Module III: Natural Sciences and Global Challenges
Proposal to Create a New Core Course

Instructions: Use this form to propose a Natural Sciences and Global Challenges University Core course. Forms for each of the other Core courses can be found on the Core website. Please provide the information requested in each section and insert a provisional syllabus that includes, at minimum, the following information: the learning outcomes, possible texts or types of texts that will be used, types of assignments and their nature/size/length, and a thematic outline describing how the course progresses through the quarter. Submit your proposal materials through the normal process for course review in your department and college/school, using the deadlines set by your college/school curriculum committees. In general, each faculty member who plans on teaching a customized version of a Core class should submit a separate proposal. Identical courses that will be taught by multiple faculty members may be included on a single proposal, but in those cases department chairs should address the issue of faculty participation in Section V.

Section I: General Information

Faculty:	SU email:
College/School:	Department:
Course Title:	
Special facilities needed: ☐ Laboratory ☐ Studio ☐ Computer Lab ☐ Other:	
Will this course require any new library resources or support from library staff? ☐ Yes ☐ No Will this course involve: ☐ Study abroad ☐ Immersion/Fieldwork ☐ Service learning Please explain any special needs for this course (including Library resources) in Section VI of this form.	

Section II: Approvals

All Core courses must be approved by 1) the chair of the faculty member's home department, 2) the dean and/or chair of the faculty member's college curriculum committee, 3) the Core Curriculum Committee, and 4) the Director of the University Core. Approvals should proceed in the order of signatures on this form.

1. **Department Chair:** (see Section V)

2. **Chair, College/School Curriculum Committee:**

3. **Dean:**

4. **Chair, Core Curriculum Committee:**

5. **Director, University Core Curriculum:**

The questions on this proposal form reflect the specific requirements for this course as explained on the course guidelines document. Please refer to that document for the details (a copy is attached at the end of this form for your convenience).

Section III: Course Information Please provide the following general information about the proposed course. Make reference to the material in the syllabus as appropriate, but be sure to directly address all of the questions. This information will be used by the departmental and college/school curriculum committees, as well as the Core Curriculum Committee.

1. Course focus: Briefly indicate the global challenge(s) or issue(s) around which the course will be focused.

Section IV: Core Requirements

Required Learning Objectives: Each Core course is responsible for helping students achieve the learning objectives assigned to that Core category. Each of the assigned learning objectives for this course is listed below. Please explain how the course is designed to achieve each of these objectives. Your explanations need not be long, but should be complete enough so that the Core Curriculum Committee can understand how well the objectives are addressed in the course. Please note that the course syllabus, required for this proposal, should also address these learning objectives.

1. **Through the scientific study of a global challenge, students gain additional scientific knowledge and improve their abilities to use rigorous scientific thinking to answer questions and solve problems.**

2. Students will develop their abilities to reflect on and use relevant knowledge they have learned in other courses across a variety of disciplines.

3. This course assists students in becoming effective writers, including writers of high quality academic prose.

4. This course helps students learn to engage in persuasive communication in appropriate civic spheres.

5. Each section of this course teaches students to deeply understand a major global issue or challenge (primarily from a scientific perspective).

6. This course helps students understand relevant cultural dimensions of the global challenges being studied and, when appropriate, helps students develop awareness and skills in cross-cultural engagement.

Essential Pedagogy: Please provide brief explanations of how this course incorporates the essential pedagogy identified in the Core course guidelines document (listed below).

1. Students will complete some kind of major paper or project in each section of these courses, as appropriate to the content of the course.

2. Students will be explicitly asked in some assignment to reflect on and synthesize what they have learned in other courses (including in their Inquiry Seminar in Natural Science courses) that relate to the global challenge being studied.

3. Students will practice translating and applying their knowledge to some appropriate public or civic context in at least one assignment in this course.

Common Learning Objectives: All Core courses share a common responsibility for helping students achieve the objectives listed below (see *Common Learning Objectives in the Core* for more information). However, it is understood that different courses will emphasize some objectives more than others. Please identify the common learning objectives emphasized in your course by checking the boxes below.

