THE UNIVERSITY OF ARIZONA®

New Academic Program Workflow Form

General

Proposed Name: Climate Change and Society

Transaction Nbr: 00000000000058

Plan Type: Minor

Academic Career: Undergraduate

Degree Offered:

Do you want to offer a minor? N

Anticipated 1st Admission Term: Sprg 2021

Details

Department(s):

AGSC

DEPTMNT ID	DEPARTMENT NAME	HOST
1239	School of Natural Resources and the Environment	Y

Campus(es):

MAIN

LOCATION	DESCRIPTION
TUCSON	Tucson

Admission application terms for this plan: Spring: Y Summer: Y Fall: Y

Plan admission types:

Freshman: Y Transfer: Y Readmit: Y Graduate: N

Non Degree Certificate (UCRT only): N

Other (For Community Campus specifics): N

Plan Taxonomy: 03.0103, Environmental Studies.

Program Length Type: Program Length Value: 0.00

Report as NSC Program:

SULA Special Program:

Print Option:

Diploma: Y Minor in Climate Change and Society

Transcript: Y Minor in Climate Change and Society

Conditions for Admission/Declaration for this Major:

Students will need to meet with an advisor in SNRE to go over a course plan and declare the minor

Requirements for Accreditation:

NA

Program Comparisons

University Appropriateness

The proposed Minor in Climate Change and Society responds directly to multiple goals articulated in the University of Arizona Strategic Plan. Among the key goals in the Strategic Plan that are addressed and advanced by the proposed Minor are the following:

Pillar 1: The Wildcat Journey. Driving Student Success for a Rapidly Changing World
1.1A1: Strategically recruit prospective high-potential undergraduate students. Having an active, solutions-oriented major addressing the concerns of many young people today will encourage them to see the University of Arizona as a place where key issues are addressed head-on in a constructive fashion. A recent Gallup Poll found that 70% of Americans aged 18-34 worried "a great deal or a fair amount" about the climate and global warming (US News and World Report 13 November 2019). A 2018 Washington Post/Kaiser Family Foundation study found that one-quarter of all American teenagers are aware of the challenges of climate change and have taken part in some form of active engagement. Careers in climate, sustainability rank among the ¿fastest Growing Occupations¿ by the US Bureau of Labor Statistics (April 2019). These figures indicate a remarkably high level of awareness among high-school students, and thus an extraordinary recruitment opportunity for the University of Arizona. Offering a minor in global change to any student in the University will put UA in the forefront of its peer institutions. While many institutions offer Master¿s and advanced degrees in climate change and related subjects, few presently offer degrees for undergraduates. The UA CCS Minor will be unique in being designed explicitly to attract students across campus: journalism, political science, economics, sociology, law, business, and the arts.

1.2A1: Design a new Gen Ed curriculum. Under the UA Strategic Plan, the ¿transformed General Education (GE) curriculum¿will prepare students for a changing and complex world.¿ No aspect of our changing world is more urgent, and with more currency across all fields of study and all aspects of the global economy, than climate and associated global changes. Indeed, it can be argued persuasively that if there is any single aspect of the world that today¿s young people must understand as they graduate and take their places in society, it is the profound challenged ¿ and enormous opportunities ¿ of global climate change. The Climate Change and Society Minor will allow students whose interests and curiosity are stimulated in GE courses to pursue the subject further, while still allowing them to choose and follow their own major degrees of interest.

Pillar 2: Grand Challenges
2.2A: Build upon UA eminence in environmentally-oriented areas of research and education. As the University pursues its mission to become a top-ten ranked environmental university in the world, climate change impacts and adaptation must rise to the very top of institutional priorities. Much of the University¿s current expertise is in basic climate science and impacts, such as on ecosystems and water. It is noteworthy that the Grand Challenges associated with global change include not only outstanding research on its causes and consequences, but also intensive and productive research in effective climate adaptation and, ultimately, solutions. The proposed Minor will emphasize not only basic climate literacy, but also an orientation toward finding solutions space in both technological and social change.

Pillar 3: The Arizona Advantage
3.1A and 3.1B: Strengthen the impact and visibility of UA's commitment to equity and support of diverse communities, and Institutionalize commitment to Hispanic advancement. As a campus-wide Minor, the proposed program will provide opportunities to advance this component of the University¿s Mission and Strategic Plan. Lower-income communities and communities of color are affected disproportionately by climate change, creating an additional motivation for a wide range of students to be interested in understanding climate change, its effects and solutions. We propose to engage in specific targeted outreach to these communities for students interested in global change. Examples may include the Arizona's Science, Engineering, and Math Scholars (ASEMS) Program, initiatives to promote Campus-Community Outreach for STEM Diversity, and other programs of the Office of the Provost, Hispanic Serving Institution (HSI) Initiatives, the Office of Diversity and Inclusive Excellence, and the Office of Leadership and Organizational Development.

The proposed minor is consistent with the College of Agriculture and Life Sciences strategic plan in its purpose of ensuring "resilience and health of our communities, people, environments, and economies locally, regionally, and globally." https://cals.arizona.edu/about/strategic-planning/cals-strategic-plan/mission. This new minor is also in line with the CALS mission of increasing

our student's readiness for new careers that haven't yet been invented, which will "enable their future success in the regional and global economies."

Arizona University System

NBR	PROGRAM	DEGREE	#STDNTS	LOCATION	ACCRDT

Peer Comparison

Our proposed minor is similar to University of Montana and UCSD Scripp's Climate Change Studies minor in that emphasis is placed not only on the science behind climate change, but the social, political, and economic aspects as well. Like the other institutions, our proposed minor incorporates a Sustainable Actions and Solutions topic area that can tailored to a student's major and career interests. Most related minors at other institutions focus only on the climate science. While the two peer institutions require an experiential component, our minor includes both internships and a practicum as options in the Sustainable Actions and Solutions area, not required components.

Faculty & Resources

Faculty

Current Faculty:

INSTR ID	NAME	DEPT	RANK	DEGREE	FCLTY/%
12107555	John Koprowski	1239	Professor	Doctor of Philosophy	5.00
22052954	Rachel Gallery	1239	Assoc. Prof	Doctor of Philosophy	5.00
10703201	Donald Falk	1239	Professor	Doctor of Philosophy	5.00
22053660	David Moore	1239	Assoc. Prof	Doctor of Philosophy	10.00
15205128	Joellen Russell	1205	Assoc. Prof	Doctor of Philosophy	10.00
01322455	Kathleen Prudic	1239	Assit. Prof	Doctor of Philosophy	10.00
00902658	Dereka Rushbrook	3008	Assoc. Prof	Doctor of Philosophy	10.00
06902654	Andrea Gerlak	3008	Assoc. Prof	Doctor of Philosophy	10.00
12102754	Gregg Garfin	1239	Assoc. Prof	Doctor of Philosophy	10.00
14704231	David Breshears	1239	Professor	Doctor of Philosophy	10.00
22071345	William Smith	1239	Assit. Prof	Doctor of Philosophy	10.00

Additional Faculty:

We do not anticipate the need for additional faculty during the initiation of the program since all courses and administration can be accomplished by current faculty members.

Current Student & Faculty FTE

DEPARTMENT	UGRD HEAD COUNT	GRAD HEAD COUNT	FACULTY FTE
1239	240	75	32.00

Projected Student & Faculty FTE

	UGRD HEAD COUNT			GRAD HEAD COUNT			FACULTY FTE		
DEPT	YR 1	YR 2	YR 3	YR 1	YR 2	YR 3	YR 1	YR 2	YR 3
1239	10	20	30	0	0	0	32.00	32.00	32.00

Library

Acquisitions Needed:

We do not anticipate this minor creating a need for additional library acquisitions.

Physical Facilities & Equipment

Existing Physical Facilities:

The existing facilities and equipment should be sufficient for the proposed program because the courses in the minor are being taught using the resources currently available.

Additional Facilities Required & Anticipated:

We do not anticipate this minor creating a need for additional physical facilities or equipment because the courses in the minor are being taught using the resources currently available.

Other Support

Other Support Currently Available:

SNRE currently has 1.5 FTE academic advisors who will be able to assist students with adding the minor. Existing faculty in the department should be able to advise students choosing to complete internships or practicums and curriculum co-advisors in SGD and Geosciences can assist with these as needed.

Other Support Needed over the Next Three Years:

We do not anticipate the need for additional staff or other assistance as the current staff in SNRE should be able to handle academic advising and administrative needs.

Comments During Approval Process

5/5/2020 1:21 PM

5QUIRRE1

Comments
Approved.

5/5/2020 1:26 PM

STATENM

Comments
Approved.

5/13/2020 12:34 PM

SCARLSON

Comments
Updated additional info form, per email from KHUGHES

THE UNIVERSITY OF ARIZONA

NEW ACADEMIC PROGRAM-STANDALONE UNDERGRADUATE MINOR
ADDITIONAL INFORMATION FORM

I. MINOR DESCRIPTION– provide a marketing/promotional description for the proposed minor. Include the purpose, nature, and highlights of the curriculum, faculty expertise, etc. The description should match departmental and college websites, handouts, promotional materials, etc.

