

Eugenio María de Hostos  
Community College  
Natural Sciences and Mathematics  
Departments  
Summer Institute 2010



Engineering at Hostos Community College  
Joint Degree/Dual Admission  
A.S./B.E. Programs  
with The City College of New York

SUMMER  
INSTITUTE  
2010

Time	Monday	Tuesday	Wednesday	Thursday
9:30 - 12:30	MAT A-534	PHY A-534	MAT A-534	PHY A-534

Time	Monday	Tuesday	Wednesday	Thursday
1:30 - 4:30	MAT A-534	CHE A-534	MAT A-534	CHE A-534

Time	Monday	Tuesday	Wednesday	Thursday	Friday
11:00 - 1:30	ENGR 204 A-526	MAT A-526	ENGR 204 A-526	MAT A-526	ENGR 204 A-526

Time	Monday	Tuesday	Wednesday	Thursday	Friday
9:00 - 11:00	ENGR 103 C-556	ENGR 103 C-556	ENGR 103 C-556	ENGR 103 C-556	ENGR 103 C-556

Time	Monday	Tuesday	Wednesday	Thursday	Friday
9:30 - 12:00	CE 23100 A-535	MAT A-535	CE 23100 A-535	MAT A-535	CE 23100 A-535

Chemical Engineering  
Civil Engineering  
Electrical Engineering  
Mechanical Engineering

For more information about the engineering  
programs contact:

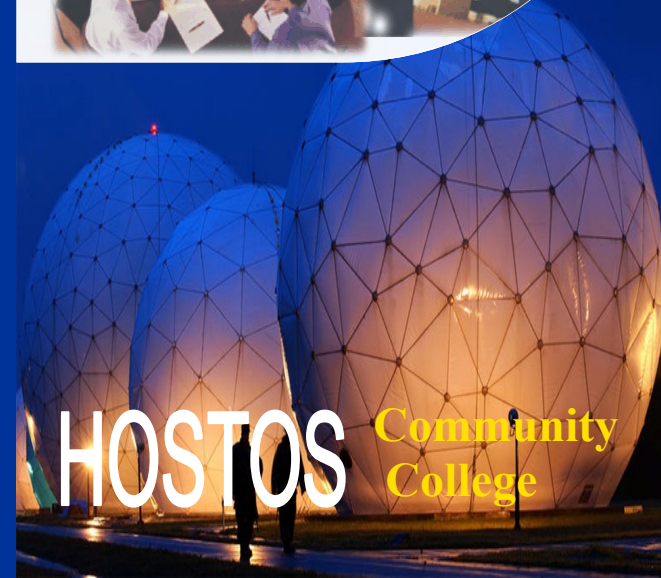
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Division of Academic Affairs



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City College/Hostos Community College  
Bridges to Engineering Success

HOSTOS Community College

**Eugenio María de Hostos Community College**  
**Mathematics and Natural Sciences Departments**  
**Summer Institute 2010**

**Bridge to Chemistry 210 & 220**

**Semester:** Summer Intersession 2010  
 (June 1 to June 30)  
**Instructors:** **Prof. Francisco Fernández**  
 (Sciences Dept.) and  
**Prof. Dionicio Taveras** (Math Dept.)  
**Class Hours:** 1:30 pm – 4:30 pm  
**Class Room:** A-534  
**Class Days:** MAT-CHEM M/W  
 CHE 210-220 T / TH

**Objectives:**

On completing this course students should be able to start studying chemistry as part of the first college chemistry course (**Chemistry 210, Chemistry 220**)

**Threshold Concepts and their Applications:**

Math Threshold Concepts	Chemistry Application
<b>Basic mathematical Concepts:</b> <ul style="list-style-type: none"> <li>Calculators</li> <li>Unit conversions</li> <li>Percent</li> <li>Scientific notations</li> </ul>	<ul style="list-style-type: none"> <li>Applications in Chemistry</li> <li>Stoichiometry</li> <li>Thermo chemistry</li> <li>Solutions, Percent composition, Percent yield</li> <li>Solubility, ionic equilibrium</li> </ul>
<b>Other mathematical issues &amp; Algebra:</b> <ul style="list-style-type: none"> <li>Logarithms</li> <li>Significant figures</li> <li>First degree equations</li> <li>Second and higher degree equations</li> </ul>	<ul style="list-style-type: none"> <li>pH</li> <li>Equilibrium</li> <li>Thermodynamics</li> <li>Gases</li> <li>Chemical equations</li> </ul>
<b>Data Processing:</b> <ul style="list-style-type: none"> <li>Functional relationships</li> <li>Graphs</li> <li>Problem Analysis</li> </ul>	<ul style="list-style-type: none"> <li>Gases</li> <li>Chemical equations</li> <li>Balancing Red-ox equations</li> <li>Hess Law</li> <li>Chemical Equilibrium</li> <li>Thermo chemistry</li> <li>Thermodynamics</li> <li>Applied Chemistry</li> </ul>