- ☐ **1. Where relevant, courses should help students understand how the field and subject matter being studied are related to or reflect the Jesuit intellectual tradition. In particular, Core courses should help students reflect on questions of meaning, spirituality, ethics, values, and justice.**
- ☐ **2. Students should develop analytic thinking and reasoning skills in all Core courses, although the forms those skills take vary across disciplines.**
- ☐ **3. Students should come to recognize and appreciate complexity and ambiguity, as well as the limitations of knowledge and imperfections in understanding of the subjects being studied.**
- ☐ **4. Study in a variety of disciplines will assist students in understanding and valuing the wide range of academic insights and perspectives.**
- ☐ **5. All courses should help students develop as writers of clear, effective, and elegant prose, including the ability to adapt their writing to different situations and content.**
- ☐ **6. Class discussions, in all their forms, help students learn to engage in effective and responsible discussion and debate.**
- ☐ **7. All faculty are encouraged to help students understand how their studies prepare them to meaningfully engage important issues and become responsible global citizens.**

Insert any necessary information here. Otherwise, leave blank.

Section V: Instructor Information

1. Submitting Faculty: Qualified individuals from any department are welcome to submit Core course proposals in all categories. Please briefly describe the academic background and experience that prepares you to teach this course. Note: In most cases, this should be very simple (e.g. a directly relevant terminal degree, teaching experience in similar courses, etc.), but if additional information regarding your academic preparation for this course is necessary, please include that here.

2. Additional Faculty: If your department's plans include faculty members other than the individual listed on this form being scheduled to teach this specific course, please list their names here with very brief explanations of their relevant preparation. Any faculty member teaching this course should have qualifications directly comparable to those of the proposing faculty member. If the versions of the course they will be teaching are expected to vary in any significant way (i.e. not using the same syllabus), each faculty member should submit a separate proposal. As new faculty members join the university and are assigned to this course, their faculty information should be submitted to the Core as soon as possible.

Section VI: Other Information

1. Short title: To be used in published information and to identify your course in SUOnline. 30 characters maximum.

2. Short description: To be published in lists of available Core courses and included in the course description on SUOnline to assist students in selecting courses. Approx. 50-75 words.

3. Special Course Requirements: If you checked any of the boxes on page 1 regarding library resources, facility requirements, or other special elements in the course, or if there are other unique features that should be considered in planning and supporting this course (e.g. team teaching, special scheduling needs, etc.), please explain.

4. Other Information: Please provide any additional information you feel necessary or helpful for the review of this course.

Thank you for submitting a proposal for this Core course! Please remember that review of this proposal is a multi-step process, proceeding through department, college/school, and Core stages. The University Core will notify both the faculty members and their departments when courses are approved by the Core Curriculum Committee.

Syllabus: A syllabus is a required part of this proposal form. There is space at the end of the form (page 10) for you to paste the syllabus into this document.

Submissions: Please submit this form through your college or school's normal submission process for new course proposals. If you are submitting this form electronically, please save it with a new name that includes the name of the course category as well as your last name (e.g. "Acad Writing - Jones").

The Core guidelines document for this course is included here for your reference. Some questions in this form refer to specific requirements listed in this document.

UCOR 3800: Natural Science and Global Challenges
Course Description and Guidelines

Description: Courses in the natural sciences that explore important global issues through the lens of a specific discipline in the natural sciences. Each course focuses on a particular issue/challenge and course content assists students in understanding key disciplinary knowledge and approaches that provide insight into the issue. Students explore ways to productively think about and address the issue. These courses help students increase their understanding of complex global issues, develop knowledge of a natural science as it relates to global issues, explore approaches to and solutions for global issues, develop skills and confidence in applying knowledge to complex issues, and improve writing and research skills. Global Challenges courses include students from a variety of disciplines, promoting interdisciplinary conversation and understanding. This course requires a major paper or project, as well as some kind of reflective assignment where students are asked to synthesize their overall learning as it relates to the global issue being studied. Community-based learning and/or field or laboratory research is encouraged but not required. Prerequisites: Module I Writing, Quantitative Reasoning, and Inquiry in Natural Sciences (or equivalent).

Notes and Guidelines:

1. "Global Challenges" refers to important issues or problems confronting the world. These issues may or may not be explicitly international in scope and character, but all should involve and affect a broad range of peoples or geography and explicitly recognize the complex interconnectedness of peoples and issues around the world. When feasible, these courses should incorporate international or intercultural study and experiences. Faculty are encouraged to incorporate non-Euro-American perspectives and content when appropriate to the courses' scientific approach to the challenges being studied.
2. This course serves as the second half of a pair of natural science courses in the Core: In the Module I inquiry seminar, students learned about the scientific method and principles through the study of a discipline-based science question. In this Module III course, students will study an important global challenge using the insights of a natural science discipline. These courses focus on the global challenge being studied, and do not function primarily as introductions to or surveys of the discipline. Disciplinary content and methods should be incorporated as relevant to study the challenge.
3. All natural science courses share common qualities: each teaches students to approach issues methodologically using the methods of the physical sciences (the scientific method, engineering design process, etc.). Natural science courses also share a broad common subject matter: the goal of objectively understanding natural phenomena and/or tangible structures or processes, and helping students distinguish claims of scientific knowledge from opinions regarding scientific matters.

