# The Chicago Military Academy at Bronzeville

### 3519 S. Giles Ave.

### Chicago, IL 60653

# Course Syllabus

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Astronomy

Department: Science

Department Chair: Mr Frontera

Primary Teacher: **Mrs Lyons**

Block 9 M, T, Th, F 2:32 – 3:30 pm (Room 311)

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The Skills-based Learning and Assessment Curriculum of the Chicago Military Academy at Bronzeville

The Skills-based Learning and Assessment Curriculum of the Chicago Military Academy at Bronzeville is a standards-based curriculum designed to provide cadets with skills mastery of the Illinois Learning Standards, ACT WorkKeys® skills and ACT College Readiness Standards. Within these standards frameworks, course objectives are defined as a compilation of the skills and knowledge identified herein. The Critical Benchmark Skills List at Paragraph 4 (below) constitutes the learning standards of this course.

1. Course Description

What makes a star shine? For how long will the Sun keep shining? What are black holes and how can they form? This astronomy course is a general introduction to the part of contemporary astronomy that includes how stars form and how they end their existence, will provide answers to these questions and more. This course introduces astronomy and astrophysics with an emphasis on discoveries from space exploration.

First, it deals with understanding the history of astronomy, orbits, gravitation, optics and the properties of light and matter. Second, it investigates the properties, origin, and evolution of the major planets, asteroids, comets, and Sun and other components of the Solar System with particular emphasis on comparative aspects with respect to the Earth. Third, it explores the developing field of Astrobiology (the origins, evolution, distribution, and future of life in the universe) highlighting recent discoveries of extra-solar planets and the intensifying search for life on mars.

In labs, students will be able to explore concepts discussed in class; students will also have the opportunity to explore astronomy on the World Wide Web.

Prerequisites: Physics, Earth Space Science, Algebra and Geometry

2. Course Resources

Textbook: Explorations (5th Edition) Thomas Arny, Stephen Schneider. (Replacement Retail $157.67)

Materials: Textbook, Student ID, any regularly used e-mail account.

Purchased Items: 1-inch 3-ring binder, college ruled loose leaf paper, 5 dividers, scientific or graphing calculator (either is acceptable), pencils, pens, flash drive.

3. Course Requirements

**General:** This astronomy course is designed as a transition course to get students up to the level of difficulty and faster pace offered by college science courses. The textbook we are using is often used in introductory astronomy courses in college for non-science majors. Success in this course is dependent on two factors: 1) commitment to working hard and 2) recognition when to get help.

**Course work:** Students enrolled in this astronomy course are expected to participate in the class in various modes:

* Benchmark Assignments: worksheets, guided reading, essays, problem sets
* Benchmark Quizzes: weekly quizzes 10 – 15 questions in length, and unannounced pop quizzes
* Projects & Labs: labs, design challenges, quick designs, online projects and **science fair project**
* Exam: midterm at the end of Q1 and final at the end of Q2
* Participation: periodic binder checks, responsibility quizzes, lab participation points, tardies

Failure to complete a lab or a project may result in a failing grade.

**Computation of Grades:**

Students’ grades are input according to tables on the right.

Benchmark Assignments: 25%

Benchmark Quizzes: 20 %

Projects & Labs: 30%

Exam: 15 %

Participation: 10 %

A 100 – 90 %

B 89 - 80 %

C 79 - 70 %

D 69 - 60 %

F 59 - 0 %

* Assignments will be input and graded in daily basis.
* Missing assignments will be put in as M (counts as zero)
* Work will be only accepted up to a week **late** (5 school days), receiving up to 80% of possible points.

