12-20a.

LSC Use Only Proposal No:	UWUCC Use Only Proposal No: ~~11-145a~~.
LSC Action-Date: AP- 11/8/12	UWUCC Action-Date: App - 2/5/13 Senate Action Date: App - 2/26/13

Curriculum Proposal Cover Sheet - University-Wide Undergraduate Curriculum Committee

Contact Person(s) **Jaeju Ko**	Email Address **jaeju.ko@iup.edu**
Proposing Department/Unit **Chemistry**	Phone **74596**

Check all appropriate lines and complete all information. Use a separate cover sheet for each course proposal and/or program proposal.

1. Course Proposals (check all that apply)

__X__ New Course _____ Course Prefix Change _____ Course Deletion

_____ Course Revision _____ Course Number and/or Title Change _____ Catalog Description Change

Current course prefix, number and full title: **SCI 107 Chemistry for Everyone**

Proposed course prefix, number and full title, if changing:

2. Liberal Studies Course Designations, as appropriate

__X__ This course is also proposed as a Liberal Studies Course (please mark the appropriate categories below)

_____ Learning Skills __X__ Knowledge Area _____ Global and Multicultural Awareness _____ Writing Intensive (include W cover sheet)

_____ Liberal Studies Elective (please mark the designation(s) that applies – must meet at least one)

_____ Global Citizenship _____ Information Literacy _____ Oral Communication

_____ Quantitative Reasoning _____ Scientific Literacy _____ Technological Literacy

3. Other Designations, as appropriate

_____ Honors College Course _____ Other: (e.g. Women's Studies, Pan African)

4. Program Proposals

_____ Catalog Description Change _____ Program Revision _____ Program Title Change _____ New Track

_____ New Degree Program _____ New Minor Program _____ Liberal Studies Requirement Changes _____ Other

Current program name:

Proposed program name, if changing:

5. Approvals	Signature	Date
Department Curriculum Committee Chair(s)		3/1/12
Department Chairperson(s)		3/1/12
College Curriculum Committee Chair		3/28/12
College Dean		3/28/12
Director of Liberal Studies (as needed)		1/31/13
Director of Honors College (as needed)		
Provost (as needed)		
Additional signature (with title) as appropriate		
UWUCC Co-Chairs	Gail S Sechrist	2/5/13

Received JAN 3 2013 Liberal Studies

Received OCT 31 2012 Liberal Studies

Received MAR 28 2012 Liberal Studies

Chemistry for Everyone
SCI 107
Syllabus of Record

I. Catalogue Description

SCI 107 Chemistry for Everyone 3c-0ℓ-3cr

A basic course in *chemistry* for the non-science major. High school chemistry is not a prerequisite. Content is designed for the students to develop an understanding and appreciation of the process of science and of the significance of chemistry in everyday life. In addition to basic chemical principles, consumer topics, such as batteries, nuclear chemistry, chemistry of living systems, air, water, energy, and food additives will be covered.

II. Course Outcomes

Objective 1: Students will understand the molecular and atomic nature of matter and its interactions.

Expected Student Learning Outcomes 1:
Informed Learners
Rationale:
Course content, activities, and exams will require students to understand current molecular level interpretation of matter (and its interactions) and course activities and exams will require students to be able to describe matter (and its interactions) using appropriate chemical terminology.

Objective 2: Students will understand quantitative relationships in chemical processes.

Expected Student Learning Outcomes 1 and 2:
Informed and Empowered Learners
Rationale:
Course content, activities, and exams will require students to solve simple problems that are fundamental to a quantitative understanding of chemical processes at the molecular world and will also require them to evaluate the impact of these processes on the global environment.

Objective 3: Students will relate chemical principles to everyday issues in energy, health, and environment.

Expected Student Learning Outcomes 1 and 3:
Informed and Responsible Learners
Rationale:
Course content, activities, and exams will require students to apply chemical facts and chemical concepts to everyday issues such as energy, health, and environment. Activities and exams will require students to be familiar with common biological compounds, energy sources, food additives, and pollutants.

