SACRAMENTO STATE

Course Change Proposal
Form A

Academic Group (*College*):	Academic Organization (*Department*):	Date:
Natural Sciences and Math	**Chemistry**	**2/4/2008**
Type of Course Proposal: New _X__ Change ___ Deletion ___	**Department Chair:** **Susan Crawford**	**Submitted by:** **Linda Roberts and Kathie McReynolds**
Does this course fulfill a requirement for single-subject or multiple subject credential students? Yes ___ No _x__	**For Catalog Copy: Yes ___ No _X__** **CCE (*Extension*): Yes ___ No _X__**	**Semester Effective:** **Fall _x__ Spring ___, 2008___**

This course replaces experimental course Subject Area (*prefix*) and Catalog Nbr (*course number*):	

Change from: NEW

Subject Area (*prefix*) & Catalog Nbr (*course no.*):	Title:	Units:
CHEM 5	Chemistry for Nurses	5

Change to:

Subject Area (*prefix*) & Catalog Nbr (*course no.*):	Title:	Units:

JUSTIFICATION:

Due to the need to accelerate nurses training, the Department of Nursing has asked the Chemistry department to develop a one-semester pre-nursing chemistry course. This course will replace the existing requirement for the two semester sequence of CHEM 6A and CHEM 6B.

NEW COURSE DESCRIPTION: (Not to exceed 80 words, and language should conform to catalog copy. See http://www.csus.edu/acaf/univmanual/crspsl.htm - Guidelines for Catalog Course Description

CHEM 5. Chemistry for Nurses. A one-semester chemistry survey course for pre-nursing students, covering the areas of general chemistry, organic chemistry and biochemistry. Major lecture topics include atomic and molecular structure and bonding, nomenclature of relevant inorganic and organic compounds, states of matter and intermolecular forces, solutions and solubility, reactions of inorganic, organic, and biological molecules, stereochemistry, structure and function of biological macromolecules, nutrition and metabolism. The course will emphasize chemistry as it appears in a practical nursing context. Lecture, four hours. Lab, three hours. Prerequisite: One year high school algebra, high school chemistry strongly recommended. 5 units.

Note: A pilot version of this course (two sections) will be offered Fall, 2008

Prerequisite:
Enforced at Registration: Yes___ No__x_

Corequisite:
Enforced at Registration: Yes___ No__x_

CAN (California Articulation Number):

Graded: Letter __x___ Credit/No Credit____	**Instructor Approval Required? Yes___ No_x__**
Course Classification (*e.g., lecture, lab, seminar, discussion*)**:** **Lecture and lab C1, C16**	**Title for CMS** (not more than 30 characters) **Chemistry for Nurses**

Cross Listed? **Yes ___ No_x___**	**If yes, do they meet together and fulfill the same requirement, and what is the other course.**

How Many Times Can This Course be Taken for Credit? _once_____

Can the course be taken for Credit more than once during the same term? Yes ___ No _x__

FOR NEW COURSE PROPOSALS OR SUBSTANTIVE CHANGES ONLY:

Description of the Expected Learning Outcomes: Describe outcomes using the following format: "Students will be able to: 1), 2), etc." See the example at http://www.csus.edu/acaf/example.htm

CONCEPTS FOR ONE-SEMESTER NURSING CHEMISTRY COURSE

Students will be able to:

1. Perform calculations involving dimensional analysis, concentration and dilution, and other kinds of measurement, particularly as applied to nursing situations.
2. Describe the shell model of the atom, find the valence electrons of atoms and ions and understand the trends of the periodic table.
3. Name and identify binary compounds (salts, acids and bases) and polyatomic ions.
4. Balance and complete basic chemical reactions involving binary compounds and polyatomic ions.
5. Explain the properties and concepts of pH, acids, bases and buffers and apply these concepts to problems involving systems of the human body.
6. Understand ionic, polar and non-polar covalent bonding.
7. Draw molecular structures, indicating bond and molecular dipoles and use VSEPR theory to predict molecular shapes.
8. Describe intermolecular forces and predict their effects on physical properties of solutions.
9. Understand basic gas laws, especially in regard to the human respiratory system. Understand the relationships between respiration and blood pH.
10. Name and draw the major organic functional groups (alcohols, thiols, aldehydes, ketones, acids and acid derivatives, amines).
11. Apply the concepts of intermolecular forces to organic molecules.
12. Draw and complete substitution and addition reactions involving aldehydes, acids, and acid derivatives.
13. Describe, draw, and identify stereoisomers.
14. Identify and draw basic structures of proteins (peptides), lipids, carbohydrates and nucleic acids.
15. Understand the chemical reactivity, structural properties, and biological activities of the four major groups of biological macromolecules.
16. Describe the occurrence of mutations in genes, particularly with regard to common disease states arising from errors in macromolecular structures.
17. Understand the basic principles of bioenergetics and biological redox reactions.
18. Describe the major anabolic pathways: glycolysis, Kreb's, β-oxidation, especially as they relate to basic nutrition. Explain the relationship between metabolic cofactors and vitamins.
19. Understand alterations in metabolism, especially Type II diabetes.

