



RULEBOOK

SEASON 3



MIX MASTER



ORGANIZED BY:
ASCE STUDENT CHAPTER, DUET



IN COLLABORATION WITH:
DEPARTMENT OF CIVIL ENGINEERING, DUET, GAZIPUR

The “**Mix Master**” is a High Strength Concrete Cylinder Challenge which is a hands-on technical event designed to assess participants understanding of concrete technology, mix proportioning, and material performance. Participants will design and prepare concrete cylinders aiming to achieve the **maximum compressive strength** while maintaining economy, accuracy, and quality workmanship.

Objective:

- To encourage practical application of concrete mix design principles, teamwork, and technical decision-making among future civil engineers.

Eligibility:

- Each team shall consist of **maximum 3 members**.
- Undergraduate students enrolled at universities across Bangladesh are eligible to participate in this competition. Participants **must remain undergraduate students until 1 January 2027**. Anyone whose undergraduate student status ends before this date will not be eligible to participate.
- Each team has to involve a **faculty advisor** as their supervisor.
- Participants must be undergraduate students of Civil Engineering or relevant discipline from any recognized university.
- Teams must register by the announced deadline via the official CEvilization registration portal or Google Form.
- Each university may send multiple teams, provided they are registered separately.
- A faculty advisor may **supervise** multiple teams.
- Team names should be **unique and professional**.

Materials:

- **Cement:** Ordinary Portland Cement (**OPC**) or Portland Composite Cement (**PCC**) (as available).
- **Aggregates:** Crushed stone (coarse) and natural sand (fine).
- **Admixtures:** Any kind of strength-enhancing additive or chemical admixture is allowed.
- **Water:** Potable water meeting **BNBC/ASTM** standards.

Additional Materials:

- Any material that may enhance the strength of concrete can be used only with proper documentation and prior declaration.
- Polymer fiber and steel fiber may be used as concrete ingredients.
- **The cylinder specimen must be plain concrete only. Reinforced concrete is strictly prohibited.**

Rules And Regulations For The Mix Master:

❖ Casting Procedure

- Each team must cast their concrete cylinders at their respective university campus under the supervision of a **faculty advisor**. The casting process must be properly documented with photos and short clips as evidence of authenticity.
- Each team shall prepare **a set (3 cylinders)** of standard cylinders (**100mm × 200 mm**) for testing.
- All specimens must be cured for **28 days (±2 days)** before testing.
- Cylinders older than **30 days** at the time of testing will incur a penalty deduction from the final score.
- Any visible defect, honeycombing, or non-standard finishing may lead to disqualification or score reduction.

❖ Mix Design and Documentation

- Teams must submit a detailed mix design sheet within **10 days** of casting. The sheet should include:
 - i. Material proportions (cement, sand, aggregate, water, admixtures)
 - ii. Target strength and theoretical calculations
 - iii. Predicted compressive strength (f'_c)
 - iv. Material cost breakdown and **total mix cost per m³**
- A cost-performance ratio may be considered during evaluation to encourage economical design.
- **The submitted mix design & other documentation must be signed by the team leader and faculty advisor.**

❖ Curing and Storage

- Cylinders must be cured using standard water curing methods (submerged or moist curing) at normal temperature.
- Teams must ensure the specimens are properly labeled with team name/code and casting date.
- Improper curing or labeling will result in score penalties.
- Cylinders must remain in good condition until testing day. Cracked or damaged specimens will not be tested.

❖ Testing

- Testing will be conducted during the competition day using a Universal Testing Machine (UTM) at **DUET campus** under the supervision of the Technical Committee.
- Each cylinder's dimensions (diameter and height) will be measured before testing to ensure accuracy in strength calculation.
- The ends of each cylinder must be properly polished before submission to ensure uniform load distribution during compression.
- Each team's average compressive strength will be calculated from their tested specimens.
- Teams must be present during the testing session; absence may result in disqualification.
- Teams must bring hard copy of their submitted reports and faculty advisor's certification of authenticity.
- The judges' decisions will be final and binding.

Evaluation (Total = 100 Marks)

The total score is derived from the following categories, calculated using the specific formulae below.