**Bridge to Physics 210**

**Semester:** Summer Intersession 2010  
 (June 1 to June 30)  
**Instructors:** **Prof. Yoel Rodríguez** (Sciences Dept.)  
 and **Prof. Ross Flek** (Math Dept.)  
**Class Hours:** 9:30 am – 12:30 pm  
**Class Room:** A-534  
**Class Days:** MAT-PHY M / W  
 PHY 210 T / TH

**Objectives:**

On completing this course students should be able to start studying mechanics as part of the first college physics course (**Physics 210**)

**Threshold Concepts and their Applications:**

Math Threshold Concepts	Physics Application
<b>Trigonometry</b> <ul style="list-style-type: none"> <li>Right Triangle Trigonometry</li> <li>Definition of Trigonometric Functions: <math>\sin(a)</math>, <math>\cos(a)</math>, and <math>\tan(a)</math>; and their inverses <math>\sin^{-1}(a)</math>, <math>\cos^{-1}(a)</math>, and <math>\tan^{-1}(a)</math>,</li> <li>Identities</li> </ul>	<ul style="list-style-type: none"> <li>Physics-related problems (Daily-life situations)</li> <li>Newton's Law of Motion (First Law, Second Law, and Third Law of motion)</li> </ul>
<b>Linear Algebra</b> <ul style="list-style-type: none"> <li>Vectors and Vector Addition</li> <li>Unit Vectors</li> <li>Products of vectors</li> </ul>	<ul style="list-style-type: none"> <li>Physics-related problems (Daily-life situations)</li> <li>Motion along a straight line</li> <li>Motion in two or three dimensions</li> <li>Newton's Law of Motion (First Law, Second Law, and Third Law of motion)</li> <li>Work</li> <li>Right-Hand Rule (e.g. Torque)</li> </ul>
<b>Calculus</b> <ul style="list-style-type: none"> <li>Derivatives</li> <li>Integrals</li> </ul>	<ul style="list-style-type: none"> <li>Motion along a straight line</li> <li>Motion in two or three dimensions</li> <li>Newton's Law of Motion (First Law, Second Law, and Third Law of motion)</li> <li>Work</li> <li>Right-Hand Rule (e.g. Torque)</li> </ul>

**Bridge to Engr 103**

**Semester:** Summer Intersession 2010  
 Bridge to Engr.103  
 (June 1 to June 29)  
**Instructors:** Jiang Biao  
**Class Hours:** 9:00 am - 11:00 am  
**Class Room:** C-556  
**Class Days:** M / F

**Threshold Concepts and their Applications:**

<ul style="list-style-type: none"> <li>Coding</li> <li>Linear Algebra</li> <li>Numeric integration</li> <li>Complex numbers</li> <li>Statistics</li> </ul>
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**Bridge to Engr. 204**

**Instructors:** Akm Mahfuzur Rahman  
**Class Hours:** 11:00 am - 1:30 pm  
**Class Room:** A-526  
**Class Days:** ENGR M/ W/ F  
 MAT T/ TH

**Threshold Concepts and their Applications:**

Basic Concepts	Basic Laws:	Methods of Analysis
<ul style="list-style-type: none"> <li>Systems of Units</li> <li>Charge and current</li> <li>Voltage</li> <li>Power and Energy</li> <li>Circuits Elements</li> </ul>	<ul style="list-style-type: none"> <li>Ohm's Laws</li> <li>Nodes, Branches, and Loops</li> <li>Kirchhoff's Laws</li> <li>Series Resistors and Voltage division</li> <li>Wye-Delta transformations</li> </ul>	<ul style="list-style-type: none"> <li>Nodal Analysis with Voltage Sources</li> <li>Mesh analysis with Current Sources</li> <li>Nodal and Mesh Analysis by Inspection</li> <li>Circuit Analysis with PSpice</li> </ul>
Circuits Theorems	Operational Amplifiers	Capacitors and Inductors
<ul style="list-style-type: none"> <li>Linearity Property</li> <li>Superposition</li> <li>Source Transformation</li> <li>Thevenin's Theorem</li> <li>Norton's Theorem</li> <li>Derivations of Thevenin's and Norton's Theorems</li> </ul>	<ul style="list-style-type: none"> <li>Operational Amplifiers</li> <li>Ideal Op Amplifiers</li> <li>Inverting Amplifier</li> <li>Noninverting Amplifier</li> <li>Summing Amplifier</li> <li>Difference Amplifier</li> <li>Cascaded Op Amp Circuits</li> </ul>	<ul style="list-style-type: none"> <li>Capacitors</li> <li>Series and Parallel Capacitors</li> <li>Inductors</li> <li>Series and Parallel Inductors</li> <li>Sinusoids/ Phasors</li> <li>Source Transformation / Equivalent Circuits</li> </ul>