**Attach a list of the required/recommended course readings and activities [Note: it is understood that these are updated and modified as needed by the instructor(s).] This attachment should be forwarded only to your Dean's office, not Academic Affairs.

Assessment Strategies: A description of the assessment strategies (e.g., portfolios, examinations, performances, pre-and post-tests, conferences with students, student papers) which will be used by the instructor to determine the extent to which students have achieved the learning outcomes noted above:

Assessment will include: quizzes and examinations (lecture and lab), homework assignments, laboratory case studies, laboratory reports.

For whom is this course being developed?

Majors in the Dept ___ Majors of other Depts _X__ Minors in the Dept ___ General Education ___ Other ___

Is this course required in a degree program (major, minor, graduate degree, certificate? Yes _X_ No ___

If yes, identify program(s):

Nursing

Does the proposed change or addition cause a significant increase in the use of College or University resources (lab room, computer facilities, faculty, etc.)? Yes _X__ No ____

If yes, attach a description of resources needed and verify that resources are available.

Indicate which department or programs will be affected by the proposed course (if any). This course will reduce the chemistry requirement for pre-nurses.

The Department Chair's signature below indicates that affected programs have been sent a copy of this proposal form.

Approvals: If proposed change, new course or deletion is approved, sign and date below. If not approved, forward without signing to the next reviewing authority, and attach an explanatory memorandum to the original copy.

Signatures:	Date
Department Chair: Susan M Crawford	2/7/08
College Dean or Associate Dean: Laurel Heffernan	2/25/08
CPSP *(for school personnel courses ONLY)*	
Associate Vice President and Dean for Academic Programs	

Distribution: Academic Affairs (original), Department Chair and College Dean. Dean's office to send original after approval to Academic Affairs, at mail zip 6016. An electronic copy must also be sent.

RESOURCE REQUIREMENT FOR CHEMISTRY 5 (CHEMISTRY FOR NURSES)

WTU's

CHEM 5 will replace existing sections of CHEM 6A and 6B. CHEM 6A/6B will still be offered for ENVS, KIN, and occupational health and safety students. Since the course for nursing majors is being condensed to one semester, we will be able to serve many more students in completing prerequisites for the nursing program since we will get those students through their chemistry requirement in half the time it takes now.

Facilities

CHEM 5 will likely be taught in Sequoia 444, which currently houses CHEM 106. If this scenario holds, CHEM 106 will move to Sequoia 452. No major changes will be made to the laboratory space but the lab will need to be outfitted with some basic equipment. The table below is a ball-park estimate of the cost to set up the lab.

Item	Unit price	Cost for 5 sections (24 per section)
Model kits[1]	55.00	6600
Beakers (six sizes)[2]	3.00	2160
Flasks (four sizes)[2]	3.00	1440
Scoopulas	2.00	240
Wash bottles	2.00	240
Thermometers	30.00	360 (limit to 12 for lab)
Grad cylinders (two sizes)	6.00	1440
Tube racks	12.00	1440
Watch glass	3.50	420
Stirring rods	0.50	60
Mortar and pestles[1]	20.00 (used in pairs)	1200
Funnels	10.00	1200

[1]Scheduling may allow sharing of existing equipment
[2]Number of sizes may be reduced

Grand total: $16,800

Total minus model kits and mortar and pestles: $9,000

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MEMORANDUM

DATE: February 14, 2007

TO: University Curriculum Committee

FROM: Laurel Heffernan, Associate Dean
College of Natural Sciences and Mathematics

SUBJECT: Chemistry 5 Resources

The Chemistry Department, working in collaboration with Nursing faculty, has developed a 5 unit one semester course for Pre-nursing students that will replace the 10 unit two semesters of Chemistry 6A and Chemistry 6B that are currently required. This change will eliminate 5 units of coursework before students can apply to the Nursing program and accommodate more total Pre-Nursing students in the course each year.

One-time resources, estimated between $10,000 and $16,800, are required to buy essential items needed to set up the laboratory experiences. It is essential that the resources are provided in order to make the change in the Pre-nursing Chemistry requirement.

cc: Jill Trainer
Susan Crawford
Linda Roberts