This is a sample syllabus only. (Do not purchase the textbook until you confirm with the instructor.)

BOROUGH OF MANHATTAN COMMUNITY COLLEGE
City University of New York
Department of Science

Course Title	COLLEGE CHEMISTRY II	**Class hours** 4 (on line)	
CHE 202	Section 985	**Lab hours** 3 (face to face)	
Semester	Spring, 2010	**Instructor Information**	
Credits	4	**Name:** C Kosky	
		Office: N656	
		Email:	ckosky@bmcc.cuny. edu
		Tel: 212 220 1315	

The face to face class is the laboratory, and meets on Tuesdays from 10:00 AM to 12:45 PM.

Course Description
This is the second semester of a two-semester course sequence that involves the study of chemical principles including atomic and molecular theories, molecular structure, and reactivity. The laboratory will include experiments illustrating the chemical principles. *Two terms required. Required in A.S. (Science) and A.S. (Engineering Science). Fulfills science requirement for A.A. (Liberal Arts). Two terms required.*
Prerequisites/Co-requisites

Student Learning Outcomes
1. Students will be able to learn the concepts and principles of chemistry.
2. Students will be able to recognize the importance of and develop a skill in problem solving.
3. Students will be able to relate chemistry to all areas of science.
4. Students will be able to unify the diverse topics of chemistry

Required Text & Readings

1. Moore, John W., Stanitiski, Conrad L., and Jurs, Peter C., *Chemistry The Molecular Science 3rd Edition*, Brooks/Cole, 2008
2. Wentworth, R. A. D., *Experiments in General Chemistry 9th Ed*, Houghton Mifflin, 2009

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Other Resources

Use of Technology (if applicable): Blackboard

Evaluation & Requirements of Students

Examinations @ 10%	50%
Final Examination	20%
Laboratory	30%
Total	100%

College Attendance Policy

At BMCC, the maximum number of absences is limited to one more hour than the number of hours a class meets in one week. For example, you may be enrolled in a three-hour class. In that class, you would be allowed 4 hours of absence (not 4 days). In the case of excessive absences, the instructor has the option to lower the grade or assign an F or WU grade.

Academic Adjustments for Students with Disabilities

Students with disabilities who require reasonable accommodations or academic adjustments for this course must contact the Office of Services for Students with Disabilities. BMCC is committed to providing equal access to all programs and curricula to all students.

BMCC Policy on Plagiarism and Academic Integrity Statement

Plagiarism is the presentation of someone else's ideas, words or artistic, scientific, or technical work as one's own creation. Using the idea or work of another is permissible only when the original author is identified. Paraphrasing and summarizing, as well as direct quotations, require citations to the original source. Plagiarism may be intentional or unintentional. Lack of dishonest intent does not necessarily absolve a student of responsibility for plagiarism.

Students who are unsure how and when to provide documentation are advised to consult with their instructors. The library has guides designed to help students to appropriately identify a cited work. The full policy can be found on BMCC's web site, www.bmcc.cuny.edu. For further information on integrity and behavior, please consult the college bulletin (also available online).

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Outline of Topics

Ch/ Sec	Topic	Pages
	Liquids, Solids and Materials	
11.1	The Liquid State	489 – 492
11.2	Vapor Pressure	492 – 495
11.3	Phase Changes: Solids, Liquids and Gases	495 - 507
11.4	Water	507 - 510
11.5	Types of Solids	510 – 512
11.6	Crystalline Solids	512 – 519
11.7	Network Solids	519 – 521
	Fuels, Organic Chemicals and Polymers	
12.4	Organic Chemicals	558 – 561
12.5	Alcohols	561 – 569
12.6	Carboxylic Acids and Esters	569 – 575
12.7	Synthetic Organic Polymers	
	Addition Polymers	576 - 580
	Condensation Polymers	583 - 585
	Amines, Amides and Polyamides	586 – 589
12.8	Biopolymers, Proteins and Monosaccharides	590 - 599
	Chemical Kinetics	
13.1	Reaction Rate	608 – 614
13.2	Effect of Concentration on Reaction Rate	614 – 618
13.3	Rate Law and Order of Reaction	618 – 624
13.4	Elementary Reactions	624 – 631
13.5	Temperature and Reaction Rate	631 – 635
13.6	Rate Laws for Elementary Reactions	635 – 637
	Reaction Mechanisms	
13.7		637 – 639
	Kinetics and Mechanism	640 - 642
13.8	Catalysts and Reaction Rate	642 – 645
	Chemical Equilibrium	
14.1	Chemical Equilibrium	672 – 675
14.2	The Equilibrium Constant	675 – 682
14.3	Determining Equilibrium Constants	682 – 686
14.4	Meaning of the Equilibrium Constants	686 – 689
14.5	Using Equilibrium Constants	689 – 694
14.6	Le Chatelier's Principle	695 - 703