People, animals, plants, and all living organisms are being impacted by long-term changes in temperatures and ecosystems around the world. This global change is an increasingly dominant fact of life for all human and natural systems, and we can see the impacts all around us. In many parts of the world, governments and organizations have already been forced to adapt to ensure basic services that are essential for human civilization--including water, food, clean air, livable climate, renewable resources, and natural areas—will continue to be available for their communities.

Climate change is also creating unprecedented new opportunities for innovation and economic growth; the jobs of the future are already aligning with solving the tremendous reorganization of the global economy driven by this global change. College students today will live their entire personal and professional lives in a world that is being shaped by these rapidly-changing forces; there is no part of our world that will not be touched by global change.

The Minor in Climate Change and Society is designed to supplement the career interests of students in any field who want to understand how global change will affect their professional and personal lives and adapt to new emerging career opportunities. The CCS Minor curriculum ensures basic competency in three primary areas, taking advantage of UArizona's expert faculty. First, students will have the opportunity to understand the physical and natural realities of global change, including what is driving these changes and how they are being manifested in today's world. The component of the Minor is designed to enable students, as current and future citizens, to distinguish fact from fiction, and learn important skills in critical thinking about important global issues. Second, the Minor will examine how societies are adapting to address these challenges, both through short-term adaptation and via long-term restructuring of the global economy. The third component of the Minor is intended to be solutions-oriented; instead of instilling feelings of helplessness and fatalism, we hope to inspire students to see the enormous range of creative possibilities in technological and social change that will be key to the coming century. Students will have the flexibility within the Minor to select electives to match their curriculum to their specific academic and career interests and have the opportunity to practice what they've learned through internships or research. The

ultimate goal of the Minor is to produce a generation of UA alumni who will be effective professionals and educated world citizens. The Minor is designed to respond to and advance multiple goals articulated in the *University of Arizona Strategic Plan*.

II. **NEED FOR THE MINOR/JUSTIFICATION**- provide market analysis data or other tangible evidence of the need for and interest in the proposed minor. This might include results from surveys of current students, alumni, and/or employers or reference to student enrollments in similar programs in the state or region. Curricular Affairs can provide a job posting/demand report by skills obtained/outcomes of the proposed minor. Please contact Martin Marquez to request the report for your proposal.

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III. MINOR REQUIREMENTS– complete the table below by listing the minor requirements, including minimum number of credit hours, required core, electives, and any special requirements. Note: information in this section must be consistent throughout the proposal documents (comparison charts, curricular/assessment map, etc.). Delete the EXAMPLE column before submitting/uploading.

Minimum total units required	21	
Minimum upper-division units required	12	
Total transfer units that may apply to minor	6	
List any special requirements to declare/admission to this minor (completion of specific coursework, minimum GPA, interview, application, etc.)	-Meet with SNRE advisor to go over a course plan and declare the minor	
Minor requirements. List all required minor requirements including core and electives. Courses listed must include course prefix, number, units, and title. Mark new coursework (New). Include any limits/restrictions needed (house number limit, etc.). Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.	*All courses are 3 units except those marked with an * which are 4 units* **Introductory course** RNR 101 Global Sustainability and Natural Resources **Area Study:** Choose a minimum of 6 units from each of the following areas **Climate Basics** (please choose a minimum of one course at the 300-400 level) ATMO 336 Weather, Climate and Society ATMO 421 Physical Climatology ENVS 210 Fundamentals of Environmental Sustainability ENVS 410 Microbial Biogeochemistry and Global Change GEOG 230 Our Changing Climate GEOG 430 The Climate System GEOS 212 Intro to Oceanography GEOS 220 Environmental History of the Southwest GEOS 342 History of Earth's Climate	

	GEOS 412 Ocean Sciences GEOS 478 Global Change RNR 458 Ecosystem Ecology and a Sustainable Future RNR 429 Ecological Climatology *WSM 452 Global Change Ecology and Management **Social Perspectives** AIS 403 Globalization and Indigenous People ASTR 208 Energy, Society, and the Environment ENVS 310 Ecosystem Health and Justice EVS 374 Geography, Social Justice and the Environment EVS 462 Environmental Law, Geography and Society GEOG 260 Environmental Studies: Ideas and Institutions GEOG 302 Introduction to Sustainable Development GEOG 404 Politics of Nature GER 327 Recycling Culture: Environmentalism Made in Germany HIST 247 Nature and Technology in U. S. History LAW 454 Environmental Law MNE/ANTH 201 Nonrenewable Resources and Human Civilizations PHIL/PA 323 Environmental Ethics PLG 256 Sustainable Cities and Societies RSSS 305 Russian and American Foodways: Cultivation, Culture, and Connectedness **Sustainable Actions and Solutions** AREC 360 The Poverty and Development of Nations EVS 445 Geographies of International Environmental Governance EVS 363 Climate Change: Human Causes, Social Consequences and Sustainable Responses JOUR 455 Environmental Journalism	

	JOUR 465 Issues in covering Science and the Environment PHIL/LAW 419 The Ethics & Economics of Environmental Policy (in approval process) LAW 459 Public International Environmental Law PA 461 Global Climate Change: Integrating Science, Policy, and Decision Making PLG 408 Planning for Urban Resilience PLG 497S Sustainable Urban Development and Design RCSC 480 Sustainable Consumption & Retailing RNR 440 Climate Change Adaptation: Perspectives at the Nexus of Science, Society, & Resource Management RNR 496G Climate Assessment: Explorations in Decision Support RNR/GEOG/GEOS/EVS 493 Internship RNR/GEOG/GEOS/EVS 494 Practicum RNR/GEOG/GEOS/EVS 499 Independent Study • A minimum of 12 upper division units is required for the minor • Double dipping of two Tier 2 general education requirements is permitted with the minor • A minimum of 6 units must be unique to the minor	
Internship, practicum, applied course requirements (Yes/No). If yes, provide description.	Must be approved by faculty administering the minor	
Additional requirements (provide description)	NA	
Any double-dipping restrictions (Yes/No)? If yes, provide description.	• A minimum of 6 units must be unique to the minor	

IV. CURRENT COURSES–using the table below, list all existing courses included in the proposed minor. You can find information to complete the table using the UA course catalog or UAnalytics (Catalog and Schedule Dashboard> "Printable Course Descriptions by Department" On Demand Report; right side of screen). If the courses listed belong to a department that is not a signed party to this implementation request, upload the department head's permission to include the courses in the proposed minor and information regarding accessibility to and frequency of offerings for the course(s). Upload letters of support/emails from department heads to the "Letter(s) of Support" field on the UAccess workflow form. Add rows to the table, as needed.

Table IV is in a separate attachment.

We recognize the growing imperative for the University to provide on-line options for undergraduate education. We believe that the nature of the material that is the focus of this Minor will adapt well to on-line delivery, in part because of abundant availability of information regarding global change and its components. *A student is currently able to complete the majority of the coursework necessary to fulfill the minor requirements online.* SNRE faculty and leadership are engaged with the Office of Digital Learning personnel for on-line education program development and marketing. We are confident that all pedagogical and strategic objectives of the Minor can be met fully in the emerging hybrid model of University education that meets Quality Matters standards.

V. **NEW COURSES NEEDED** – using the table below, list any new courses that must be created for the proposed program. If the specific course number is undetermined, please provide level (ie CHEM 4**). Add rows as needed. Is a new prefix needed? If so, provide the subject description so Curricular Affairs can generate proposed prefix options.

No new courses are needed at this time, but we will welcome new or additional courses as they are developed or identified.

*In development (D); submitted for approval (S); approved (A)

Subject description for new prefix (if requested). Include your requested/preferred prefix, if any:

VI. FACULTY INFORMATION- complete the table below. If UA Vitae link is not provided/available, attach a short CV (2-3 pages) to the end of the proposal or upload to the workflow form. UA Vitae profiles can be found in the UA directory/phonebook. Add rows as needed. Delete the EXAMPLE rows before submitting/uploading. **NOTE: full proposals are distributed campus-wide, posted on committee agendas and should be considered "publicly visible". Contact Pam Coonan and Martin Marquez if you have concerns about CV information being "publicly visible".**

John Koprowski	Director, SNRE	https://profiles.arizona.edu/person/5quirre1
Rachel Gallery, SNRE	Associate Director, SNRE; internship supervisor; faculty advisor	https://profiles.arizona.edu/person/rgallery
Don Falk, SNRE	Minor Chair; faculty advisor; UA campus liaison; internship supervisor	https://profiles.arizona.edu/person/dafalk
Katie Hughes, SNRE	Senior Academic Advisor; campus advisor liaison	
Dave Moore, SNRE	Teach RNR 101, faculty advisor; internship supervisor; co-curriculum advisor, Climate Basics	https://profiles.arizona.edu/person/davidjpmoore
Joellen Russell, Geosciences	Teach GEOS 212; faculty advisor; internship supervisor; co-curriculum advisor, Climate Basics	https://profiles.arizona.edu/person/jrussell
Katy Prudic, SNRE	Teach RNR 101; internship supervisor; instructional innovation, on-line education	https://profiles.arizona.edu/person/klprudic
Dereka Rushbrook, SGD	Internship supervisor; co-curriculum advisor, Social Perspectives	https://profiles.arizona.edu/person/dereka
Andrea Gerlak, SGD	Internship supervisor; co-curriculum advisor, Social Perspectives	https://profiles.arizona.edu/person/agerlak
Gregg Garfin, SNRE/AIR	Teach RNR 440; internship supervisor; curriculum advisor, Climate Solutions	https://profiles.arizona.edu/person/gmgarfin
Dave Breshears, SNRE	Teach WSM 452; internship supervisor; faculty advisor	https://profiles.arizona.edu/person/daveb
Bill Smith, SNRE	Teach RNR 429; internship supervisor; faculty advisor	https://profiles.arizona.edu/person/wksmith

VII. STUDENT LEARNING OUTCOMES AND CURRICULUM MAP—describe what students should know, understand, and/or be able to do at the conclusion of this minor. Work with Office of Instruction and Assessment to create a curricular map using Taskstream. Include your curricular map in this section (refer to Appendix A for sample Curriculum Map generated using Taskstream).

