	Native files, STEP export and evidence

RULES AND REGULATIONS

1. **Eligibility:** Participants must register as a two-member team. Eligibility across years, departments or institutions will be stated in the registration announcement.
2. **Equipment:** Each member must bring a separate laptop, charger and approved CAD software installed and tested before reporting.
3. **Software:** Teams may use an approved parametric CAD package. Both members should use compatible software versions or exchange through an approved neutral format.
4. **Common challenge**: Every team receives the same reference drawings, dimensions, part allocation and prescribed motion. There will be no surprise redesign or unequal variation between teams.
5. **Part ownership:** Member 1 must model Parts A, B and C etc.. . Member 2 must model Parts D, E and F etc.. Reassigning a principal part before the assembly stage is not permitted.

6. **Collaboration**: Members may discuss dimensions, interfaces and design strategy throughout the event. During part modelling, each member must create the parts assigned to that member.
7. **Assembly:** After the six parts are completed, both members may work together on final integration, constraints, interference correction.
8. **External resources**: Internet access, generative tools, pre-built models, external storage libraries, communication with outsiders and reuse of previous CAD files are prohibited unless expressly permitted by the organizers.
9. **Original work:** All submitted geometry must be created during the official competition period from the supplied reference package.
10. **Clarifications:** Questions must be raised with the technical desk. Any correction affecting the task will be announced to all teams and the same time adjustment, if required, will be applied.
11. **Submission:** Teams must submit before the deadline using the prescribed folder structure and file names. Late work is subject to the stated penalty.
12. **Conduct**: Participants must not disturb another team, exchange files across teams or access another team's workstation.
13. **Final authority**: The judging panel and event coordinator will decide technical interpretations, penalties and final results. Their decision is final.

Permitted File Transfer

File exchange is permitted only between the two registered teammates for only assembly integration. Teams should use the organizer-approved local method or a shared team folder. Transfer to or from another team is prohibited.

Submission Requirements

- Native editable part files, labelled Part A through Part F etc.
- One native assembly file with complete constraints or mates.
- One neutral STEP export of the final assembly.
- One exploded or isometric assembly view.
- Screenshots showing the final assembly, interference result and required motion positions.

Recommended folder name: TeamNumber_TeamName. All dependent files must open correctly from the submitted folder. Missing references, suppressed errors or corrupted files may reduce the score.

Evaluation Scheme

Criterion	Marks	Evaluation focus
Accuracy of Parts A, B and C etc	20	Dimensions, geometry, feature order and editable construction
Accuracy of Parts D, E and F etc	20	Dimensions, geometry, feature order and editable construction
Overall dimensional accuracy	15	Interface compatibility, units and tolerance-sensitive features
Assembly constraints	15	Correct mates, constraint completeness and intended degrees of freedom
Final assembly completion	20	All required parts integrated in the correct arrangement
Interference-free result	5	No invalid collisions in the required operating range
File organization and submission	5	Naming, completeness, openability and timely submission
Total	**100**	**Final score before penalties**

Penalties and Disqualification

Issue	Proposed action
Missing native or assembly file	Deduct marks under the relevant criterion
Wrong member models an assigned principal part	Up to 10 marks deducted, subject to judging verification
Use of pre-built or externally sourced geometry	Disqualification
Cross-team file exchange or outside assistance	Disqualification
Deliberate rule violation or misconduct	Warning, penalty or disqualification depending on severity

Fairness and Tie Break Procedure

- All teams receive identical drawings, dimensions, part allocation and available time.
- Reference drawings will be validated against a master assembly before the event.
- Workstations may be checked before distribution to prevent preloaded challenge files.
- An official clarification log will record questions and answers that affect multiple teams.
- Judges will use the same 100-mark rubric and record deductions with reasons.
- Submitted file timestamps and feature history may be reviewed where authorship is disputed.

If two teams obtain the same final score, ranking will be determined in this order: higher assembly-constraint score, higher combined part-accuracy score, earlier valid submission time, and finally a short live technical explanation assessed by the judges.

Reference Design Standard

The competition model should contain six principal components with balanced difficulty. Interfaces should require meaningful collaboration but must not depend on hidden dimensions. The assembly should include one clear prescribed motion, such as rotation, sliding or deployment, that can be tested without specialized simulation tools.

- Create and fully constrain the master parts and assembly.
- Generate orthographic drawings directly from the verified master model.
- Check that every required dimension is visible and unambiguous.
- Record expected completion time, common mistakes and judge checkpoints.
- Export sample STEP files to verify software-neutral compatibility.

Facilities and Resources

Resource	Requirement
Venue	Computer-friendly hall or laboratory with team seating and judge area
Power	Two charging points per team plus safe extension boards
Network	Restricted local submission network or controlled USB submission
Technical tools	Approved CAD viewers, file archive, stopwatch and interference checklist
Stationery	Team labels, score sheets, attendance, certificates and pens
Backup	Spare extension boards, storage device and offline copies of references

Prize Plan

Position	Prize amount
First place	₹2,500
Second place	₹1,500
Third place	₹1,000
Total prize pool	**₹5,000**

Certificates may be provided to winners and participants subject to institutional approval. Any non-prize expenditure will be finalized after venue, printing, certificate and refreshment requirements are confirmed.

Safety and Participant Responsibility

Participants are responsible for the safe condition of their laptops, chargers and adapters. Cables must be routed without obstructing walkways. Food and liquids should be kept away from electrical equipment. Organizers will brief emergency exits and venue rules before the competition begins.

Expected Outcomes

- Measurable improvement in part modelling and assembly skills.
- Experience with parallel engineering work and interface coordination.
- Greater awareness of space-mechanism design practices.
- Identification of skilled CAD participants for future SEDS technical projects.
- A reusable competition framework for future editions.