

MANHATTAN COMPREHENSIVE NIGHT AND DAY HIGH SCHOOL
240 SECOND AVENUE, NEW YORK, NY 10003

HOWARD A. FRIEDMAN,
Principal & Founder

Science Department
Summer Bioresearch Academy
July1 – August 3, 2004

Daily Schedule:

Teachers: Michael O'Herlihy
Dennis Robinson
Student Teacher: Sophie Homan

Period 1: 9:00- 10:30
Break: 10:30-10:45
Period 2: 10:45- 12:15
Lunch: 12:15- 1:00
Period 3: 1:00- 2:00

Dates: July 1- August 3: Monday thru Thursday

Goals: The program is constructed in such a manner that it will enable students to gain a familiarity with new state of the art equipment in Biological Science; gain some basic research skills; and gain an understanding of Power Point presentations.

Credit: Each student will receive an elective credit in Science upon successfully completing the course.

Requirements:

1. Each student will be required to keep a daily journal which they will turn in at the end of the program. The journal will contain a daily log of information gained in class, a weekly reflection on their own experience during the week; a collection of research information on their topic for presentation; and a final conclusion of their evaluation of the course.
2. A presentation of a research project at the end of the course using Power Point and any other program which will enhance their project. This may include Excel and/or Digital Camera.
3. Attendance: Attendance is expected to be 100%. Any absence should be agreed upon before hand with the administrator in charge. More than 3 absences will disqualify a student from receiving credit for the course

Week 1:

7/1: Period 1: Welcome

General Introduction & Instructions

Subway Passes

Lunch Information

Period 2: Introduction to the Digital Microscope

Set-up (Microscope & Program)

Care of Microscope

Introduction to Program

Choose teams

Period 3: Introduction to writing journal

Week 2:

7/6: Period 1: Review Program & Microscope

Practice exercises

Period 2: How to calibrate

Practice exercises

Calibrate Microscopes

Period 3: Measurement Instruction & Practice

Team Results of Paramecium measurement (Table of class results & discussion)

7/7: Period 1: Review Measurement

Research Skills: Internet

Period 2: Microorganisms- Lecture and Microscope study

Period 3: Journal Instructions continued: Reflection and independent research

Journal entry

7/8: Period 1: Power Point: Introduction

Power Point Practice

Period 2: Power Point application to Paramecium: 3 slides

Period 3: Presentation of slides by groups

Week 3:

7/12 Period 1: Lecture on animal, plant, and bacterial cells: Research question on Internet-

“What are the differences between Prokaryotic and Eukaryotic cells?”

Lab on Cell Size

Period 2: Lab continued

Period 3: Lab completion plus Table results of team data & analysis

7/13: Period 1: Creation of Power Point presentation of Cell Size lab
Period 2: Exercise continued
Period 3: Journal entry (Reflection)

7/14: Period 1: Cell Size lab preparation continued
Period 2: “ “ “ “ “
Period 3: Presentations of Cell Size lab

7/15: Period 1: Preview Amalgamation function on Motic Program
Period 2: Practice this function
Period 3: View live Protozoan under microscope

Week 4:

7/19: Period 1: CSFB visit & lecture on advanced Power Point usage
Period 2: “ “ “ “ “ “ “ “ “
Period 3: Collect data and make class table for Amalgamation Lab

7/20: Period 1: Transfer Data from above lab to Power Point
Period 2: Continue Power Point preparation
Period 3: Power Point Presentation of Amalgamation Lab

7/21: Period 1: Continue Power Point Presentation of Amalgamation Lab
Brief lecture on Diffusion & Osmosis
Period 2: Lab on Osmosis using Elodea & Onion cells
Period 3: Power Point preparation for Osmosis lab

7/22: Period 1: Continue Power Point preparation for Osmosis lab
Period 2: “ “ “ “ “ “ “
Period 3: Power Point Presentation of Osmosis Lab

Week 5:

7/26: Period 1: Continue PowerPoint Presentation of Osmosis Lab
Period 2: DNA Lecture
Period 3: DNA Structure Lab

7/27: Period 1: DNA Structure Lab
Period 2: “ “ “
Period 3: Presentation of DNA Structure Lab & Instruction On gel Electrophoresis

7/28: New York Hall of Science visit
Schedule: 9:30 - Meet at school (in Lab)
9:45 – Departure from MCNDHS
10:30 - Arrival & Welcome
2:00- Departure from Hall of Science

7/29: Period 1: Group Final Presentation Preparation

Period 2: “ “ “ “

Period 3: “ “ “ “

Week 6:

8/2 Period 1: Group Final Presentation Preparation

Period 2: Presentations

Period 3: Presentations continued

8/3 Period 1: Presentations continued

Period 2: Presentations completed & program evaluation

Period 3: Final luncheon & clean-up

SUMMARY:

The Summer Science Academy consisted of 16 students registered, and one student assist from last year's program. The program was geared toward ESL students which was the entire make-up of the class. There were three teachers involved, one of whom was a student - teacher from NYU. Each teacher undertook a specific aspect of the course along with participating in the other areas. One assessed student participation, another, the group presentations, and the third, the student journals.

SYALLABUS:

The course compromised several major areas: 1- The understanding of several computer programs which included the Motic Program which is developed to bring an appreciation of the Digital Microscopes and Power Point which allows our students to express their discoveries under the Digital Microscope in a formal display. 2- The use of the Internet as a tool for research. 3- The keeping of a journal which allowed our students to not only record information on a daily basis, but also to reflect on their learning. 4- The opportunity to perform labs in various areas of cell Biology with the Motic Program, and to record their data in a Power Point Presentation. 4- The ability to express their results verbally along with their Power Point presentations. 5- The opportunity to work in teams and assist one another in their learning process.

STUDENT ACHIEVEMENT:

The sixteen students who participated in the Academy all were successful in their course work and received good grades for their efforts. Evidence of their work is recorded in their journals and on a compact disc which we have filed for future reference. It may also be noted that attendance for this course was almost perfect which gave great encouragement to the teaching faculty and the students.

EVALUATION:

The course was greatly enhanced by the presence of two teachers and a student teacher. Due to the nature of the course, it was necessary to have these facilitators present as the work was at times intense and intricate and demanded this kind of presence. These students have completed a course which will be not only recorded on their transcripts and a help to their college acceptance, but also will be recycled this coming year as they will hopefully act as assistants in training other students to use this technology.

RECOMMENDATIONS:

Upon reflection, we also sought ways by which we can improve the program in the future: 1- We would like to include more off site trips to centers that would pertain to our subject goals, such as pond water collection of specimens, museums, research laboratories, and other institutions which may have programs that are relevant to our work. 2- An even greater use of research on the Internet which would allow for students to add to their journal a weekly component that would give them the opportunity to extend their knowledge of the subject area that they are investigating.