

Crystals and Polymers (CPOL) CTY Course Syllabus

Day	Time	Topics
Monday Day 1	Morning Session	<ul style="list-style-type: none"> - Introductions - Classroom Guidelines - Technology Policy - Laboratory Safety - Honor Code Policy - Drawing Jolly Ranchers
	Early Afternoon Session	<ul style="list-style-type: none"> - Making Rock Candy - Drawing Sugar - Crystal Reading - Crystal Observations - Crystal Definitions
	Late Afternoon Session	<ul style="list-style-type: none"> - Growing Crystals Experiment - Pre-assessment - Mini Quiz
Tuesday Day 2	Morning Session	<ul style="list-style-type: none"> - Laboratory Journal Procedures - Rock Candy Observations - Growing Crystals Observations
	Early Afternoon Session	<ul style="list-style-type: none"> - Physical Properties Discussion - Identifying Crystals - Phases/States of Matter Discussion - Phase Changes
	Late Afternoon Session	<ul style="list-style-type: none"> - Modeling States of Matter - Solids
Wednesday Day 3	Morning Session	<ul style="list-style-type: none"> - Physical Properties Review - Atoms and Their Parts - Periodic Table Introduction - Bohr Diagrams - Electron Energy Levels
	Early Afternoon Session	<ul style="list-style-type: none"> - 3D Atomic Modeling - Introduction to Ions
	Late Afternoon Session	<ul style="list-style-type: none"> - Building Ions - Identifying an Unknown Crystal Experiment - Mini Quiz

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Thursday Day 4	Morning Session	<ul style="list-style-type: none"> - Rock Candy Observations - Growing Crystals Observations - Identifying an Unknown Crystal Observation - Crystal Growing Videos - Building Balloon Ions - Atomic and Ionic Radii
	Early Afternoon Session	<ul style="list-style-type: none"> - Microscope Crystals Experiment - Basic Ionic Compounds - Building and Naming Basic Ionic Compounds - Polyatomic Ionic Modeling Demonstration - Building and Naming Polyatomic Ionic Compounds
	Late Afternoon Session	<ul style="list-style-type: none"> - Building Sodium Chloride - Cleaving Sodium Chloride - Everything Review
Friday Day 5	Morning Session	<ul style="list-style-type: none"> - Everything Mini Quiz - Building Ionic Models - Review Mini Quiz
	Early Afternoon Session	<ul style="list-style-type: none"> - Crystal Shapes and Systems - Classifying Crystals - Crystal Writing Exercise
Sunday Day 5	Evening Session	<ul style="list-style-type: none"> - Gemstone Selection - Gemstone Research
Monday Day 6	Morning Session	<ul style="list-style-type: none"> - Making Borax Crystals - Rock Candy Observations - Growing Crystals Observations - Identifying an Unknown Crystal Observation - Making Alum Crystals - Measuring Crystals/Crystallography
	Early Afternoon Session	<ul style="list-style-type: none"> - Gemstone Report Writing - Memory Metal
	Late Afternoon Session	<ul style="list-style-type: none"> - Review Crystals and Crystallography - Crystal Jeopardy!
Tuesday Day 7	Morning Session	<ul style="list-style-type: none"> - Periodic Table Review - Rock Candy Observations - Growing Crystals Observations - Identifying an Unknown Crystal Observation - Electronegativity - Covalent Bonding
	Early Afternoon Session	<ul style="list-style-type: none"> - Hybridized Atoms - Hybridized Atom Balloon Models - Single, Double, and Triple Bonds

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	Late Afternoon Session	<ul style="list-style-type: none"> - Building Covalent Compounds - Hybridized Atoms and Covalent Bonding
Wednesday Day 8	Morning Session	<ul style="list-style-type: none"> - Covalent Bonding Review - Rock Candy Observations - Growing Crystals Observations - Identifying an Unknown Crystal Observation - What is a Polymer? - Polymer Survey - Monomers and Polymers - Polyethylene - Building Polyethylene Models
	Early Afternoon Session	<ul style="list-style-type: none"> - Building a Human Polymer - Ghost Crystals Experiment - Toothpick Polymers - Polymer Characteristics
	Late Afternoon Session	<ul style="list-style-type: none"> - Drawing Polymers - Polymer Chains and Branches - Paperclip Polymers - Collecting Polymers
Thursday Day 9	Morning Session	<ul style="list-style-type: none"> - Polymer Review - Mini Quiz - Rock Candy Observations - Growing Crystals Observations - Identifying an Unknown Crystal Observation - Polymer Types - Needles Through Balloons
	Early Afternoon Session	<ul style="list-style-type: none"> - Making Rubber Bands - Polymer Properties - Non-Newtonian Fluids - Making Silly Putty
	Late Afternoon Session	<ul style="list-style-type: none"> - Shrinkable Polymers Experiment - Thermosets and Thermoplastics - Polymer Review
Friday Day 10	Morning Session	<ul style="list-style-type: none"> - Polymer Cooking - Peanut Brittle Reading - Amorphous and Crystalline Polymer Discussion - Epoxy Putty Experiment - Hydrophilic and Hydrophobic Discussion
	Early Afternoon Session	<ul style="list-style-type: none"> - Properties of Tyvek - Superabsorbent Polymers - Addition and Condensation Polymerization

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Sunday Day 10	Evening Session	<ul style="list-style-type: none"> - Gemstone Presentations - Polymer Product Examples
Monday Day 11	Morning Session	<ul style="list-style-type: none"> - Making Superballs - Eraser Challenge - Natural Polymers - Biomolecules
	Early Afternoon Session	<ul style="list-style-type: none"> - Monosaccharides - Disaccharides - Sugars - Drawing Sugar - Building Sugar Molecules
	Late Afternoon Session	<ul style="list-style-type: none"> - Sugar Content in Food - Food Labels - Polysaccharides - Carbohydrates - Sugar Writing Exercise
Tuesday Day 12	Morning Session	<ul style="list-style-type: none"> - Review Sugars - Sinking Soda Demonstration - Monosaccharide and Polysaccharide Distinctions - Artificial Sweeteners - Lactose Intolerance Investigation
	Early Afternoon Session	<ul style="list-style-type: none"> - Starch Investigation - Polysaccharide/Polymer Comparison - Polysaccharide/Polymer Posters
	Late Afternoon Session	<ul style="list-style-type: none"> - Cellulose Discussion - Chitin Discussion - Mini Quiz
Wednesday Day 13	Morning Session	<ul style="list-style-type: none"> - Proteins - Protein Structures - Protein Coagulation
	Early Afternoon Session	<ul style="list-style-type: none"> - Protein Denaturation Using Heat - Protein Denaturation Using Agitation - Protein Denaturation Using Acids
	Late Afternoon Session	<ul style="list-style-type: none"> - Proteins in Food Experiment - Amino Acid Discussion - Amino Acid Modeling
Thursday Day 14	Morning Session	<ul style="list-style-type: none"> - DNA Discussion - DNA and Biomolecules - Relationship Between DNA and Proteins - Drawing Nucleotide Parts

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	Early Afternoon Session	<ul style="list-style-type: none"> - Strawberry DNA Isolation Experiment - Discuss DNA Isolation
	Late Afternoon Session	<ul style="list-style-type: none"> - Introduction to Fats - Saturated and Unsaturated Fats - Lipids/Triglycerides - Fat Review - Mini Quiz
Friday Day 15	Morning Session	<ul style="list-style-type: none"> - Everything Review - Post-assessment - Summarizing Activity