

HOPE 25 Concrete Mix & Cube Design

Demonstrate your structural engineering skills

Objective:

The Concrete Mix & Cube Design competition at HOPE 25 is a hands-on challenge for civil engineering enthusiasts to showcase their expertise in concrete technology and structural design. Teams will attend an introductory seminar, design a concrete mix, cast a cube specimen, and test its strength the following day. From calculating the perfect mix ratio to achieving optimal compressive strength, this event tests both theoretical knowledge and practical skills.

Event Details:

Team Competition (2 members per team)

Prizes:

1st Place: ₹1000 | 2nd Place: ₹1500

Event Structure

Seminar:

- A pre-competition seminar will be conducted to cover the fundamentals of concrete mix design, material properties, and testing procedures.
- Attendance is mandatory for all participants.
- Duration: Approximately **2 hours**. (10 AM - 12 PM)

Competition Day 1: Mix Design & Cube Casting

- Teams will design a concrete mix by calculating the ratio of cement, sand, and metal (coarse aggregate) based on seminar teachings.
- Materials will be provided by the organizers (cement, sand, metal, water, and moulds).
- Teams will prepare their mix and cast it into a cube mould of size 15x15x15 cm.
- Maximum duration for mix design and casting: 1 hour.

Competition Day 2: Cube Testing

- After curing overnight (approximately 24 hours), the moulds will be opened.
- The compressive strength of each cube will be tested using a compression testing machine in the Civil Lab.
- Testing will be supervised by judges and lab staff.

Rules and Guidelines:

Team Registration:

- Teams must register online at **hope.gptcperinthalmanna.in** by **March 5, 2025**.
- Open to all civil engineering students of the college hosting HOPE 25.
- Teams can have a maximum of 4 members. Solo participation is not allowed.

Materials & Equipment:

- All materials (cement, sand, metal, water) and cube moulds (15x15x15 cm) will be provided by the organizers.
- Use of personal materials or tools is not permitted unless approved by the coordinators.

Mix Design:

- Teams must calculate their own mix ratio (cement:sand:metal) based on seminar guidelines.
- Water-cement ratio and workability should be considered in the design.
- Calculations must be submitted on paper along with the cast cube.

Casting:

- Concrete must be mixed manually or with provided equipment within the 1-hour time limit.
- The cube mould must be filled completely, compacted properly, and leveled off.
- Any cube with visible defects (e.g., honeycombing) may be penalized.

Curing & Testing:

- Cubes will be labeled and stored for curing by the organizers overnight.
- Testing will occur the next day under controlled conditions using a standard compression testing machine.
- Teams are encouraged to attend the testing session to observe results.

Judging Criteria:

- **Mix Design:** Accuracy and rationale of the calculated mix ratio.
- **Compressive Strength:** Measured strength of the cube in N/mm².
- **Workmanship:** Quality of casting (e.g., uniformity, compaction).
- **Documentation:** Clarity and completeness of submitted calculations.

General Rules:

- All team members **must attend the seminar** to participate in the competition.
- No external assistance or pre-made mix designs are allowed.
- Time limit of 1 hour for Day 1 activities (mix design and casting) will be strictly enforced.
- The decision of the judges and organizers is **final**.

Contact:

For clarifications, reach out to the following before the event.

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