Learning outcomes

1. **Define**, **differentiate**, and **explain** the nature of climate change and the importance of modern sustainable best practices across human societies;
2. **Associate**, **examine**, and **compare** how to infer meaning and inspire personal and collective action through written, visual, and verbal communication to a variety of audiences;
3. **Summarize, implement,** and **appraise** sustainable thinking as it relates to addressing current and future real-world climate change challenges and crises;
4. **Design**, **practice**, and **manage**, a personal and professional toolbox of sustainability knowledge, skills, and abilities useful for successful professional careers and engaged citizenship

Curriculum Map:

University of Arizona AMS
DEMO AREA

Minor in Climate, Change and Society

Courses and Activities Mapped to Minor in Climate, Change and Society

	Outcome			
	Outcome 1 Define, differentiate, and explain climate change and the importance of sustainable best practices across human societies.	Outcome 2 Inspire personal and collective climate action through written, visual, and verbal communication to a variety of audiences.	Outcome 3 Summarize, implement, and appraise sustainable thinking as it relates to addressing current and future real-world climate change challenges and crises.	Outcome 4 Design, manage, and use a personal and professional toolbox of sustainability knowledge, skills, and abilities useful for professional and engaged citizenship.
Courses and Learning Activities				
Survey Exit survey (Indirect) Students completing the minor will self-evaluate their attainment of the learning outcomes.	A	A	A	A
RNR 101 Course assignments Outcomes will be measured for students early in the minor.	A	A	A	A
ATMO 336 Course assignments Outcomes will be measured for students at the end of the minor.	A	A	A	A

Legend : **I** Introduced **P** Practiced A Assessed **I/P** Introduced/Prac

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VIII. ASSESSMENT PLAN FOR STUDENT LEARNING- using the table below, provide a schedule for program assessment of intended student learning outcomes 1) while students are in the program and 2) after completion of the minor. Add rows as needed. Delete EXAMPLE row.

Learning Outcomes	Sources(s) of Evidence	Assessment Measures	Data Collection Points
Outcome 1: Define, differentiate, and explain climate change and the importance of sustainable best practices across human societies.	Course-embedded assessments	Exams, papers, and other forms of student work	▪ Course assignments and projects in RNR 101 ▪ course assignments in ATMO 336 ▪ Minor completion exit survey
Outcome 2: Inspire personal and collective climate action through written, visual, and verbal communication to a variety of audiences.	Course-embedded assessments	Exams, papers, and other forms of student work	▪ Course assignments and projects in RNR 101 ▪ course assignments in ATMO 336 ▪ Minor completion exit survey
Outcome 3: Summarize, implement, and appraise sustainable thinking as it relates to addressing current and future real-world climate change challenges	Course-embedded assessments	Exams, papers, and other forms of student work	▪ Course assignments and projects in RNR 101 ▪ course assignments in ATMO 336 ▪ Minor completion exit survey
Outcome 4: Design, manage, and use a personal and professional toolbox of sustainability knowledge, skills,	Course-embedded assessments	Exams, papers, and other forms of student work	▪ Course assignments and projects in RNR 101

and abilities useful for professional and engaged citizenship.			▪ course assignments in ATMO 336 ▪ Minor completion exit survey

IX. ANTICIPATED STUDENT ENROLLMENT-complete the table below. What concrete evidence/data was used to arrive at the numbers?

5-YEAR PROJECTED ANNUAL ENROLLMENT					
	1st Year	2nd Year	3rd Year	4th Year	5th Year
Number of Students	10	20	30	50	70

Data/evidence used to determine projected enrollment numbers:

Enrollment in closely related minors at peer institutions, UCSD and University of Montana. Past four years of enrollment in minor curriculum courses (see attached).

X. ANTICIPATED MINORS AWARDED- complete the table below, beginning with the first year in which minors will be awarded. How did you arrive at these numbers? Take into consideration departmental retention rates.

PROJECTED MINORS AWARDED ANNUALLY					
	1st Year	2nd Year	3rd Year	4th Year	5th Year
Number of Minors	0	10	20	30	50

Data/evidence used to determine number of anticipated minors awarded annually:

Enrollment in closely related minors at peer institutions, UCSD and University of Montana. Past four years of enrollment in minor curriculum courses (see attached).

XI. PROGRAM DEVELOPMENT TIMELINE- describe plans and timelines for 1) marketing the minor and 2) student recruitment activities.

1). Marketing

During the first year, we will work with CALS marketing to develop an attractive webpage for the minor on the School of Natural Resources website as well as the lead generation website for the major, https://naturalresources.arizona.edu/.
As soon as the minor is approved, announcements and promotional materials will be sent to all advisors via UPAC. Fliers will be posted around campus. We will request brief guest speaker spots or instructor announcements in the beginning of classes that are part of the minor curriculum. Additionally, we will place advertisements in the Daily Wildcat and via social media. During subsequent years, we will update and maintain the minor webpages as needed. CALS's marketing team will also create a video profile of a student in the program to use on websites, social media posts, and YouTube.

2). Recruitment

Students in Natural Resources are organizing a Global Change club (applying through ASUA) that will help recruit students to the minor. Initially, affiliated faculty will continue to actively participate in promoting minor in classrooms and with student clubs (Students for Sustainability, Marine Sciences Awareness, etc.) and with special outreach to fields of study that could greatly influence our society's trajectory in the coming century; Political Science, Journalism, Law, Business, etc. Social Media. The minor will be advertised during all on campus tabling events where majors are represented (Meet Your Major fair, Career Days, etc.). These activities will continue beyond the first two years of the program.

XII. DIVERSITY AND INCLUSION-describe how you will recruit diverse students and faculty to this minor. In addition, describe retention efforts in place or being developed in order to retain students.

Climate change and its affects are linked directly to social and environmental justice (Levy and Patz 2015). Communities of color and economically disadvantaged people are affected disproportionately by global change. These disparities includes exposure to environmental contamination, heat and drought stress, crop failures, water shortages, unsafe workplace conditions, and disease. Global change interacts with the drivers of economic inequality and poverty to produce greater effects on communities of color worldwide. Within the US, Hispanic, African American, and Native American communities are far more likely to be exposed to the physical and economic consequences of global change as it is expressed where they live and work. As a consequence, we consider recruiting students from these affected communities into the Minor to be a central goal. A recent National Academy Study (2020) noted that diversifying the community of practice in research may be as important as the societal implications of climate change itself. As a fully-recognized Hispanic Serving Institution that is also a leading R1 University with leading expertise in global change, UA is uniquely positioned to deliver global change education to a diverse student body.

This minor highlights the need for listening, collaboration, and innovation among people with different perspectives, values, and backgrounds to create climate resilient economies and positive social impact. The structure of the Minor reflects this intention: by leading students from problem analysis to climate solutions, we will encourage students to think creatively about how climate justice can be applied to their own communities. We will collaborate with other campus centers and community stakeholders to amplify these student-driven thoughts, experiences, and creations to improve human societies in light of climate change. This includes cooperating with important UA initiatives that seek to build a diverse and inclusive student body in areas critical to sustainability, such as the Haury Program in Environment and Social Justice (https://www.haury.arizona.edu/) and the Arizona Science, Engineering, and Math Scholars Program (ASEMS, https://asems.arizona.edu/home).

