



# Engineering and Science Admissions Test (ESAT)

**Cheenta Academy for  
Olympiad & Research**

**[cheenta.com](http://cheenta.com)**

Since 2010

**Passion for Mathematical Science & Research**

This curriculum is for Engineering and Science  
Admissions Test (ESAT)



# Curriculum

## Module 1



### Algebra and Functions

11 Lessons



Polynomials



Equations and Inequalities



Functions



Composition of Functions



Sequences & Series



Sequence and Series 1, (A.P, G.P)



Sequence and Series 2, (Telescoping Sum,  
Polynomial Series)



Quadratics



Quadratic Inequality



Speacial Factorization



Exponentials & Logarithms

# Module 2



## Calculus

12 Lessons



Differentiation - Tangent Lines and Rates of Change



The Derivative Function



Introduction to Techniques of Differentiation



Product & Quotient Rules



Absolute Maxima and Minima



Applied Max/Min Problems



The Indefinite Integral



Integration by Substitution



The Definition of Area as a Limit; Sigma Notation



The Definite Integral



Areas between Curves



Volumes by Cross Sections/Disks/Washers

# Module 3



## Geometry and Trigonometry

9 Lessons



Trigonometric Functions



Trigonometric Equations



Coordinate Geometry



Vectors



Properties of Circle



Tangent to circle



Properties of Triangle



Congruent Triangles



Similarity of Triangles

# Module 4



## Probability and Statistics

6 Lessons



Mean, Standard Deviation & Variance



Bivariate Statistics



Venn Diagrams & Probability



Conditional Probability



Discrete and continuous random variables,  
distributions (binomial, Poisson, normal)



Bayes Theorem Probability Density Functions

# Module 5



## Numerical Methods

3 Lessons



Numerical Methods (Basic)



Approximation: Newton-Raphson method, trapezium rule



Iterative Methods: Solving equations numerically

# Module 6



## Mechanics (Basic Concepts)

6 Lessons



Linear Congruence and Properties



Newton's laws of motion, work, energy, power



Projectiles, circular motion, simple harmonic motion



Momentum and impulse, collisions



Kinematics



Dynamics

# Taught by Olympians and Researchers from leading universities

Since 2010 Cheenta has evolved into a Gurukul. Our students are in leading universities in India such as Indian Statistical Institute, Chennai Mathematical Institute, TIFR, IITs and universities abroad such as Harvard, MIT, Oxford, Edinburgh to name a few. Some of them returned as teachers for the next generation of learners. And the pursuit of excellence continues.

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Cheenta Team has 40+ members. Here are some of the leaders.



**Srijit Mukherjee**

BStat and MStat from  
Indian Statistical  
Institute (India)  
Director at Cheenta



**Dr. Ashani Dasgupta**

PhD from University of  
Wisconsin-Milwaukee (USA)  
Founder - Director at  
Cheenta



**Sanu Shaw**

B.Sc. in Mathematics Honours  
from the University of  
Calcutta  
Secured an All India Rank of  
15 in the ISI Entrance Exam  
(2023)



**Raghunath J.V.**

B.Tech and M.Tech from IIT Chennai.  
Math Olympiad Coach at Cheenta.  
INMO and IMO Trainer.



**Shayeeef Murshid**

B.Math and M.Math from ISI  
INMO Merit List  
Doctoral Scholar at Indian Statistical  
Institute



# Cheenta Academy for Olympiad & Research

Outstanding Mathematical Science Programs. Since 2010.



## Email

support@cheenta.com

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## Phone / Whatsapp



+91 760 501 9991



+1 414 220 0191

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## Address

2nd Floor, 22, Lake Place Rd, Kolkata,  
West Bengal 700029, India

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## Website

[www.cheenta.com](http://www.cheenta.com)

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