4. Critical Benchmark Skills List

First Semester

Quarter 1: **Natural Patterns in the Sky**

1. Understand the effects of gravity within the solar system. Understand that the tides are caused by the gravitational interaction among the earth, moon, and sun. (ILS 12.11.106)
2. Understand basic scientific terminology. (CRS 16-19 Science.I.D.)
3. Find basic information in a brief body of text. (CRS 16-19 Science.I.D.)
4. Determine how the value of one variable changes as the value of another variable changes in a simple data presentation. (CRS 16-19 Science.I.D.)
5. Translate information into a table, graph, or diagram. (CRS 20-23 Science.I.D.)
6. Understand the methods and tools used in a moderately complex experiment. (CRS 20-23 Science.S.I.)
7. Understand a simple experimental design. (CRS 20-23 Science.S.I.)
8. Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model. (CRS 20-23 Science.E.M.I.)
9. Determine how the value of one variable changes as the value of another variable changes in a complex data presentation (CRS 24-27 Science.I.D.)
10. Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives. (CRS English.16-19)

Quarter 2 **The Electromagnetic Spectrum and the Sun**

1. Solve real-world problems using first-degree equations (CRS 24-27 Mathematics)
2. Select data from a complex data presentation (e.g., a table or graph with more than three variables; a phase diagram) (CRS 20-23 Science.I.D.)
3. Compare or combine data from a simple data presentation (e.g., order or sum data from a table) (CRS 20-23 Science.I.D.)
4. Translate information into a table, graph, or diagram. (CRS 20-23 Science.I.D.)
5. Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model (CRS 20-23 Science.E.M.I.)
6. Identify key issues or assumptions in a model (CRS 20-23 Science.E.M.I.)
7. Show some recognition of the complexity of the issue in the prompt by acknowledging counter arguments to the writer's position. (CRS Writing)
8. Show clear understanding of the persuasive purpose of the task by taking a position on the specific issue in the prompt and offering a broad context for discussion. (CRS Writing)

Second Semester

Quarter 3 **Stellar Astrophysics**

1. Solve multi-step arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour) (CRS 20-24 Mathematics)
2. Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages. (CRS 20-23, Reading)
3. Identify clear cause-effect relationships in uncomplicated passages. (CRS 20-23, Reading)
4. Compare or combine data from a simple data presentation (e.g., order or sum data from a table). (CRS 20-23 Science.I.D.)
5. Understand the methods and tools used in a moderately complex experiment. (CRS 20-23 Science.S.I.)
6. Identify a control in an experiment. (CRS 20-23 Science.S.I.)
7. Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model. (CRS 20-23 Science.E.M.I.)

Quarter 4 **Mysteries of the Universe**

1. Solve multi-step arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour) (CRS 24-27 Mathematics)
2. Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages (CRS 24-27 Reading)
3. Translate information into a table, graph, or diagram (CRS 20-23 Science.I.D)
4. Understand the methods and tools used in a moderately complex experiment (CRS 20-23 Science.S.I.)
5. Identify similarities and differences between experiments (CRS 20-23 Science.S.I.)
6. Identify key issues or assumptions in a model (CRS 20-23 Science.E.M.I.)
7. Interpolate between data points in a table or graph (CRS 24-27 Science.I.D)
8. Identify and/or use a simple (e.g., linear) mathematical relationship between data (CRS 24-27 Science.I.D)

5. Attachments/Appendices

**Grade Awareness:** Students and parents are required to check grades online at least once a week to monitor the progress. This is my only method of communicating grade information to students and parents.

 Student Portal <https://student.cps.k12.il.us/>

 Parent Portal <https://parent.cps.k12.il.us/>

**Homework:** Homework will be assigned 1-2 times a week. It is the student’s responsibility to write down homework assignment, bring home the necessary supplies to complete it, and to turn it in on time. Parents are encouraged to check their student’s binder or planner for homework assignments.

**Absent work:** It is a student’s responsibility to obtain make-up work. Call your study buddy for it or ask to see teacher’s planner where it can be found. Absent work should be turned in 1 day after your return to class.

**Reminder Service:** I will be sending after the bell reminders and announcements via Remind101. You can subscribe to text-message or e-mail reminder service. (Standard messaging rates apply)

For Students:

 

For Parents:



Life Lines

Name: ……………………………………………….

Study Buddy Phone Numbers

1.

2.

3.

4.

5.

Important Links:

 Class Syllabus

Student Portal <https://student.cps.k12.il.us/> Scan QR Code to Download

Parent Portal <https://parent.cps.k12.il.us/>

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For Parents:

