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| **School or Division** | School of Pure and Applied Sciences |
| **Program or Certificate or** | All degrees |
| **New degree or certificate program** |  |
| **Proposed by (faculty only)** | Dr. Marcela Trevino |
| **Presenter (faculty only)** | Dr. Qin Liu |
| Note that the presenter (faculty) listed above must be present at the Curriculum Committee meeting or the proposal will be returned to the School or Division and must be submitted for a later date. |
| **Submission date** | 12/16/2014 |
| **Course prefix, number, and title** | CHM 1020C: Chemistry for a Sustainable Future |

**Section I, New Course Information (must complete all items)**

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| **List School or Division** | School of Pure and Applied Sciences |
| **List course prerequisite(s) and minimum grade(s) (must include minimum grade if higher than a “D”)** | SB1720 Testing Exemption or successful completion of all Developmental courses |
| **Will students be taking any of the prerequisites listed for this course in different parts of the same term (ex. Term A and Term B)** | No |
| **List course corequisites** |  |
| **Is any corequisite for this course listed as a corequisite on its paired course?**(Ex. CHM 2032 is a corequisite for CHM 2032L, and CHM 2032L is a corequisite for CHM 2032) | No |
| **Course credits or clock hours** | 4 |
| **Contact hours (faculty load)** | 5 |
| **Select grade mode** | Standard Grading (A, B, C, D, F) |
| **Credit type** | College Credit |
| **Course description** (provide below) |
| This introductory chemistry course for non-science majors presents the general principles and concepts of chemistry, and explores its relevance in contemporary society. The course examines the role of chemistry in consumer products, food, medicine, materials /energy resources, and the environment. |

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| **General topic outline** (type in outline below) |
| * Green chemistry and sustainable practices for the future of society and of our planet.
* The nature and classification of matter and energy.
* Principles of chemical reactions and energy transformations.
* The chemistry of the biosphere and atmosphere, including Earth’s energy balance, air quality and water quality.
* Chemical processes related to renewable and non-renewable materials and energy sources, and to their impact on global climate change.
* The basic chemistry of life and of consumer products, including food, plastics and drugs.
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**Learning Outcomes:** For information purposes only. Type in all learning outcomes, assessments, and general education competencies as they should be displayed in the syllabus. More rows can be added if necessary.

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| **Learning Outcomes** | **Assessments** | **General Education Competencies** |
| Relate the principles of green chemistry and of sustainable practices to the responsibility of individuals, corporations, governments, and society at large. | Successfully complete one or more of the following: exams; quizzes; debates; case studies; writing or problem solving assignments; oral, written, or electronic presentations; discussion forums; collaborative problem solving exercises; data interpretation and analysis exercises. | GSR, TIM, QR, CT |
| Understand the nature and classification of matter; distinguish among atoms, elements, molecules, organic/inorganic and molecular/ionic compounds. |
| Describe and represent chemical change, applying quantitative mass and molar concepts; use scientific notation and significant figures in related problem solving.  |
| Describe the chemical processes underlying the production of major air pollutants and the destruction of stratospheric ozone; identify associated risks and available prevention and mitigation practices. |
| Understand the physicochemical processes involved in Earth’s energy balance and the greenhouse effect; analyze the consequences of global climate change and identify available mitigation practices. |
| Understand and apply the laws of energy transformations; compare and contrast the chemical principles, advantages and challenges of renewable and traditional energy sources. |
| Describe the structure and properties of water and aqueous solutions; understand the chemical processes related to water pollution and identify solutions to global water quality issues. |
| Distinguish between natural and synthetic polymers; recognize the challenges related to plastic production, pollution and recycling. |
| Apply basic concepts of organic chemistry to explain the general mechanism of drug action; compare and contrast the production and pollution issues of natural versus synthetic drugs. |
| Identify the resources needed to produce and distribute natural, processed and genetically modified foods, comparing and contrasting their environmental impact and nutritional/caloric value. |

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| **ICS code for this course** | ADVANCED AND PROFESSIONAL - 1.11.19 - PHYSICAL SCIENCES |
| **Should any major restriction(s) be listed on this course? If so, select "yes" and list the appropriate major restriction code(s) or select "no".** | No |
| **Is the course an “International or Diversity Focus” course?** | No, not International or Diversity Focus |
| **Is the course a General Education course?** | Yes |
| **Is the course a Writing Intensive course?** | No |
| **Is the course repeatable\*?**(A repeatable course may be taken more than one time for additional credits. For example, MUT 2641, a 3 credit hour course can be repeated 1 time and a student can earn a maximum of 6 credits). \*Not the same as Multiple Attempts or Grade Forgiveness | No |
| **Do you expect to offer this course three times or less (experimental)?** | No |

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| **Impact of Course Proposal** |
| **Will this new course proposal impact other courses, programs, departments, or budgets?** | Yes |
| **If the answer to the question above is “yes”, list the impact on other courses, programs, or budgets?** | It might impact the enrollment in the other introductory chemistry classes we offer (CHEM 2025/L and 2032/L); this will depend on whether this new course will be accepted as an appropriate substitute for any chemistry degree requirements. However, the total chemistry enrollment should stay the same and might even increase with the addition of this new general education core course.  |
| **Have you discussed this proposal with anyone (from other departments, programs, or institutions) regarding the impact? Were any agreements made? Provide detail information below.** |
| N/A |

**Section II, Justification for proposal**

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| **Provide justification (below) for this proposed curriculum action**  |
| This is one of the state designated general education core courses in the natural sciences; adding this course to our curriculum increases the options our students have in covering their general education requirements by taking a course in the physical sciences. The course also represents a valuable contribution to our community, as it provides an opportunity for our students to better understand their role in creating a sustainable future. |

**Section III, Important Dates and Endorsements Required**

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| **List all faculty endorsements below. (Note that proposals will be returned to the School or Division if faculty endorsements are not provided).** |
| Dr. Marcela Trevino, Dr. Qin Liu, Dr. Di Xue, Prof. Fred Posey |

**nOTE:** Changes for the Fall 2015 term must be submitted by the January 3, 2015 deadline and approved no later than the February 28, 2015 Curriculum Committee meeting. Changes during mid-school year are NOT permitted. Extreme circumstances will require approval from the appropriate Dean or Assistant Vice President as well as the Provost and Vice President of Academic Affairs to begin in either the Spring 2015 or Summer 2015 term.

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| **Term in which approved action will take place** | Fall 2015 |

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| **Required Endorsements** | **Type in Name** | **Select Date** |
| **Department Chair or Program Coordinator** | George Manacheril | 12/15/2014 |
| **Academic Dean or Assistant Vice President** | Theo Koupelis | 12/16/2014 |
| **Dean’s Council Representative** | Dr. Mary Myers | 2/3/2015 |

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| **Select Curriculum Committee Meeting Date** | February 27, 2015 |

Completed curriculum proposals must be uploaded to Dropbox by the deadline. Please refer to the *Curriculum Committee Critical Dates for Submission of Proposals* document available in the document manager in the FSW Portal:

* Document Manager
* VP Academic Affairs
* Curriculum Process Documents

**Important Note to Faculty, Department Chairs or Program Coordinators, and Deans or an Assistant Vice President:**

Incomplete proposals or proposals requiring corrections will be returned to the School or Division. If a proposal is incomplete or requires multiple corrections, the proposal will need to be completed or corrected and **resubmitted to the Dropbox for the next Curriculum Committee meeting** (no later than January 9, 2015 to be effective for the Fall 2015 term). All Curriculum proposals require approval of the Provost and Vice President of Academic Affairs. Final approval or denial of a proposal is reflected on the completed and signed Summary Report.