Cited:

Levy BS and Patz JA. 2015. Climate change, human rights, and social justice. *Annals of Global Health* 81(3): 310-322.
National Academies of Sciences, Engineering, and Medicine 2020. **Promising Practices for Addressing the Underrepresentation of Women in Science, Engineering, and Medicine: Opening Doors.** Washington, DC: The National Academies Press. https://doi.org/10.17226/25585

Enrollment 2016 through 2020

Prefix and #	Course Title	Spring 2016	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Grand Total
AIS 403	Globalization & Indigen People	4	3							5	**12**
AREC 360	Poverty+Dvlpmt of Nation	95		64		58		56		56	**329**
ATMO 336	Weather,Climate+Society	146	156	121	90	116	81	70	77	103	**960**
ECOL/RNR/WSM 452	Dryland Ecohydro&Veg Dynamics		8		9		5		2		**24**
ENVS 210	Fund Env Sci+Sustain	137	118	118	144	101	114	101	272	267	**1372**
ENVS 310	Ecosystem Health and Justice				18		45		45	43	**151**
ENVS 410	Microbes Biogeochemistry								6		**6**
EVS 260	Envir Stds: Ideas/Institutions	29	39	29	39	52	36	53	41	55	**373**
EVS/GEOG 302	Intro to Sustainable Dev	52	49	54	53	50	84	50	80	50	**522**
EVS/GEOG 374	Geog, Social Justice & Env				55		35		17		**107**
EVS/GEOG 462	Env. Law, Geography & Society		16			21		20			**57**
GEOG 230	Our Changing Climate		74		75		63		58		**270**
GEOG 430	The Climate System	27		9		8		13		10	**67**
GEOS 478	Global Change		27		28		32		35		**122**
JOUR 455	Environmental Journalism	13		17		15		13		11	**69**
JOUR 465	Issues in Covering Sci & Env		12								**12**
PA 461	Global Climate Change	50				48					**98**
PA 482	Environmental Governance						19		31		**50**
PA 482	Gov for Sust Dev		13	25		33					**71**
PA/PHIL 323	Environmental Ethics	150	234	142	153	107	161	121	144	132	**1344**
RCSC 480	Sustainable Consumption									28	**28**
RNR 101*	Global Sustainability		6		2		6		4		**18**
RNR 150C1*	Sustainable Earth		139	30	142		218	59	323	208	**1119**
RNR 429	Ecological Climatology				1		6		4		**11**
RNR 458	Ecosystem Ecology	16		14		19		8		7	**64**
	Grand Total	**743**	**908**	**642**	**836**	**632**	**950**	**575**	**1183**	**986**	**7455**

*credit allowed for only RNR 101 or RNR 150C1

THE UNIVERSITY OF ARIZONA

Arizona Institutes for Resilience
~Solutions for Environment and Society~

ENR2 Building
1064 E. Lowell Street, Rm. N523
PO Box 210137
Tucson, AZ 85721-0137
Tel: (520) 626-4454
http://www.environment.arizona.edu/

April 28, 2020

Dr. John Koprowski
Director
School of Natural Resources
and the Environment
University of Arizona
Tucson, Arizona

Dear Dr. Koprowski:

I have carefully reviewed the course structure and justification for the Minor in Climate Change and Society at the University of Arizona, and I enthusiastically support its establishment. It is precisely the kind of program needed at this critical time, and the UArizona is precisely the university to offer this education to our state, our nation, and our world. The breadth of the proposed offering underscores what I've always known…that the UArizona is rich with expertise in a way that few places are. My very strong support for this Minor comes from a number of perspectives.

During my time as Director of the Office of Climate and Society at the National Oceanic and Atmospheric Administration (1986 – 2003) I had the pleasure of creating and managing a number of research programs aimed at advancing the understanding of the relationship between human systems and our climate system. These include the Regional Integrated Sciences and Assessments Program of which the UArizona Climate Assessment of the Southwest (CLIMAS) and the International Research Institute for Climate and Society (IRI) at Columbia University are two. While successful as research endeavors, these programs miss the opportunity to educate the next generation of thinkers and doers with the skills and understanding needed to succeed, regardless of the careers students might ultimately choose.

During my time as ASU President Michal Crow's Senior Advisor for Institutional Transformation (2003 – 2011) I was tasked with designing and establishing the Global Institute of Sustainability and its School of Sustainability, which included Minors in Sustainability. To my dismay at the time, the offerings we came up with lacked the breadth of what I had hoped for, especially in the natural and physical sciences. This, because ASU simply didn't have the personnel to cover those critically important topics. At the UArizona, we do, and the Minor as proposed, benefits from our diverse, world class in-house expertise.

In addition to the above, I also bring the perspective of one who serves on the Boards of Directors of a number of national not-for-profit environmental organizations. These include as past chair at the National Council for Science and the Environment (NCSE) and as chair at

Second Nature, which oversees the Climate Leadership Network and the University Climate Change Coalition (UC3), in which UArizona President Bobby Robbins has recently become very engaged. I also serve on the Advisory Council of George Washington University's Planet Forward Program led by Emmy Award winning journalist Frank Sesno. I mention this because, over the years these organizations have discussed ways to encourage universities to do precisely what is proposed…to provide all college students with an understanding of the complex world we live in, in the context of a changing climate. These discussions have led to little progress at a national level, so over the weekend I explored with them (fellow board members and organizational leadership) the Minor being proposed. Without exception they enthusiastically endorsed our initiative, indicating their willingness to promote the Minor through their networks, which, in aggregate, number well over 100,000 individuals across the globe.

Over the years, I have also served on climate-related panels of the National Academies of Science, as lead author of National Climate Assessments, and as program reviewer of academic sustainability programs in the U.S. and abroad. These experiences give me a rich exposure of what is being offered elsewhere. I can tell you with confidence, that this Minor is unique in its breadth, depth and quality of offerings.

This brings me to perhaps the most valuable of perspectives, that of (interim) Director of the Arizona Institutes for Resilience at the University of Arizona. As you know, this newly formed institute results from President Bobby Robbins', Provost Liesl Folks' Senior Vice President for Research and Innovation, Betsy Cantwell's, and Senior Vice President for Marketing and Communications, Steve Moore's strong desire to promote Environment at the UArizona.

On March 1, 2020 the Environment Design Committee formed by Dr. Cantwell, and which I chaired, presented her with our recommendations. She was very pleased with the vision and recommendations we offered her, and she encouraged us to proceed with implementation. Amongst the recommendations was to increase our educational offerings, including, but not limited to an expanded "experiential" learning offering for undergraduates. In addition, the committee proposed that the UArizona become the "go to" place for all students interested in being part of the solution to the global climate crisis. The Minor being proposed is precisely the very best next step in that direction.

Further, by incorporating the use of the many valuable UArizona assets like the Biosphere2, the Desert Laboratory on Tumamoc Hill, the Tree Ring Lab, to name just a few, along with our countless environmental field experiments and our relationships with the Southern Arizona management and broader communities, we can offer our students an unparalleled learning experience…something which, as you are aware, Provost Folks is keenly interested in seeing us advance. From what I know, I am confident that this Minor supports directly the UArizona's senior leadership's commitment to strengthen and elevate environmental education as an avenue for institutional growth and to promote our global reputation of expertise at the nexus of climate change and society.

For the reasons articulated above, and in particular from my position as interim director of AIR, I cannot be more supportive of the proposal to establish the Minor in Climate Change and Society at the UArizona, and with absolutely no reservation offer the full backing of my institute and its experts to advance its implementation. Please let me know how we might help.

Please don't hesitate to reach out if you have questions or would like further input.

Sincerely and with best regards,

James L. Buizer
Interim Director
Arizona Institutes for Resilience
University of Arizona
Tucson, Arizona

From: Koprowski, John L - (5quirre1)
To: Hughes, Katie Marie - (khughes)
Subject: Fw: Request for use of courses in our minor - Climate Change & Society
Date: Thursday, April 2, 2020 5:00:11 PM

Sincerely,

John L. Koprowski, Professor and Director
Wildlife Conservation and Management
School of Natural Resources & the Environment
ENR2 N333
1064 E. Lowell Street
PO Box 210137
Tucson, AZ 85721 USA

Email: squirrel@ag.arizona.edu
Phone: +1 (520) 626-5895
Web: www.ag.arizona.edu/research/redsquirrel
Research Gate: https://www.researchgate.net/profile/John Koprowski

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From: Trosper, Ronald L - (rltrosper) <rltrosper@arizona.edu>
Sent: Wednesday, April 1, 2020 4:30 PM
To: Koprowski, John L - (5quirre1) <5quirre1@ag.arizona.edu>
Subject: RE: Request for use of courses in our minor - Climate Change & Society

To Whom It May Concern:

I approve of the use of the following course for the proposed minor, Climate Change and Society, and enthusiastically support the minor's creation.

AIS 403 Globalization and Indigenous People

Sincerely,

Ronald L. Trosper, Professor

PI, Sloan Indigenous Graduate Program
American Indian Studies
The University of Arizona
Harvill 237A, 1103 E. 2nd Street
P.O. Box 210076
Tucson, Arizona 85721-0076
520-621-7108; fax 520-621-7952
web: http://www.ais.arizona.edu/

THE UNIVERSITY OF ARIZONA

Department of Agricultural
and Resource Economics
College of Agriculture and
Life Sciences

304 McClelland Park, 650 N. Park Ave.
P.O. Box 210078
Tucson, AZ 85721-0078
Tel: (520) 621-2421
Fax: (520) 621-6250
http://ag.arizona.edu/arec/

April 1, 2020

Dear Dr. Koprowski,

We would be happy to include AREC 360 *The Poverty and Development of Nations* as an elective option for your new minor in Climate Change and Society. For the moment, there is ample space for students pursuing a minor in your new program. Should space become constraining, we will seek a larger classroom to accommodate all your majors and minors. We enthusiastically welcome all SNRE students, be they majors and minors in your new program or in existing programs, into AREC 360.