Category	Formula / Method	Marks	Notation
Compressive Strength	$S_{Str} = 55 \times \left(\frac{f_{avg}}{f_{max}} \right)$	55	f_1, f_2, f_3 = Compressive strength of three cylinders (MPa) f_{avg} = Average strength, $f_{avg} = \frac{f_1 + f_2 + f_3}{3}$
	f_{max} = Highest average strength among all participating teams		

Category	Formula / Method	Marks	Notation
Economy	Score ($S_{economy}$): $S_{eco} = 15 \times \left(\frac{P}{P_{max}} \right)$	15	C = Cost per m ³ P = Strength-cost performance $P = \frac{f_{avg}}{C}$
	P_{max} = Highest strength-cost performance among all teams		
Strength-Density Efficiency	Efficiency (E): $E = \frac{f_{avg}}{\rho_{avg}}$ Score ($S_{density}$): $S_{den} = 10 \times \left(\frac{E}{E_{max}} \right)$	10	ρ_i = Density of cylinder i: $\rho_i = \frac{\text{Mass of cylinder i } (m_i)}{\text{Volume of cylinder i } (V_i)}$ ρ_{avg} = Average density $\rho_{avg} = \frac{\rho_1 + \rho_2 + \rho_3}{3}$
	E_{max} = Highest Strength-Density Efficiency among all teams		
Cylinder Uniformity	Variation Ratio (V): $V = \frac{f_{\max(cyl)} - f_{\min(cyl)}}{f_{avg}}$ Score ($S_{uniformity}$): $S_{uni} = 5 \times \left(\frac{V_{min}}{V} \right)$	5	$f_{\max(cyl)}$ = Max ^m strength among three cylinder $f_{\min(cyl)}$ = Min ^m strength among three cylinder
	V_{min} = Lowest variation ratio among all teams		
Documentation & Viva	Submitted report evaluation	15	Your report should include mix-design, casting verification, costing calculation etc.
	Technical evaluation		You must explain why you made your engineering decisions (e.g., selection of W/C ratio, admixture type)

Final Score Calculation

The final ranking is determined by the summation of scores from all categories:

$$\text{Total Score} = S_{str} + S_{eco} + S_{den} + S_{uni} + S_{doc} + S_{viva} - \text{Penalty}$$

IMPORTANT DATES:

Topic	Date	Medium/Venue
Registration Starts	October 20, 2026	Online
Workshop on Mix Master	Will be announced	Online
Registration Closed	Will be announced	Online
Casting of Specimen	December 01-03, 2026	On Campus
Mix Design and Costing Report Submission	December 13, 2026	Online
Video Submission	December 13, 2026	Online
Specimen test	January 01, 2027	DUET Campus

Prize Pool

- Prizes will be awarded to the **Champion, 1st Runner-up, and 2nd Runner-up** based on their final scores.
- The total prize pool is **BDT 50k+**, distributed as follows:
 - Champion** : BDT **25k**
 - 1st Runner-up** : BDT **15k**
 - 2nd Runner-up** : BDT **10k**
- The winners of the **Mix Master** segment will receive a **Gorgeous Crest and a Certificate**.

N.B. The rules and guidelines stated above are **subject to change** at the discretion of the organizing committee. Participants are advised to **check official announcements** regularly for any updates or changes.

Registered Participants will receive →

- Event Kits [T-Shirt + Merchandise + ID Card]
- Breakfast and Lunch
- Participation Certificate
- Transport Facilities (Specific Routes)

REGISTRATION PROCESS:

Registration Fee	: BDT 1,800.00 per Team
Payment Method	: Online payment gateway via the official website.
Registration Link	: https://ascechapter.duet.ac.bd/cevilization/21
Registration Deadline	: Will be announced
Event Date	: January 1, 2027 (Friday)
Event Link	: Will be announced

For Further Queries

Segment In-charge	: Mazharul Islam
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Assistant In-charge	: Nafiul Islam
Phone No	: 01777-031584

For More Updates

Website	: https://ascechapter.duet.ac.bd/cevilization
Facebook Page	: www.facebook.com/cevilization.duet
Email	: cevilizationduet@gmail.com