III. Course Outline[1]

A. Introduction (3 hours)
   1. SI units
   2. Exponential numbers
   3. Dimensional analysis and unit conversions

B. Nature of matter (3 hours)
   1. Physical and chemical changes
   2. Physical and chemical properties
   3. Elements, compounds, mixtures
   4. Atoms, molecules, and ions
   5. The periodic table of elements – overview

C. Naming inorganic compounds (1 hour)

D. Atoms, atomic structure, and quantum mechanical atom (3 hours)
   1. Law of conservation of mass, law of definite proportions, and law of multiple proportions-history and applications
   2. Dalton's atomic theory
   3. History and discovery of subatomic particles
   4. The quantum mechanical model of the atom
   5. The quantum mechanical atom and its relationship to the periodic table of the elements

E. Quantitative analysis of chemical reactions (3 hours)
   1. Atomic mass, molecular mass, and molar mass
   2. Mole-mole relationship in chemical reactions
   3. Mass-mass relationship in chemical reactions
   4. Concentration units

Exam 1 (1 hour)

F. Chemistry of water, acid, bases, and chemistry of electron transfer (3 hours)
   1. Common acids, bases, and their properties
   2. pH scale and pH indicators
   3. Examples of oxidation-reduction reactions
   4. Electrochemical cells, fuel cells, and batteries

G. Intermolecular forces in pure substances and mixtures (3 hours)
   1. Intermolecular forces in liquids: dipole-dipole, hydrogen-bonding, ion-dipole, and dispersion forces
   2. Intermolecular forces in solids: molecular solid, metallic bonding, covalent-

[1] 1 hour = one 50-minute class period

network, and ionic bonding forces

H. Thermodynamics and chemical kinetics (3 hours)
   1. Laws of thermodynamics, their applications
   2. Consequences of laws of thermodynamics
   3. Chemical kinetics, reaction coordinate, activation energy

I. Nuclear Chemistry and its applications (3 hours)
   1. Radioisotopes and radioactive decay
   2. Half-life concept
   3. Consumer applications of radioactive materials

Exam 2 (1 hour)

J. Organic compounds (4 hours)
   1. Natural vs. man-made organic compounds
   2. Saturated vs. unsaturated hydrocarbons
   3. Functional groups
   4. Use of common organic compounds
   5. Polymers and plastics

K. Biochemical compounds (4 hours)
   1. Carbohydrates
   2. Proteins
   3. Fats
   4. Nucleic Acids, DNA, and RNA
   5. Antioxidants, vitamins, and minerals
   6. Food additives

L. Energy and environment (5 hours)
   1. Fossil fuels and alternative energy sources
   2. Chemistry of air
   3. Air pollution
   4. Enhanced greenhouse effect
   5. Water, water pollution, and wastewater treatment

M. Current topics (2 hours)
   Selected by each individual instructor

Final Exam during final examinations week (2 hours)

IV. Evaluation Methods

1. Two examinations, 25% for each exam for a total contribution of 50%. Exams involve multiple choice, true/false, short answers, and calculation-based problems.
2. Final examination, with a total contribution of 35%. The cumulative final exam will

involve multiple choice, true/false, short answers, calculation-based problems, and essays.

3. A reflective summary of the non-textbook reading, with a total contribution of 15%. Students will submit a report of a maximum of five printed pages, exclusive of references.

V. Grading Scale

Grading scale: A 90-100%, B 80-89%, C 70-79%, D 60-69%, F 59% and below

VI. Undergraduate Course Attendance Policy

IUP attendance policy will be strictly followed as outlined in the current undergraduate catalog.

VII. Required Textbook

Millard, J.T., *Adventures in Chemistry*, Cengage, 2008.

VIII. Non-textbook Reading

Distributed syllabi will include a list of 4-6 relevant nonfiction titles. Examples include:

Joe Schwarcz, *Brain Fuel: 199 Mind-Expanding Inquiries into the Science of Everyday Life,* Anchor Canada, 2010

Penny Le Couteur and Jay Burrreson, *Napoleon's Buttons: How 17 Molecules Changed History,* Penguin Group Inc., 2004

Mark E. Eberhart, *Why Things Break: Understanding the World By the Way It Comes Apart,* Three Rivers Press, 2003

John Emsley, *Molecules At An Exhibition: Portraits of Intriguing Materials in Everyday Life,* Oxford University Press, 1998

IX. Special Resource Requirements

Student must have a scientific calculator.

