

**NASCA<sup>®</sup>**

NATIONAL ACADEMY OF  
STEM, CYBERNETICS & AI

SAMPLE DOCUMENT · v1.0

# Scope & Sequence

## Senior Band

Grades 9 – 12 · Ages 14 – 18

*Term-by-term progression of outcomes, anchor projects and assessment moments across NASCA's eleven STEAM streams.*

## PHILOSOPHY

# How the Senior Band works

The Senior band is structured as a research practicum. Each learner declares a specialisation (AI Systems, Robotics & Mechatronics, Computational Biology, Climate & Earth Systems, Computational Design, or Quantitative Reasoning) and carries a two-year capstone. The remaining streams operate as breadth seminars. All capstones are peer-reviewed, mentored by a working researcher or practitioner, and submitted to an external venue — a journal, a conference, a competition, or a public-policy submission. Olympiad pathways run alongside.

## ELEVEN STEAM STREAMS

### The disciplines that thread through every term

01 AI & Robotics	02 Computational Thinking	03 Maker / Engineering
04 Data Literacy	05 Design Thinking	06 Science Inquiry
07 Math Reasoning	08 Digital Citizenship	09 Sustainability
10 Arts & Storytelling	11 Entrepreneurship	

## ANCHOR PROJECTS

### One signature build per grade

Grade	Project	What learners produce
Grade 9	<b>Systems Year</b>	Each learner runs a small empirical study of their choosing — replicating a published paper at school scale, with a written critique.
Grade 10	<b>Specialisation Year</b>	Two-term apprenticeship inside the chosen lab; one published technical write-up and one open-source contribution.
Grade 11	<b>Capstone I</b>	Original research proposal, ethics review, methodology, baseline results. External advisor formally onboards.
Grade 12	<b>Capstone II + Defence</b>	Completion, manuscript, and a 30-minute public defence. Submission to journal, competition or public venue.

**TERM-BY-TERM PROGRESSION**

# What learners do, term by term

Each row is a term. Each column is one of the eleven STEAM streams. Cells describe the learner-facing focus — outcomes, tools and a representative anchor activity. This is a sample; the full curriculum dossier expands each cell into a 4-week unit plan with materials, vocabulary, formative checks and family letters.

Term	AI&R	Comp.Th.	Maker	Data	Design	Sci.Inq.	Math	DigCit	Sust.	Arts	Entrep.
<b>Term 1 - Methods</b>	ML foundations	Data structures	Mech. design	Stats & R	Research ethics	Phys / Bio / Chem A	Calculus I	Algorithmic bias	Climate models	Long-form essay	Venture lab
<b>Term 2 - Tools</b>	Deep learning I	Algorithms & DSA	Mechatronics	Python data	Speculative design	Phys / Bio / Chem B	Calculus II	Cyber & policy	Energy systems	Documentary	Investor decks
<b>Term 3 - Research</b>	Deep learning II	Systems & networks	Robotics labs	ML in practice	User research+	Capstone science	Linear algebra	Governance lab	Field ecology	Critical theory	Go-to-market
<b>Term 4 - Submit</b>	Capstone build	Capstone build	Capstone build	Capstone build	Capstone build	Capstone build	Capstone build	Capstone build	Capstone build	Capstone build	Capstone build

**ASSESSMENT MOMENTS**

## How we know learning is happening

Instrument	What it looks like
<b>Capstone Manuscript</b>	8 000–12 000 words. IMRaD format. External examiner.
<b>Public Defence</b>	30 minutes presentation + 20 minutes questions, panel of three.
<b>External Submission</b>	Journal, competition, conference or policy paper — required, not optional.
<b>Olympiad Track</b>	IMO, IOI, IOAA, IBO, IChO, IPhO and national pathways supported in parallel.

**FRAMEWORK ALIGNMENT**

# How NASCA maps to the world's K-12 frameworks

Schools adopting NASCA do not abandon their existing curriculum — they upgrade it. Every NASCA outcome is mapped to the framework codes used by your Ministry, board or accreditor. The grid below summarises coverage; the full mapping appendix (available on request) lists every standard code against the term that addresses it.

Framework	Coverage	Notes
CBSE (NEP 2020)	● Full	Capstones map to framework + external venue rubrics.
ICSE	● Full	Capstones map to framework + external venue rubrics.
IB PYP / MYP / DP	● Full	Capstones map to framework + external venue rubrics.
Cambridge Primary–IGCSE	● Full	Capstones map to framework + external venue rubrics.
UAE MOE / KHDA / ADEK	● Full	Capstones map to framework + external venue rubrics.
KSA Vision 2030	● Full	Capstones map to framework + external venue rubrics.
Common Core (US)	● Full	Capstones map to framework + external venue rubrics.
NGSS (US)	● Full	Capstones map to framework + external venue rubrics.

**ABOUT THIS DOCUMENT**

This is a sample preview of the full Scope & Sequence dossier for the Senior Band. The complete dossier is provided to partner schools on signature of a curriculum-licence agreement and includes: (a) week-by-week unit plans, (b) materials and procurement lists, (c) framework code mapping, (d) assessment rubrics, (e) family communication templates, and (f) staff professional-development pathways. Request the full pack at [partnerships@nasca.edu.in](mailto:partnerships@nasca.edu.in).

*Prepared by the NASCA Curriculum Council. Sample preview — not for redistribution.*