Please be advised we have two other classes, which would be excellent general education options for your majors and minors:

AREC150C *Sustaining Life: The Global Economy of Food (Tier 1)*
AREC210 *Understanding the World of Commerce (Tier 2)*

We wish you success in launching and growing your new minor in Climate Change and Society.

Sincerely,

Gary Thompson
Professor and Department Head
Department of Agricultural and Resource Economics
College of Agriculture & Life Sciences
The University of Arizona
McClelland Park 304C
650 N. Park Avenue
Tucson, AZ 85719-0078

Dr. Barbara Carrapa
Professor and Department Head
Department of Geosciences
Gould-Simpson Building
Tucson, AZ 87521-0077

THE UNIVERSITY OF ARIZONA
TUCSON ARIZONA

Tel. (520) 621 5011
Fax (520) 621-2672
e-mail: bcarrapa@email.arizona.edu

Tucson, April 22, 2020

Dear Dr. Koprowski,

I approve of the use of the following courses for the proposed minor, Climate Change and Society, and enthusiastically support the minor's creation.

GEOS 212 (Intro to Oceanography)
GEOS 220 (Environmental History of the Southwest)
GEOS 342 (History of Earth's Climate)
GEOS 412 (Ocean Sciences)
GEOS 478 (Global Change)

Sincerely,

Barbara Carrapa
(Professor and Department Head of Geosciences)

From: Walworth, Jim - (jlw1)
To: Koprowski, John L - (5quirre1); Chorover, Jon - (chorover)
Cc: Hughes, Katie Marie - (khughes); Landeen, Kathleen A - (klandeen)
Subject: RE: Letter of support to use ENVS courses in our Climate Change & Society
Date: Thursday, April 2, 2020 8:29:22 AM

John

I'm glad to see that you are proceeding with a minor in Climate Change and Society. We are happy to approve inclusion of ENVS 210 Fundamentals of Environmental Science and Sustainability, ENVS 310 Ecosystem Health and Justice, and ENVS 410 Microbial Biogeochemistry and Global Change in this minor degree program. Please let us know if we can do more to support you.

Jim

Dr. Jim Walworth Professor and Associate Head
Department of Soil, Water and Environmental Science
University of Arizona, Tucson AZ
(520) 626-3364
jlw1@email.arizona.edu

From: Koprowski, John L - (5quirre1) <5quirre1@ag.arizona.edu>
Sent: Wednesday, April 1, 2020 3:55 PM
To: Chorover, Jon - (chorover) <chorover@arizona.edu>; Walworth, Jim - (jlw1) <Walworth@ag.arizona.edu>
Cc: Hughes, Katie Marie - (khughes) <khughes@arizona.edu>; Koprowski, John L - (5quirre1) <5quirre1@ag.arizona.edu>
Subject: Letter of support to use ENVS courses in our Climate Change & Society

Dear Jim and Jon,

As you know, the School of Natural Resources and the Environment is developing a minor in Climate Change and Society and requests to use the following course from your department. These will be among a list of choices so we don't foresee this adding a great burden to your instructors. Please let us know if you approve by providing us with a letter of support (or email) indicating that you approve of the use of these courses. Please feel free to copy and/or edit the text below into your letter as you see fit. Many thanks and let us know if you have any questions!

To Whom It May Concern:

I approve of the use of the following course for the proposed minor, Climate Change and Society, and enthusiastically support the minor's creation.

ENVS 210 Fundamentals of Environmental Science and Sustainability

ENVS 310 Ecosystem Health and Justice
ENVS 410 Microbial Biogeochemistry and Global Change

Sincerely,

Sincerely,

John L. Koprowski, Professor and Director
Wildlife Conservation and Management
School of Natural Resources & the Environment
ENR2 N333
1064 E. Lowell Street
PO Box 210137
Tucson, AZ 85721 USA

Email: squirrel@ag.arizona.edu
Phone: +1 (520) 626-5895
Web: www.ag.arizona.edu/research/redsquirrel
Research Gate: https://www.researchgate.net/profile/John Koprowski

THE UNIVERSITY OF ARIZONA
COLLEGE OF AGRICULTURE & LIFE SCIENCES
Norton School of Family & Consumer Sciences

650 N. Park Avenue
P.O. Box 210078
Tucson, AZ 85721-0078

Ofc: (520) 621-1075
Fax: (520) 621-9445

cals.arizona.edu/fcs

4/7/2020

To Whom It May Concern:

I approve of the use of the following course for the proposed minor, Climate Change and Society, and enthusiastically support the minor's creation.

RCSC 480 Sustainable Consumption & Retailing

Sincerely,

Laura Scaramella

Laura Scaramella, Ph.D.

Director, John and Doris Norton School of Family and Consumer Sciences

Hughes, Katie Marie - (khughes)

Sent: Friday, April 3, 2020 12:22 AM
To: Koprowski, John L - (5quirre1)
Cc: Hughes, Katie Marie - (khughes); Koprowski, John L - (5quirre1)
Subject: Re: Request for letter of support to use courses in our minor...

Follow Up Flag: FollowUp
Flag Status: Flagged

To Whom It May Concern:
I approve of the use of the following course for the proposed minor, Climate Change and Society, and enthusiastically support the minor's creation.
GER 327 Recycling Culture: Environmentalism Made in Germany

All the best, Barbara Kosta

Get Outlook for iOS

From: Koprowski, John L - (5quirre1) <5quirre1@ag.arizona.edu>
Sent: Wednesday, April 1, 2020 4:00:31 PM
To: Kosta, Barbara - (bkosta) <bkosta@arizona.edu>
Cc: Hughes, Katie Marie - (khughes) <khughes@arizona.edu>; Koprowski, John L - (5quirre1) <5quirre1@ag.arizona.edu>
Subject: Request for letter of support to use courses in our minor...

Dear Barbara:

The School of Natural Resources and the Environment is developing a minor in Climate Change and Society and requests to use the following course from your department. These will be among a list of choices so we don't foresee this adding a great burden to your instructors. Please let us know if you approve by providing us with a letter of support (or email) indicating that you approve of the use of these courses. Please feel free to copy and/or edit the text below into your letter as you see fit. Many thanks and let us know if you have any questions!

_____

To Whom It May Concern:

I approve of the use of the following course for the proposed minor, Climate Change and Society, and enthusiastically support the minor's creation.

GER 327 Recycling Culture: Environmentalism Made in Germany

Sincerely,

_____

Sincerely,
John L. Koprowski, Professor and Director
Wildlife Conservation and Management
School of Natural Resources & the Environment

ENR2 N333
1064 E. Lowell Street
PO Box 210137
Tucson, AZ 85721 USA

Email: squirrel@ag.arizona.edu
Phone: +1 (520) 626-5895
Web: www.ag.arizona.edu/research/redsquirrel
Research Gate: https://www.researchgate.net/profile/John Koprowski

From: Meixner, Thomas - (tmeixner)
To: Koprowski, John L - (5quirre1)
Cc: Hughes, Katie Marie - (khughes)
Subject: Re: A modification of course used in the Climate and Society minor...
Date: Thursday, April 23, 2020 12:57:33 PM
Attachments: Need and justification GCEM Minor v1.5.pdf
Proposed GC Minor courses 2-14-20 v2 (1).pdf

John,

I support including these courses in the new minor.

Elliott Cheu sent over the proposal docs to me earlier this morning.

I think, 436A | Fundamentals of the Atmospheric Sciences would fit in the Climate Basics category

Also ENVS 454 Water Harvesting would seem to be appropriate under Susatinable Actions and Solutions

Also it seems like you have avoided tier 1 gen ed course which makes sense. If opinions change about that exclusion ATMO 170 and HWRS 170 both offer a solid intro to earth system processes including human actions and activities.

Thanks,

Tom

From: Koprowski, John L - (5quirre1) <5quirre1@ag.arizona.edu>
Sent: Thursday, April 23, 2020 11:40 AM
To: Meixner, Thomas - (tmeixner) <tmeixner@arizona.edu>
Cc: Koprowski, John L - (5quirre1) <5quirre1@ag.arizona.edu>; Hughes, Katie Marie - (khughes) <khughes@arizona.edu>
Subject: A modification of course used in the Climate and Society minor...

Dear Tom,

I know that you are not getting enough emails and felt the need to send you another...apologies! As you know, The School of Natural Resources and the Environment is developing a minor in Climate Change and Society and requests to use the following course from your department. These will be among a list of choices so we don't foresee this adding a great burden to your instructors. Please let

us know if you approve by providing us with a letter of support (or email) indicating that you approve of the use of these courses that supersedes your previous note of support. Please feel free to copy and/or edit the text below into your letter as you see fit. Many thanks and let us know if you have any questions!

To Whom It May Concern:

I approve of the use of the following course for the proposed minor, Climate Change and Society, and enthusiastically support the minor's creation.

HWRS 201 Water Science and the Environment
ATMO 336 Weather, Climate, and Society
ATMO 421 Physical Climatology

Sincerely,

John L. Koprowski, Professor and Director
Wildlife Conservation and Management
School of Natural Resources & the Environment
ENR2 N333
1064 E. Lowell Street
PO Box 210137
Tucson, AZ 85721 USA

Email: squirrel@ag.arizona.edu
Phone: +1 (520) 626-5895
Web: www.ag.arizona.edu/research/redsquirrel
Research Gate: https://www.researchgate.net/profile/John Koprowski

From: Hughes, Katie Marie - (khughes)
To: Hughes, Katie Marie - (khughes)
Subject: FW: Request for letter of support to use your courses in our minor - Climate Change & Society
Date: Friday, April 10, 2020 11:03:31 AM

From: Futrell, Alison - (afutrell) <afutrell@arizona.edu>
Sent: Wednesday, April 1, 2020 6:47 PM
To: Koprowski, John L - (5quirre1) <5quirre1@ag.arizona.edu>
Cc: Vetter, Jeremy A - (jvetter) <jvetter@arizona.edu>
Subject: Re: Request for letter of support to use your courses in our minor - Climate Change & Society

Dear John:

I certainly do enthusiastically support the creation of this minor!

I am wondering if you're familiar with our other courses that seem potentially relevant, specifically HIST 355: US Environmental History; HIST 356: Global Environmental History and HIST 428: Food, Health and Environment in History. Might any of these fit into your plans?

All best,

Alison

Prof. Alison Futrell
Head
Dept. of History
University of Arizona
She/her/hers

From: Koprowski, John L - (5quirre1) <5quirre1@ag.arizona.edu>
Sent: Wednesday, April 1, 2020 4:25 PM
To: Futrell, Alison - (afutrell) <afutrell@arizona.edu>
Cc: Hughes, Katie Marie - (khughes) <khughes@arizona.edu>; Koprowski, John L - (5quirre1) <5quirre1@ag.arizona.edu>
Subject: Request for letter of support to use your courses in our minor - Climate Change & Society

Futrell, Alison - (afutrell) <afutrell@arizona.edu>

Dear Alison,

As you know, the School of Natural Resources and the Environment is developing a minor in Climate Change and Society and requests to use the following course from your department. These will be among a list of choices so we don't foresee this adding a great burden to your instructors. Please let us know if you approve by providing us with a letter of support (or email) indicating that you approve of the use of these courses. Please feel free to copy and/or edit the text below into your letter as you see fit. Many thanks and let us know if you have any questions!

_____

To Whom It May Concern:

I approve of the use of the following course for the proposed minor, Climate Change and Society, and enthusiastically support the minor's creation.

HIST 247 Nature and Technology in U. S. History

Sincerely,

_____

Sincerely,

John L. Koprowski, Professor and Director

Wildlife Conservation and Management

School of Natural Resources & the Environment

ENR2 N333

1064 E. Lowell Street

PO Box 210137

Tucson, AZ 85721 USA

Email: squirrel@ag.arizona.edu

Phone: +1 (520) 626-5895

Web: www.ag.arizona.edu/research/redsquirrel

Research Gate: https://www.researchgate.net/profile/John Koprowski

JAMES E. ROGERS COLLEGE OF LAW
1201 E. Speedway Blvd.
PO Box 210176
Tucson AZ 85721-0176

OFFICE OF THE DEAN

Ofc: 520-621-1498

law.arizona.edu

THE UNIVERSITY OF ARIZONA
James E. Rogers College of Law

April 9, 2020

John L. Koprowski, Professor and Director
Wildlife Conservation and Management
School of Natural Resources & the Environment

Re: Support for Inclusion of Courses in Proposed Minor in Climate Change and Society

Dear John,

The College of Law approves the use of the following courses for the proposed minor, Climate Change and Society, and enthusiastically supports the minor's creation:

LAW 454 Environmental Law and Policy
LAW 459 Public International Environmental Law

Sincerely,

Marc L. Miller
Dean and Ralph W. Bilby Professor of Law

THE UNIVERSITY OF ARIZONA
COLLEGE OF ENGINEERING
Department of Mining and Geological Engineering

Lowell Institute for Mineral Resources

1235 E James E. Rogers Way
P.O. Box 210012
Tucson / AZ / 85721-0012
(P) 520.621.6063
(F) 520.621.8330
http://mge.arizona.edu
http://minerals.arizona.edu

Wednesday April 1, 2020

To Whom It May Concern:

I approve of the use of the following course for the proposed minor, Climate Change and Society, and enthusiastically support the minor's creation.

MNE 201 - Nonrenewable Resources and Human Civilizations

Sincerely,

Moe Momayez, PhD
Interim Department Head
moe.momayez@arizona.edu
520-621-6580

THE UNIVERSITY OF ARIZONA
Department of Philosophy
PO Box 210027
Tucson AZ 85721-0027
Tel: (520) 621-3129 Fax: (520) 621-9559

March 30 2020

To Whom It May Concern:

I approve of the use of the following course for the proposed minor, Climate Change and Society, and enthusiastically support the minor's creation.

PHIL 323 Environmental Ethics
PHIL 419 The Ethics & Economics of Environmental Policy

Sincerely,

Jason Turner
Professor and Head, Department of Philosophy
The University of Arizona

THE UNIVERSITY OF ARIZONA
College of Architecture, Planning & Landscape Architecture

SCHOOL OF LANDSCAPE ARCHITECTURE AND PLANNING

1040 N Olive Rd.
PO Box 210075
Tucson, AZ 85721-0075

Ofc: 520-621-1004
Fax: 520-621-8700

capla.arizona.edu

April 2, 2020

To Whom It May Concern:

I approve of the use of the following courses for the proposed School of Natural Resources and the Environment minor, Climate Change and Society, and enthusiastically support the creation of the minor.

- PLG 202 Cities of the World: An International City Planning Perspective
- PLG 256 Sustainable Cities and Societies
- PLG 408 Planning for Urban Resilience
- PLG 497S Sustainable Urban Development and Design

Sincerely,

Lauri Macmillan Johnson
Director and Professor

THE UNIVERSITY OF ARIZONA

DEPARTMENT OF RUSSIAN AND SLAVIC STUDIES
Learning Services Building
Room 305
1512 E. 1st Street
P.O. Box 210105
Tucson, AZ 85721-0105

russian.arizona.edu

April 2, 2020

To Whom It May Concern:

I approve of the use of the following course for the proposed minor, Climate Change and Society, and support the minor's creation.

RSSS 305 Russian and American Foodways: Cultivation, Culture, and Connectedness

Sincerely,

John Leafgren
Head, Department of Russian and Slavic Studies
305 Learning Services Building
University of Arizona
Tucson, AZ 85721

520-621-5825 leafgren@email.arizona.edu

THE UNIVERSITY OF ARIZONA

School of Journalism
College of Social and Behavioral Sciences
Marshall Building Room 334
http://journalism.arizona.edu/

845 N Park Ave.
P.O. Box 210158B
Tucson, AZ 85721-0158
(520) 621-7556

April 6, 2020

Dear Dr. Koprowski:

The School of Journalism supports the use of our courses in your new Minor in Climate Change and Society. We are so pleased to be a part of this minor. We look forward to working with you and wish you great success. So long as seats are available, we agree to give regular access to the courses listed below to students in the Minor in Climate Change and Society:

- JOUR 455 Environmental Journalism
- JOUR 465 Issues in Covering Science and the Environment

There is no conflict with School of Journalism programs, and there are certainly opportunities for synergy moving forward. We are eager to welcome your students into our relevant courses.

If I can be of any assistance to you with this minor, please do not hesitate to contact me. The School of Journalism looks forward to our collaboration.

With best wishes,

Carol B. Schwalbe

Carol B. Schwalbe
Professor | Director
School of Journalism
University of Arizona

520.300.0693
cschwalbe@email.arizona.edu

THE UNIVERSITY OF ARIZONA
COLLEGE OF SOCIAL & BEHAVIORAL SCIENCES
School of Geography & Development

ENR2 Building
Tucson, AZ 85721-0137
Tel: (520) 621-1652
Fax: (520) 621-2889

April 2nd 2020

To whom it may concern

The School of Geography and Development is pleased to be asked to participate in the new proposed minor in Climate Change and Society. I have consulted with faculty who teach the courses below and they are happy to receive students in the minor.

I specifically approve of the use of the following courses offered through the School of Geography and Development for the minor Climate Change and Society.

EVS 374 Geography, Social Justice and the Environment
EVS 363 Climate Change: Human Causes, Social Consequences and Sustainable Responses
EVS 462 Environmental Law, Geography and Society
EVS 445 Geographies of International Environmental Governance
GEOG 230 Our Changing Climate
GEOG 260 Environmental Studies: Ideas and Institutions
GEOG 302 Introduction to Sustainable Development
GEOG 404 Politics of Nature
GEOG 430 The Climate System

Sincerely,

Shana Liverman

Regents Professor of Geography and Development, University of Arizona

COLLEGE OF SOCIAL AND BEHAVIORAL SCIENCES
School of Government and Public Policy

School of Government & Public Policy
315 Social Science
P.O. Box 210027
Tucson, AZ 85721-0027
Tel: (520) 621-7600
Fax: (520) 621-5051
http://sgpp.arizona.edu

April 2, 2020

To Whom It May Concern:

I approve of the use of the following course for the proposed minor, Climate Change and Society, and enthusiastically support the minor's creation.

PA 461 Global Climate Change: Integrating Science, Policy, and Decision Making

Sincerely,

Edella Schlager
Professor & Director

THE UNIVERSITY OF ARIZONA

BUDGET PROJECTION FORM

Name of Proposed Program or Unit: School of Natural Resources & the Environment

Budget Contact Person: Bethina Krogsgaard

	Projected		
	1st Year 2020__ - 2021	**2nd Year** 2021___ - 2022	**3rd Year** 20 ___ - 20 ___
METRICS			
Net increase in annual college enrollment UG	10	20	30
Net increase in college SCH UG	41	82	123
Net increase in annual college enrollment Grad	-	-	-
Net increase in college SCH Grad	-	-	-
Number of enrollments being charged a Program Fee	-	-	-
New Sponsored Activity (MTDC)	-	-	-
Number of Faculty FTE			
FUNDING SOURCES			
Continuing Sources			
UG RCM Revenue (net of cost allocation)	7,626	15,252	22,878
Grad RCM Revenue (net of cost allocation)			
Program Fee RCM Revenue (net of cost allocation)			
F and A Revenues (net of cost allocations)			
UA Online Revenues			
Distance Learning Revenues			
Reallocation from existing College funds (attach description)			
Other Items (attach description)			
Total Continuing	**$ 7,626**	**$ 15,252**	**$ 22,878**
One-time Sources			
College fund balances			
Institutional Strategic Investment			
Gift Funding			
Other Items (attach description)			
Total One-time	**$ -**	**$ -**	**$ -**
TOTAL SOURCES	**$ 7,626**	**$ 15,252**	**$ 22,878**
EXPENDITURE ITEMS			
Continuing Expenditures			
Faculty			
Other Personnel			
Employee Related Expense			
Graduate Assistantships			
Other Graduate Aid			
Operations (materials, supplies, phones, etc.)			
Additional Space Cost			
Other Items (attach description)			
Total Continuing	**$ -**	**$ -**	**$ -**
One-time Expenditures			
Construction or Renovation			
Start-up Equipment			
Replace Equipment			
Library Resources			
Other Items (attach description)			
Total One-time	**$ -**	**$ -**	**$ -**
TOTAL EXPENDITURES	**$ -**	**$ -**	**$ -**
Net Projected Fiscal Effect	**$ 7,626**	**$ 15,252**	**$ 22,878**

Undergraduate Minor Peer Comparison Chart- Select two peers for completing the comparison chart from (in order of priority) ABOR-approved institutions, AAU members, and/or other relevant institutions recognized in the field. The comparison chart will be used to identify typically required coursework, themes, and experiences for minor programs within the discipline. The comparison programs are not required to have the same minor name as the proposed UA program. Information for the proposed UA program must be consistent throughout the proposal documents. Delete EXAMPLE columns once ready to submit/upload.

Minor name, institution	**Proposed UA Program: Climate Change: Science and Solutions**	**Peer 1: Climate Change Studies, University of Montana**	**Peer 2: Climate Change Studies, University of California, San Diego**
Current# of enrolled students		70	27
Minor program description	People, animals, plants, and all living organisms are being impacted by long-term changes in temperatures and ecosystems around the world. This global change is an increasingly dominant fact of life for all human and natural systems, and we can see the impacts all around us. In many parts of the world, governments and organizations have already been forced to adapt to ensure basic services that are essential for human civilization--including water, food, clean air, livable climate, renewable resources, and natural areas—will continue to be available for their communities. Climate change is also creating unprecedented new opportunities for innovation and economic growth; the jobs of the future are already aligning with solving the tremendous reorganization of the global economy driven by this global change. College students today will live their entire personal and professional lives in a world that is being shaped by these rapidly-changing forces; there is no part of our world that will not be touched by global change. The Minor in Climate Change and Society is designed to supplement the career interests of students in any field who want to understand how global change will affect their professional and personal lives and adapt to new emerging career opportunities. The CCS Minor curriculum ensures basic competency in three primary areas, taking advantage of UArizona's expert faculty. First, students will have the opportunity to understand the physical and natural realities of global change, including what is driving these changes and how they are being manifested in today's world. The component of the Minor is designed to enable students, as current and future citizens, to distinguish fact from fiction, and learn important skills in critical thinking about important global issues. Second, the Minor will examine how societies are adapting to address these challenges, both	https://www.cfc.umt.edu/ccs/about/default.php The University of Montana offers the nation's first interdisciplinary, undergraduate degree program in climate change. The minor in Climate Change Studies (CCS) combines rigorous training in sciences with coursework in ethics and policy to offer students a unique, multidisciplinary understanding of climate change. The CCS minor provides students opportunity to become informed and engaged on the issue — from multi-disciplinary coursework, to field studies, to study abroad and service learning opportunities. "The climate change topic is rapidly evolving from only an earth science issue to a technological, economic and sociological issue. We have designed a broad interdisciplinary curriculum to reflect this expanding focus." Dr. Steve Running, Climate Change Studies Program Director, and a lead author on the Nobel Prize winning Intergovernmental Panel on Climate Change The CCS minor educates students in three areas of the climate change issue: science, society, and solutions. Coursework in the minor provides a foundation that enables students to engage the scientific, societal and political dimensions of global climate change. Further, the focus on solutions with its orientation toward applied learning helps students develop critical thinking and problem solving skills. The Climate Change Studies Program is a joint program with the Davidson Honors College, College of Forestry and Conservation, College of Humanities and Sciences, and Missoula College's Energy Technology Program that draws on the expertise of faculty across the university and includes students from more than 20 majors.	https://scripps.ucsd.edu/undergrad/curriculum/climate-change-studies-minor Climate change is the most serious challenge of our lifetimes, posing serious risks to economic and social structures on local, national and global scales. This interdisciplinary minor curriculum highlights UC San Diego's broad campus expertise in understanding and responding to the challenges of climate change. The minor covers an understanding of the scientific, social, political and economic dimensions of climate change, and involves students in developing solutions such as greenhouse gas mitigation strategies, climate adaptation projects and educational approaches. The curriculum provides connections with any primary field of study and is open to students from any major. The minor places a strong emphasis on interdisciplinary solution-based thinking, a skill which is relevant to solving many 21st century problems. A hallmark of the climate change studies minor is the practicum requirement, in which students learn about carbon neutrality initiatives and climate change research on campus (e.g. CCS101 and 102), and then complete an applied project relevant to their major or interests in CCS 190 or CCS 199. The Minor consists of twenty-eight units of coursework, at least twenty of which must be upper-division. Students must earn at least a letter grade of C- in courses used for the minor, with the exception of 199 courses or other courses that are only offered for a "P/NP" grade.

Target careers	Will be highly variable and based on students' chosen career field.	Sustainability coordinators or educators; incorporation of climate lens in chosen career or graduate field of study; highly variable as students in the minor represent 20-25 majors on campus.	NA
Minimum total units required	21	21	28 units (quarter system)
Minimum upper-division units required	12	NA	20
Total transfer units that may apply to minor	6	NA	NA
List any special requirements to declare/admission to this minor (completion of specific coursework, minimum GPA, interview, application, etc.)	Meeting with minor advisor to go over the requirements	Meeting with minor program coordinator to go over the requirements and discuss interests and degree plans	NA
	All courses are 3 units except those marked with an * which are 4 units Introductory course RNR 101 Global Sustainability and Natural Resources Area Study: Choose a minimum of 6 units from each of the following areas Climate Basics (please choose a minimum of one course at the 300-400 level) ATMO 336 Weather, Climate and Society ATMO 421 Physical Climatology ENVS 210 Fundamentals of Environmental Sustainability ENVS 410 Microbial Biogeochemistry and Global Change GEOG 230 Our Changing Climate GEOG 430 The Climate System GEOS 212 Intro to Oceanography GEOS 220 Environmental History of the Southwest GEOS 342 History of Earth's Climate GEOS 412 Ocean Sciences GEOS 478 Global Change HWRS 201 Water Science and the Environment RNR 458 Ecosystem Ecology and a Sustainable Future RNR 429 Ecological Climatology	Introductory Course Introduction to Climate Change: Science and Society, CCS 103X, 3 cr, Fall semester This is an introductory and foundational course on the scientific and social dimensions of global climate change. The course provides students with a breadth of knowledge that builds connections across the scientific, social, political, and technological dimensions of this complex global issue. This course counts for General Education credit in the "X" perspective. It is open to all students and required for the Climate Change Studies minor. There is also a section for Honors students. Climate Change Science (natural and physical sciences) The climate change science area introduces students to the basic processes by which the biosphere, atmosphere, hydrosphere, lithosphere, and cryosphere interact to produce and respond to climatic change. Students choose any six credits from the following courses: Science of Climate Change: NRSM 281, 3 cr., Fall Weather and Climate: ERTH 303N, 3 cr.,	Climate Change: Solutions a. Required Course. Students choose one of the following courses: SIO 109/POLI 117. Bending the Curve: Solutions to Climate Change (recommended) ESYS 103/MAE 124. Environmental Challenges: Science and Solutions BIBC 140. Our Energy Future—Sustainable Energy Solutions 2. Climate Change: Understanding the Science a. Required Course. Students choose one of the following two courses: SIO 25. Climate Change and Society SIO 117. The Physical Basis of Global Warming (recommended for students in science, math or engineering majors) b. Climate change science elective. Students select at least one of the following electives: SIO 10. The Earth SIO 20. The Atmosphere SIO 35. Water