X. Bibliography

Chenier, P.J. *Survey of Industrial Chemistry,* 3rd ed.*; Springer*, New York, 2002

Goodstein, D., Out of Gas: *The End of the Age of Oil*, W.W. Norton & Company, New York, 2004

Gribbin, J. *The Scientists: A History of Science Told Through The Lives of Its Greatest Inventors;* Random House, New York, 2002

Hill, J. W.; McCreary, T. W.: Kolb, D. K. *Chemistry for Changing Times*, 13th ed.; Pearson, New York, 2010

Middlecamp, C. , Ed. *Chemistry in Context: Applying Chemistry to Society*; American Chemical Society, McGraw Hill, New York, 2011

vanLoon, G.W., Duffy, S.J. *Environmental Chemistry: A global perspective,* 3rd ed.*;* Oxford, USA, 2010.

SCI 107 Chemistry for Everyone – sample final examination

1. T F (1 pt) One mole of water contains the same number of water molecules as there are oxygen molecules in one mole of oxygen.

2. T F (1 pt) When a metal reacts with a nonmetal, the resultant compound is usually an ionic substance.

3. T F (1 pt) Molecular substances have a wide range of properties because the macroscopic properties depend on both the individual molecules and on the intermolecular forces.

4. T F (1 pt) A molecule with polar bonds can be nonpolar if the shape is right.

5. T F (1 pt) Molecular substances that dissolve in water are probably polar.

6. T F (1 pt) If a reaction has a positive activation energy, then heating the reaction will cause that reaction to proceed faster.

7. T F (1 pt) The average speed of a substance's molecular motion is proportional to its absolute

8. T F (1 pt) We now know that atoms can be converted from one element into another.

9. T F (1 pt) If a mixture of gases, say He and Kr, is heated, the heavier gas speeds up more than the lighter gas.

10. T F (1 pt) Significant figures are used to indicate the precision of a measurement.

11. T F (1 pt) Homonuclear diatomic molecules must be nonpolar.

12. T F (1 pt) The pH of your blood is partially regulated by the carbon dioxide generated by your metabolism.

13. T F (1 pt) Most citrus juices are actually fairly acidic, with pH's below 4.

14. T F (1 pt) Over-the-counter antacid tablets contain bases which neutralize stomach acid.

15. T F (1 pt) Ostensibly, nitrite is added to hot dogs, baloney, etc., to inhibit the growth of particular microorganisms.

16. T F (1 pt) Different radioisotopes have different half-lives.

17. T F (1 pt) If one tested a fresh sample of mine drainage for dissolved iron, the value would be higher than if one tested that same water after storage in a bottle for a decade.

18. T F (1 pt) If a clear liquid and a blue liquid are mixed and the mixture is red, it is likely that a chemical reaction has occurred.

19. T F (1 pt) Intentional food additives are those things, like food color, added to a material because the additive provides some favorable feature.

20. T F (1 pt) Eukaryotic cells possess a nuclear membrane while prokaryotic cells do not.

21. T F (1 pt) Most hydrogen sold commercially is a by-product of the petroleum industry.

22. T F (1 pt) Most nitrogen-based fertilizer sold commercially is derived directly or indirectly from the petroleum industry.

23. T F (1 pt) Most of the total annual production of petroleum is used to manufacture plastics.

24. T F (1 pt) Many of the most produced petrochemicals are used primarily to produce other chemicals.

25. T F (1 pt) A polymer is a large molecule usually created by joining many, many small molecules together.

26. T F (1 pt) Proteins are polymers of amino acids, although some proteins contain other things attached to them.

27. T F (1 pt) Proteins provide seven different general functions in an organism, including transport, signaling, catalysis, motive, and structure.

28. T F (1 pt) The function of a protein is determined by its shape, which is largely determined by its primary structure—the sequence of amino acids making up the protein chain.

29. T F (1 pt) DNA and RNA are polymers of a simpler unit called a nucleotide, which contains a sugar, one or more phosphates, and a "base."

30. T F (1 pt) RNA is the primary information storage molecule in the nucleus, and is the nucleic acid found in chromosomes.

31. T F (1 pt) Carbohydrates are now recognized as being important as fuel for cells, as providing structural material, and as important components in cell-cell recognition, or self-other recognition.

32. T F (1 pt) Cellulose, glycogen, and starch are all polymers of simple sugars.

33. T F (1 pt) Lipids are polymers of fatty acids.

34. T F (1 pt) Lipids are critical to the proper functioning of cell membranes.

35. T F (1 pt) Many steroids are hormones, molecules that send signals from one organ to another, or to the rest of the organism.

