



## GENIUS CEREBRUM - INTERNATIONAL STEM OLYMPIAD 2022

### STEM OLYMPIAD 2022 – SYLLABUS

#### LEVEL BUDS (PRE-SCHOOL, KG1 & KG2 )

MATHEMATICS	POPULAR SCIENCE	ENGINEERING & TECHNOLOGY
Numbers	Living and non-living things	Computer Basics
Counting	Plant and animal life	Gadgets
Basic Arithmetic operations	My body	Youtube kids and Google
Number patterns	Food	Safe practice for kids browsing
Basic shapes	Homes	Google classrooms and other Online teaching tools - Basics
Logical reasoning	Health and hygiene	
	Safety and first aid	
	Good habits and safety	
	Earth and sky	
	Our Environment, Our universe	
	Transport and communication	

#### LEVEL 1 (GRADES 1 & 2 )

MATHEMATICS	POPULAR SCIENCE	ENGINEERING & TECHNOLOGY
Numbers	Living and non-living things	Computer Basics
Counting	Plant and animal life	Hardware/Software Basics
Arithmetic operations	My body	Gadgets
Numbers consisting of multiple digits	Food	Youtube kids and Google
Hundreds Chart	Homes	Safe practice for kids browsing

Place value	Health and hygiene	Google classrooms and other Online teaching tools - Basics
Ones/Tens/Hundreds/ Thousands	Safety and first aid	Print, Scan & Copy function
Numbers in sequence	Air, water and weather	MS-Paint
Measurement of time, length, and money	Light and sound	
Basic concept of fractions	Clothing and shelter	
Comparison of numbers	Good habits and safety	
Word problems	Earth and sky	
Geometric shapes	Rocks	
Perimeter and area	Light and shadow	
	Our Environment, Our universe	
	Transport and communication	

## LEVEL 2 (GRADES 3,4 & 5)

MATHEMATICS	POPULAR SCIENCE	ENGINEERING & TECHNOLOGY
Patterns and Equations	The planet Earth	Computer Basics
Whole Numbers	Natural disasters	Hardware/Software Basics
Multiplying and Dividing Larger Numbers	Night and day and seasons.	Operating Systems
Telling Time	Oceans, lakes, rivers, groundwater	Desktop Apps
Fractions and Decimals	Water Cycle	Word Processing
Measuring Area	Describing and measuring common weather conditions	Slide Show
Symmetrical Shapes	Light and shadow	Algorithm and Blockly Coding
Data Analysis	Energy from a variety of sources	Algorithm Basics
Measuring and Constructing Angles	Electricity and Electric circuits	Blockly Programming
Tenths and Hundredths	Producing and transferring heat	

Mean and Mode	Basic properties of sound	
Drawing Bar Graphs	Properties of solids, liquids and gases	
Units of Measure	Reversible, or irreversible, changes.	
Measuring Volume	Everyday materials	
Patterns and Equations	Basic microorganisms to adaptations in plants and animals.	
Angles and Polygons	Plant and animal and microorganism features and their interactions with their environment.	
Data Analysis and Probability	Relationships in communities and ecosystems	
Perimeters of Polygons	Major body structures and their functions in animals and plants	
	Life cycles of common plants and animals	

### LEVEL 3 (GRADES 6, 7 & 8)

MATHEMATICS	POPULAR SCIENCE	ENGINEERING & TECHNOLOGY
Operations on natural numbers	Properties of substances	Computer Basics
Operations on integers	Energy resources	Hardware/Software
Operations on rational numbers	Renewable and non-renewable resources	Operating Systems
Ratio and proportion	Mixtures	Communication and Internet Technologies
Percentage	Habitats and interactions	Desktop Apps
Rate and Speed	Classification	Word Processing
Algebraic expressions and formulas	Forces	Spreadsheet
Exponents	Friction and gravity force	Algorithm and Basics of Coding
Equations, inequalities and systems of linear equations	Magnetic and electric fields	HTML Basics
Data analysis	Solar system	Automobile technology and space technology
Angles, parallel lines and transversals	Cells	
Triangles	Body systems	

Congruence and similarity	Digestion, breathing and respiration	
Trigonometry in right triangles	Circulation and waste disposal	
Polygons	Muscles and bones	
Quadrilaterals	Reproduction	
Circles	Energy	
Volume and surface areas of figures	Sound and light energy	
Transformations	Compounds and mixtures	
Problem solving	Physical and chemical change	
Mathematical logic	Materials	
	Reaction types	
	Heat, sound and light	
	Electromagnetic radiation	
	Electricity	
	Body coordination	
	Diseases	
	Earth Science topics	

#### LEVEL 4 (GRADES 9, 10, 11 & 12)

MATHEMATICS	POPULAR SCIENCE	ENGINEERING & TECHNOLOGY
Operations on real numbers	DNA and genetics	Computer Basics
Exponents	Geological time	Hardware/Software
Solving linear equations	The periodic table	Operating Systems
Graphing linear functions	Weather and climate	Communication and Internet Technologies
Writing linear functions	Climate change and global warming	Desktop Apps
Solving systems of linear equations	The universe	Word Processing
Exponential functions and sequences	Motion and energy	Spreadsheet
Polynomial equations and factoring	Cells	Algorithm and Coding

Graphing quadratic functions	Reproduction	HTML Basics
Solving quadratic equations	Properties of matter	Python Basics
Radical functions and equations	Metals and non-metals	Basics of block chain technology
Arithmetic and geometric sequences	Ionic bonding	Automobile technology
Combinatorics	Atoms and molecules	Space technology
Algebraic and transcendental functions	Properties of water	
Graphs and transformations	Energy production	
Right triangle trigonometry	Chemical reactions	
Trigonometric identities and equations	Organic compounds	
Trigonometric functions	Thermal effects	
Angles, parallel lines and transversals	Electric circuits	
Triangles	Matter	
Congruence and similarity	Motion	
Polygons	Momentum and force	
Quadrilaterals	Energy	
Circles	Stars	
Volume and surface areas of figures	Nuclear power	
Transformations	Gravity	
Vectors	Magnetic fields	
Problem solving	Electromagnetic induction	
Mathematical logic	Transmission of energy	
	Light	
	Earth Science topics	
	DNA and genetics	
	Geological time	
	The periodic table	
	Weather and climate	
	Climate change and global warming	
	The universe	
	Motion and energy	
	Cells	
	Reproduction	
	Properties of matter	
	Metals and non-metals	
	Ionic bonding	
	Atoms and molecules	
	Properties of water	
	Energy production	



	Chemical reactions	
	Organic compounds	
	Thermal effects	
	Electric circuits	
	Matter	
	Motion	
	Momentum and force	
	Energy	
	Stars	
	Nuclear power	
	Gravity	
	Magnetic fields	
	Electromagnetic induction	
	Transmission of energy	
	Light	
	Earth Science topics	

- Questions in STEM Olympiad will test the application of concepts for practical applications.