Minor requirements. List all minor requirements including core and electives. Courses listed must include course prefix, number, units, and title. Mark new coursework (New). Include any limits/restrictions needed (house number limit, etc.). Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.	*WSM 452 Dryland Ecohydrology and Vegetation Dynamics Social Perspectives AIS 403 Globalization and Indigenous People ASTR 208 Energy, Society, and the Environment ENVS 310 Ecosystem Health and Justice EVS 260 Environmental Studies: Ideas and Institutions EVS 374 Geography, Social Justice and the Environment EVS 462 Environmental Law, Geography and Society GEOG 302 Introduction to Sustainable Development GEOG 404 Politics of Nature GER 327 Recycling Culture: Environmentalism Made in Germany HIST 247 Nature and Technology in U. S. History LAW 454 Environmental Law MNE/ANTH 201 Nonrenewable Resources and Human Civilizations PHIL/PA 323 Environmental Ethics PLG 256 Sustainable Cities and Societies RSSS 305 Russian and American Foodways: Cultivation, Culture, and Connectedness Sustainable Actions and Solutions AREC 360 The Poverty and Development of Nations EVS 363 Climate Change: Human Causes, Social Consequences and Sustainable Responses EVS 445 Geographies of International Environmental Governance JOUR 455 Environmental Journalism JOUR 465 Issues in covering Science and the Environment PHIL/LAW 419 The Ethics & Economics of Environmental Policy (in approval process) LAW 459 Public International Environmental Law PA 461 Global Climate Change: Integrating Science, Policy, and Decision Making PLG 408 Planning for Urban Resilience PLG 497S Sustainable Urban Development and Design RCSC 480 Sustainable Consumption & Retailing RNR 440 Climate Change Adaptation: Perspectives at the Nexus of Science, Society, & Resource Management RNR 496G Climate Assessment: Explorations in Decision Support XXX 493 Internship XXX 494 Practicum XXX 499 Independent Study •A minimum of 12 upper division units is required for the minor •Double dipping of two Tier 2 general education requirements is permitted with the minor •A minimum of 6 units must be unique to the minor	Spring, online course (not offered in 2020) Global Cycles and Climate: NRSM 408 (UG), 3 cr., Spring even years Ecosystem Climatology: NRSM 418 (UG), 3 cr., Spring odd years Seminar in Paleoclimatology: GPHY 525, 3 cr., Fall intermittent *Open to seniors Climate Change and Society (social sciences and humanities) The climate change and society area provides students with the opportunity to evaluate the social, political, economic, and ethical dimensions of climate change at the local, national, and international levels. Students choose any six credits from the following courses: Intro to Ethics and the Environment;Honors: PHIL 112E, 80, 3 cr., Fall (not offered in 2020) Climate Change Ethics & Policy: NRSM 349E, 3 cr., Fall Communication, Consumption, & Climate: COMX 349, 3 cr., Spring Public Policy Cycle and the Climate: PSCI 468, 3 cr., TBA Climate & Society, NRSM 426, 3 cr., Fall odd years International Environmental Economics & Climate Change: ECNS 445 (UG), 3 cr. (Prereq., ECNS 201S), Spring 2019, then intermittent Society, Economy and Environment of the Mekong Delta: ENST 427/514,3 cr., May course in Vietnam (part of a 6-credit course), co-convenes with ENST 437/516 Climate Change Solutions (practical application) The climate change solutions area creates opportunities for students to study and engage in solutions to global climate change. Course options range from studies of clean energy technology and sustainable business to internships and other applied coursework that engages students in solutions to climate change. Students choose six credits from the following courses, with at least one course taken in category A, which requires practical application: Category A Climate Change Internship/Service Learning: CCS 398, 2-4 cr., Spring, arrange Climate Change Practicum:CCS 395, 2-4 cr., Spring or fall, arrange Environmental Citizenship/Service Learning: ENST 476, 3 cr., Spring (not offered in 2020) Category B Issues in Sustainability: BGEN 160S, 3 cr., Fall (class), Spring (online) ST: Energy and Climate/Honors: ENST 391.80, 3 cr., Spring 2020 Sustainable Cities: GPHY 421, 3 cr., Spring even years Sustainable Business Practices: BMGT 410, 3 cr., Fall Sustainability Reporting: BGEN 445, 3 cr., Spring Climate Change Effects and Adaptation in the Mekong Delta:ENST 427/514, 3 cr., May course in Vietnam (part of a 6-credit course), co-convenes with ENST 437/516 Cycle the Rockies: Energy and Climate Change in Montana: NRSM 321, 3 cr and ENST 311, 3cr, Summer	SIO 40. Life and Climate on Earth SIO 50. Introduction to Earth and Environmental Sciences BILD 18. Human Impact on the Environment ESYS 10. Introduction to Environmental Systems ENVR 30. Environmental Issues: Natural Sciences BIBC 140. Our Energy Future—Sustainable Energy Solutions (if not already used for requirement 1.a. above) BIEB 174. Ecosystems and Global Change BIEB 182. Biology of Global Change CHEM 171. Environmental Chemistry I CHEM 172. Environmental Chemistry II CHEM 173. Atmospheric Chemistry ESYS 102. The Solid and Fluid Earth ESYS 103/MAE 124. Environmental Challenges: Science and Solutions (if not already used for requirement 1.a., above) MAE 118. Introduction to Energy Systems MAE 119. Introduction to Renewable Energy: Solar and Wind MAE 120. Introduction to Nuclear Energy MAE 122. Flow and Transport in the Environment SIO 108. Introduction to Paleoclimatology SIO 115. Ice and the Climate System SIO 116. Climate Change & Global Health: Understanding the Mechanisms SIO 117. The Physical Basis of Global Warming (if not already used for requirement 2.a., above) SIO 143. Ocean Acidification SIO164/ANAR 164. Maritime Archeology SIO 173. Dynamics of the Atmosphere and Climate SIO 174. Chemistry of the Atmosphere and Oceans 3. Climate Change: Social and Human Dimensions Social and human dimension electives. Students must choose two of the following courses: SOCI 30. Science, Technology, and Society COMM 171. Environmental Communication ECON 131. Environmental Economics ECON 132. Energy Economics ETHN 102. Science and Technology in Society: Race/Gender/Class ETHN 103. Environmental Racism HISC 180. Science and Public Policy MGT 166. Business Ethics and Corporate Responsibility MGT 167. Social Entrepreneurship PHIL 148. Philosophy and the Environment POLI 102L. The Politics of Regulation POLI 104E. Environmental Law and Policy POLI 104P. Science, Technology, and the Law POLI 162. Environmental Policy PSYC 104. Social Psychology PSYC 137. Social Cognition PSYC 148. Psychology of Judgement and Decision SIO 109/POLI 117. Bending the Curve: Solutions to Climate Change (if not already used for requirement 1.a., above) SIO 114. The Science and Analysis of Environmental Justice

			Environmental Justice SOCI 149. Sociology of the Environment SOCI 168E. Sociology of Science SOCI 171. Technology and Science USP 124. Land Use Planning USP 170. Sustainable Planning USP 171. Sustainable Development ANTH 109. Climate Change, Cultural Heritage, and Vulnerability (currently accepted by petition) 4. Climate Change: Practicum a. Required Courses: students take both of the following 2-unit courses. CCS 101. Carbon Neutrality at University of California (2 units) tentatively scheduled for Winter 2020 CCS 102. Research Perspectives on Climate Change (2 units) offered Fall 2019 b. Climate change practicum electives. Students select at least 4 units from the following options*.
Internship, practicum, applied course requirements (Yes/No). If yes, provide description.	Internship, independent study, or practicum is not required, but is an option in the soluctions section. Must be pre-approved by faculty.	Required internship, practicum, or service learning project is required as part of Climate Change Solutions: Category A.	Required Practicum consisting of an internship, independent study or research.
Additional requirements (provide description)	NA	NA	NA

*Note: comparison of additional relevant programs may be requested.