36. T F (1 pt) Worldwide, the most common cause of death is heart disease.

37. T F (1 pt) In terms of mortality, the primary cause of cancer death in men is not the same type of cancer as in women.

38. T F (1 pt) The frequency of death due to automobile accident is considerably higher in the industrialized countries than in the underdeveloped countries.

39. T F (1 pt) When a chemical system reaches equilibrium, it does not mean that the chemicals in the system no longer react; it means that the products are changing into reactants just as fast as the reactants are changing into products.

40. T F (1 pt) A chemical change can result in a decrease in the entropy of the system provided that there is a larger increase in the entropy of the universe.

41. T F (1 pt) Cellulose is the most abundant biopolymer known, making it a potentially interesting starting material for the chemical industry as well as a potentially interesting source of alternative fuels.

42. T F (1 pt) Diamonds are not only the hardest known natural substance, but they are also have the highest thermal conductivity.

43. (8 pts) State the postulates of Dalton's atomic theory.

(a) All matter is composed of atoms
(b) All atoms of a given element are alike, and differ from atoms of any other element.
(c) Atoms combine in fixed, integer ratios to form compounds.
(d) Atoms are neither created nor destroyed in a chemical reaction.

44. (2 pts) One of the postulates is partially incorrect. Which postulate is it, and what is incorrect?

The postulate which states that all atoms of a given element are alike. We now know that isotopes exist; that atoms of a single element may differ in the number of neutrons.

45. (4 pts) Explain the difference between a scientific law and a scientific theory.

A scientific law is a statement that summarizes a large number of experimental observations. As such, it is directly based on the behavior of objects in the world. A law is a statement for which no known exceptions have occurred.

A theory is a widely accepted model that predicts the behavior of a system under some set of conditions. A theory provides a rationalization of the origins of some particular aspect of the behavior of a system.

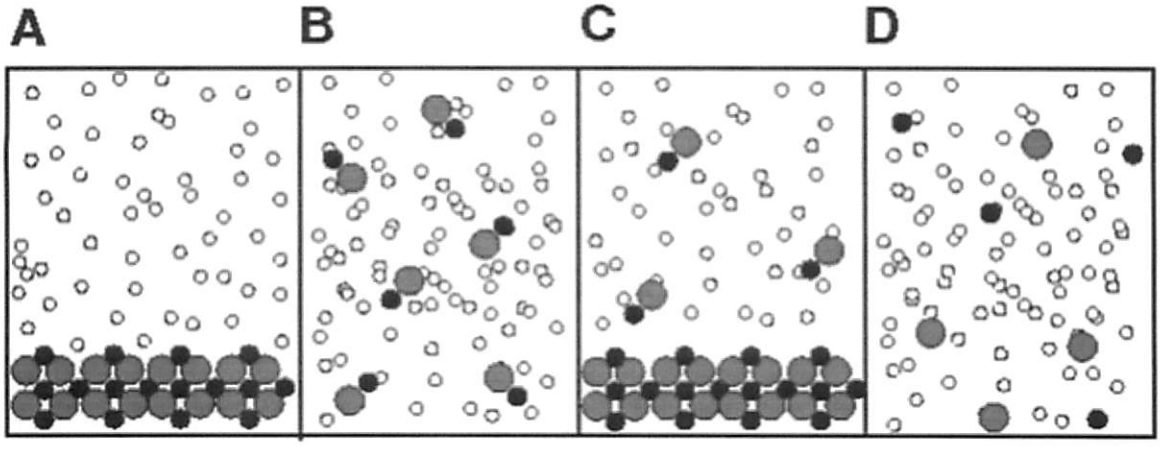

Figure 1: Sodium chloride solution: empty circles represent water molecules, larger gray circles represent chloride anions, and black circles represent sodium cations.

46. (4 pts) Explain which panel, A, B, C, or D, of Figure 1 above best represents a sodium chloride solution and why.

Panel D is the best representation of sodium chloride in solution. In solution, the sodium chloride is expected to be randomly distributed, like a gas. Thus, A and C are poor representations. Further, being ionic, the sodium ion and the chloride ion should separate in solution, so that D is much better than B.

47. (4 pts) What are the products of the combustion of ethanol, C_2H_5OH?