Essential Pedagogy:

1. Students will complete some kind of major paper or project in each section of these courses, as appropriate to the content of the course.
2. Students will be explicitly asked in some assignment to reflect on and synthesize what they have learned in other courses (including in their Inquiry Seminar in Natural Science courses) that relate to the global challenge being studied.
3. Students will practice translating and applying their knowledge to some appropriate public or civic context in at least one assignment in this course. This assignment should ask students to practice engaging in some kind of advocacy related to the challenge (e.g. letters to the editor, advocacy web pages, recommendations papers, technical reports with recommendations, proposals, persuasive speeches, etc.).

Learning Objectives: Helping students meet the Core Learning Objectives is a collaborative effort.

1. All Core courses share a common responsibility for helping students achieve some objectives, and faculty should review the common objectives document (see *Common Learning Objectives in the Core*) and consider how those objectives can be reinforced and developed in this specific course.
2. In addition, each course has specific objectives for which it has special responsibilities. The table on the back of this page describes the ways in which this course has primary responsibility for one or more of the Core Learning Objectives. These objectives must be explicitly addressed in all sections of this course.

Natural Science and Global Challenges: Learning Objectives	
Core Learning Objectives	**How objectives should be addressed within this course** (bullets are the relevant language from the Core Learning Objectives)
Jesuit, Catholic Intellectual Traditions: Through knowledge of Jesuit, Catholic intellectual traditions and understanding of diverse religious traditions, students will reflect on questions of meaning, spirituality, ethics, values, and justice.	This course is not required to specifically address this objective, although faculty may choose to do so.
Disciplinary Knowledge and Integrative Learning: By studying humanities, social sciences, natural sciences, mathematics, and fine arts, students will learn how different disciplines pursue knowledge. They will learn disciplinary ways of posing questions, gathering and analyzing evidence, developing cogent arguments, and engaging issues related to nature, culture, and society. Students will also learn to integrate knowledge and explore their intellectual passions.	1. **Through the scientific study of a global challenge, students gain additional scientific knowledge and improve their abilities to use rigorous scientific thinking to answer questions and solve problems.** • Understand content and approaches to inquiry of the discipline • Ability to apply disciplinary knowledge and methods to answer questions and solve problems 2. **Students will develop their abilities to reflect on and use relevant knowledge they have learned in other courses across a variety of disciplines.** See Essential Pedagogy #2. These courses encourage students to incorporate what they have learned in other courses in order to help them develop skills and habits of interdisciplinary thinking and better understand the challenge being studied. • Ability to integrate content of various disciplines and synthesize disciplinary perspectives
Communication: Students will be able to communicate effectively in a variety of genres and for different audiences and purposes through writing, speaking, and visual expression.	3. **This course assists students in becoming effective writers, including writers of high quality academic prose.** While this course is primarily focused on studying a global challenge, helping students improve their writing skills is a goal of all Core courses. See *Common Objectives in the Core* for more information on writing across the Core. 4. **This course helps students learn to engage in persuasive communication in appropriate civic spheres.** The course asks students to use their communication skills to translate their knowledge of the challenge being studied into some form of advocacy related to that challenge. See Essential Pedagogy #3. • Development of advocacy skills
Global Engagement: Students will examine their roles in local, regional, national, and transnational cultures and communities. Students will be prepared to act, from an informed perspective, on local and global issues that surround and affect them.	5. **Each section of this course teaches students to deeply understand a major global issue or challenge (primarily from a scientific perspective).** This course helps students develop knowledge and insight into an important issue and explore how that issue might best be approached. • Understand key dimensions and issues related to the global community • Ability to reflect on one's role as a global citizen • Appreciate importance of issues of justice, such as social justice, environmental justice, & human rights 6. **This course helps students understand relevant cultural dimensions of the global challenges being studied and, when appropriate, helps students develop awareness and skills in cross-cultural engagement.** Opportunities for the study of non-US issues and interaction with peoples of different cultures are encouraged. • Ability to communicate across cultures • Appreciation for cultural diversity and cross cultural communication and engagement

Syllabus: A syllabus is a required part of this proposal form. Please insert your syllabus here and be sure to include the appropriate Core Learning Outcomes in the syllabus.