14.7	Direction of Equilibrium	704 - 706
	Solutions	
15.1	Solubility and Intermolecular Forces	722 - 728
15.2	Enthalpy and Entropy and Dissolving Solutes	728 – 729
15.3	Solubility and Equilibrium	729 – 733
15.4	Temperature and Solubility	733 – 734
15.5	Henry's Law	734 – 736
15.6	Solution Concentration	736 – 744
15.7	Vapor Pressure, Boiling Points and Freezing Points	744 – 752
15.8	Osmotic Pressure	752 – 756
15.9	Colloids	756 – 758
	Acids and Bases	
16.1	Bronstead Lowry Theory	771 – 777
16.2	Carboxylic Acids and Amines	777 – 779
16.3	Autoionization of Water	779 – 781
16.4	pH	781 – 784
16.5	Ionization Constants of Acids and Bases	784 – 790
16.6	Molecular Structure and Acid Strength	790 – 794
16.7	K_a and K_b Problems	795 – 799
16.8	Acid Base Reactions of Salts	800 – 805
16.9	Lewis Acids and Bases	805 - 808
	Aqueous Equilibria	
17.1	Buffer Solutions	823 – 835
17.2	Acid Base Titrations	835 – 843
17.4	Solubility Equilibria	845 – 848
17.5	Factors Affecting Solubility	848 – 856
17.6	Precipitation	
	Will Precipitation Occur	856 – 857
	Kidney Stones	857 - 858
	Thermodynamics	
18.1	Reactant Favored and Product Favored Processes	868 – 869
18.2	Energy Dispersion	869 – 871
18.3	Measuring Energy Dispersion: Entropy	871 – 877
18.4	Calculating Entropy	877 – 877
18.5	Entropy and the Second Law of Thermodynamics	878 – 882
18.6	Gibbs Free Energy	883 – 886

18.7	Free Energy and Equilibrium Constants Free Energy Change Under Non Standard State Conditions	891 – 892
18.8	Free Energy and Work	892 – 894
18.9	Free Energy and Biological Systems	895 – 901
18.10	Conservation of Free Energy	902 - 903
	Electrochemistry	
19.1	Redox Reactions	921 – 922
19.2	Half Reactions	923 – 925
19.3	Electrochemical Cells	929 – 933
19.4	Electrochemical Cells and Voltage	933 – 938
19.5	Standard Cell Potentials	938 – 942
19.6	Free Energy and Cell Potential	942 – 945
19.7	Concentration and Cell Potential	946 – 950
19.8	Neuron Cells	950 – 953
19.10	Fuel Cells	958 – 959
19.11	Electrolysis	959 – 963
19.12	Stoichiometry of Electrolytic Cells	963 – 968
	Nuclear Chemistry	
20.1	Radioactivity	978 – 979
20.2	Nuclear Reactions	980 – 983
20.3	Stability of Atomic Nucleii	983 - 988
20.4	Rates of Disintegration Reactions	988 – 993
20.5	Artificial Transmutations	995 – 996
20.6	Nuclear Fission	996 – 1001
20.7	Nuclear Fusion	1002 - 1003

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Laboratory Experiments

Experiment	Title
	Laboratory Safety and Laboratory Rules
22A	Thermochemistry and Complex Ions
12B	Softening Hard Water
13	Rate of Iodine Clock Reaction
14A	Le Chatelier's Principle
14B	Determining an Equilibrium Constant
12A	Molar Mass from Freezing Point Depression
15	Relative Strength of Some Acids
16B	An Acid Base Titration Curve
17A	A Solubility Product Constant
18	Spontaneity
19B	Electrochemistry
20	Natural Radioacitivity