Carbon dioxide (CO_2) and water (H_2O).

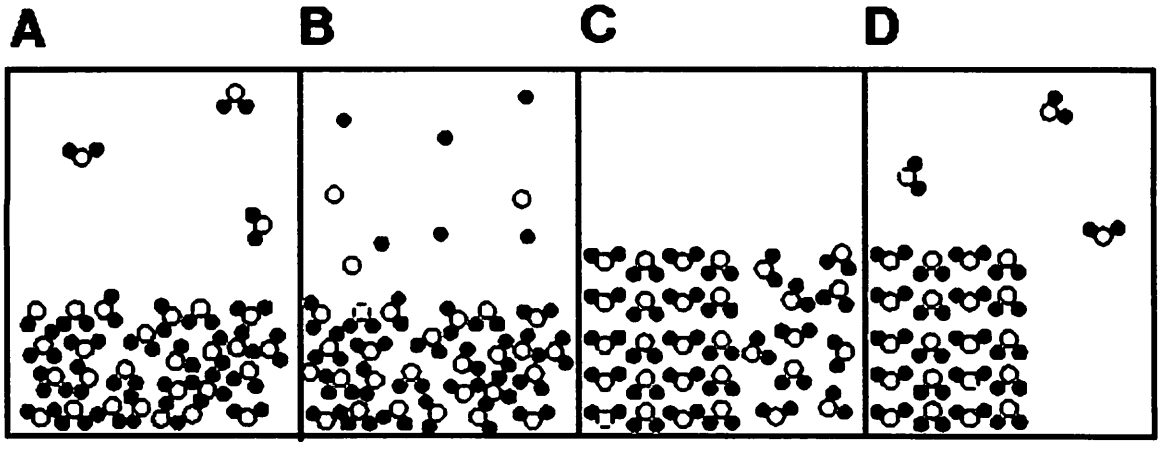

Figure 2: Phase change — liquid water evaporating: empty circles represent oxygen atoms, and black circles represent hydrogen atoms.

48. (4 pts) Explain which panel, A, B, C, or D, of Figure 2 above best represents liquid water evaporating and why.

    Panel A is the best representation of water evaporating. When a molecular liquid evaporates, it goes into the gas phase. It does not break into atoms.

49. (4 pts) How does the kinetic-molecular picture of gases account for the observation that gases are significantly more compressible than liquids or solids?

    In a gas, there is considerable empty space between the molecules. Hence, applying pressure simply reduces the amount of empty space.

50. (2 pts) Write the chemical equation for the Haber process.

    $N_2 + 3H_2 \rightarrow 2NH_3$

51. (2 pts) Give one specific example of a reaction encountered outside this course which involves catalysis.

    the catalytic convertor on your car or any of the enzymes in your body are the most likely answers

52. (4 pts) Answer one of the three following questions. No extra credit; I will grade only the first answered.

• Explain a practical consequence of the First Law of Thermodynamics.

U = Q – w, or conservation of energy, means that the total energy of a closed system (like the universe) is a constant. Practically speaking, we can convert energy from one form into another, but we cannot create (nor destroy) energy.

• Explain a practical consequence of the Second Law of Thermodynamics.

One simplified statement of the Second Law is that it is impossible to convert one form of energy into another with 100% efficiency. Consequently, practically speaking, we cannot achieve 100% efficiency. Another consequence of the Second Law is the eventual heat death of the universe.

• Explain the reasoning in referring to entropy as "the arrow of time."

Another statement of the Second Law is that the entropy of an isolated system never decreases. Whatever happens in an isolated system, the entropy of the system either holds constant or increases. Consequently, when the entropy increases, the system never goes back to the lower entropy state. Tick, tock. Just like sands through the hourglass, so is the entropic increase of our lives. Or something like that.

	Approximate Composition			Heat Content
Fuel	C	H	O	kJ/g
Wood	50	6	44	10-14
Ethanol	52	13	35	29
Coal	85	5	8	30
Gasoline	85	15	0	48
Natural Gas	75	25	0	50
Uranium-235	100% uranium			9.4×10^7

53. (4 pts) Ethanol and wood, unlike coal, gasoline, and natural gas, are renewable forms of energy. However, ethanol and wood are similar to coal, gasoline, and natural gas because

(a) their energy densities (kJ/g, the heat released per gram of substance) are the same.

(b) their chemical energy is released as heat by combustion.

(c) no greenhouse gases are produced by these materials when used to make electricity.

(d) the largest amounts of each are found in third-world countries.

(e) none of the above are similarities.

54. (4 pts) Oxygenated fuels, like ethanol and wood, have a lower energy density (heat content) than less oxygenated fuels like coal, gasoline, and natural gas. This is because

(a) the energy released in a chemical reaction is a state function, so a fuel containing oxygen is in a sense already partially burnt.

(b) the kinetics of combustion of oxygenated fuels are slower than those of less oxygenated fuels.

(c) oxygenated fuels are more renewable while less oxygenated fuels aren't.

(d) the catalytic effect of oxygen on combustion.

(e) all of the above reasons are valid.

55. (4 pts) The US government has expressed considerable interest in using wood-derived ethanol as a fuel because

(a) it would eliminate our need to use petroleum.

(b) it does not produce any greenhouse gases in use or production.

(c) trees and brush serve no major role in ecology other than providing shelter to various animals.

(d) the US has the largest share of the earth's forests.

(e) none of the above reasons explain the interest.

56. (8 pts) Glucose, when metabolized, releases about 720 Cal (720 kcal) of energy per one mole, as well as carbon dioxide and water. The balanced equation for the metabolism of glucose ($C_6H_{12}O_6$) is shown below.

$$C_6H_{12}O_6(s) + 6\ O_2(g) \rightarrow 6\ CO_2(g) + 6\ H_2O(g)$$

How many moles of CO_2 are produced from one mole of $C_6H_{12}O_6$?

How many grams of CO_2 is this?

How much energy (in kcal) is released when 90.0 grams of glucose are burned?

Is this an exothermic reaction or an endothermic reaction?

Does the reaction have a positive entropy (increased disorder) or a negative entropy?

Answers to Liberal Studies Questions

1. If this is a multiple-section, multiple-instructor course, there should be a basic equivalency (though not necessarily uniformity) among the sections in such things as objectives, content, assignments and evaluation.

   The Department will use several strategies to provide basic equivalency across multiple sections of SCI 107. First, the textbook will be selected by all instructors who teach the course regularly. While sensitive to the sanctity of academic freedom, the Department also encourages faculty to adhere closely to the syllabus of record.

2. Liberal Studies courses must include the perspectives and contributions of ethnic and racial minorities and of women whenever appropriate to the subject matter.

   The course content will include the contributions of ethnic/racial minorities and of women, e.g., Albert Einstein's (Course outline D and I), Marie Sklodowska Curie's (Course outline I), Frances Kelsey's (Course outline J), or George Washington Carver's work (Course outline L).

3. Liberal Studies courses require the reading and use by students of at least one non-textbook work of fiction or non-fiction or a collection of related articles.

   The students will be required to read a non-fiction popular press book covering one or more aspects of how science or technology impact society. Examples of such books include: *Brain Fuel: 199 Mind-Expanding Inquiries into the Science of Everyday Life*, *Napoleon's Buttons: How 17 Molecules Changed History, Why Things Break: Understanding the World By the Way It Comes Apart,* and *Molecules At An Exhibition: Portraits of Intriguing Materials in Everyday Life.* These books will provide the students with a different approach to the chemical fundamentals, as well as broadening the content of the course.

4. If this is an introductory course intended for a general student audience, it should be designed to reflect the reality that it may well be the only formal college instruction these students will have in that discipline, instead of being designed as the first course in a major sequence. That is, it should introduce the discipline to students rather than introduce students into the discipline. If this is such an introductory course, how is it different from what is provided for beginning majors?

   This course is different from that provided to either allied health majors or science majors. The content of this course is approximately evenly split between illustrating the fundamental concepts of chemistry and exploring applications relevant to environmental and consumer issues. There is no emphasis on esoteric scientific theories beyond the minimum necessary to understand the current state of chemistry and how chemists view the material world. On the other hand, more than 50% of the course deals with environmental and consumer chemistry that are not typical in major's introductory courses.

Course Analysis Questionnaire

Section A: Details of the Course

A1 How does this course fit into the programs of the department? For what students is the course designed? (majors, students in other majors, liberal studies). Explain why this content cannot be incorporated into an existing course.

This course is intended mostly for students enrolled in the Colleges of Fine Arts, College of Business and Information Technology and College of Humanities and Social Sciences.

The proposed course together with SCI 117 (if approved) will replace SCI 106. In essence, the lecture portion of SCI 106 is being proposed as SCI 107 and the lab portion is proposed as SCI 117. This separation will offer students increased flexibility in fulfilling the new LS requirements: SCI 107 can be taken alone or together with SCI 117.

A2 Does this course require changes in the content of existing courses or requirements for a program? If catalog descriptions of other courses or department programs must be changed as a result of the adoption of this course, please submit as separate proposals all other changes in courses and/or program requirements.

YES. If SCI 107 and SCI 117 are approved, SCI 106 will be deleted.

A3 Has this course ever been offered at IUP on a trial basis (e.g. as a special topic) If so, explain the details of the offering (semester/year and number of students).

No, SCI 107 was not offered on a trial basis. However, SCI 106 has been taught at IUP for two decades.

A4 Is this course to be a dual-level course? If so, please note that the graduate approval occurs after the undergraduate.

No, this course is not dual-level.

A5 If this course may be taken for variable credit, what criteria will be used to relate the credits to the learning experience of each student? Who will make this determination and by what procedures?

This course is not taken for variable credit.

A6 Do other higher education institutions currently offer this course? If so, please list examples (institution, course title).

Similar courses are taught at, e.g., Georgia State University (CHEM1050 Chemistry for Citizens), Colby College (CHEM 112 Chemistry for Citizens), University of Kentucky (CHE 101 Molecular Science for Citizens), Seton Hill University (CH102 Chemistry for Living), and Cal State Long Beach (CHEM 100 Chemistry and Today's World).

A7 Is the content, or are the skills, of the proposed course recommended or required by a professional society, accrediting authority, law or other external agency? If so, please provide documentation.

No, this course is not required by a professional society, accrediting authority, law or other external agency.

Section B: Interdisciplinary Implications

B1 Will this course be taught by instructors from more than one department? If so, explain the teaching plan, its rationale, and how the team will adhere to the syllabus of record.

No, this course is taught by instructor(s) from the Chemistry Department.

B2 What is the relationship between the content of this course and the content of courses offered by other departments? Summarize your discussions (with other departments) concerning the proposed changes and indicate how any conflicts have been resolved. Please attach relevant memoranda from these departments that clarify their attitudes toward the proposed change(s).

There is no significant overlap between this course and courses offered by other departments.

B3 Will this course be cross-listed with other departments? If so, please summarize the department representatives' discussions concerning the course and indicate how consistency will be maintained across departments.

This course will not be cross-listed.

Section C: Implementation

C1 Are faculty resources adequate? If you are not requesting or have not been authorized to hire additional faculty, demonstrate how this course will fit into the schedule(s) of current faculty. What will be taught less frequently or in fewer sections to make this possible? Please specify how preparation and equated workload will be assigned for this course.

Faculty resources are adequate to teach this course.

C2 What other resources will be needed to teach this course and how adequate are the current resources? If not adequate, what plans exist for achieving adequacy? Reply in terms of the following:

None – IUP's resources are sufficient to teach this course.

C3 Are any of the resources for this course funded by a grant? If so, what provisions have been made to continue support for this course once the grant has expired? (Attach letters of support from Dean, Provost, etc.)

This course is not grant-funded.

C4 How frequently do you expect this course to be offered? Is this course particularly designed for or restricted to certain seasonal semesters?

This course will be offered every semester and during the summer.

C5 How many sections of this course do you anticipate offering in any single semester?

Two lecture sections will be offered each semester.

C6 How many students do you plan to accommodate in a section of this course? What is the justification for this planned number of students?

Lecture sections range from 80-120 students.

C7 Does any professional society recommend enrollment limits or parameters for a course of this nature? If they do, please quote from the appropriate documents.

There are no professional society limitations on enrollment.

C8 If this course is a distance education course, see the Implementation of Distance Education Agreement and the Undergraduate Distance Education Review Form in Appendix D and respond to the questions listed.

Not applicable.

Section D: Miscellaneous

Include any additional information valuable to those reviewing this new course proposal.

This course will be offered as a Liberal Studies Natural Science Non-Laboratory Course. The proposed course represents an updated version of the lecture portion of SCI 106 Physical Science II.