The Integrated Coastal Sciences PhD Program at ECU

coastal.ecu.edu/coastalstudies/integrated-coastal-sciences/

Presented to the CSI Board of Directors

November 12, 2021

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History and Background

- ECU's flagship interdisciplinary PhD program (*Coastal Resources Management PhD*), began in 1999
- Standing stock of ~20-25 full-time students annually
- ~ 40 core faculty from Anthropology, Biology, Engineering, Geology, Geography, Maritime Studies, Recreation Sciences, Sociology
- Underwent a name change in 2018 (*Integrated Coastal Sciences PhD)* and transition into Department of Coastal Studies, Integrated Coastal Programs

Integrated Coastal Sciences PhD Curriculum

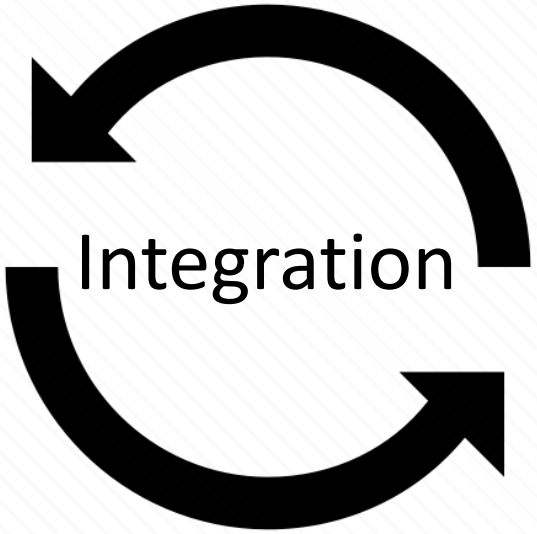
Coastal Natural Sciences & Engineering

Coastal Health & Social Sciences

Ecology

Geosciences

Engineering

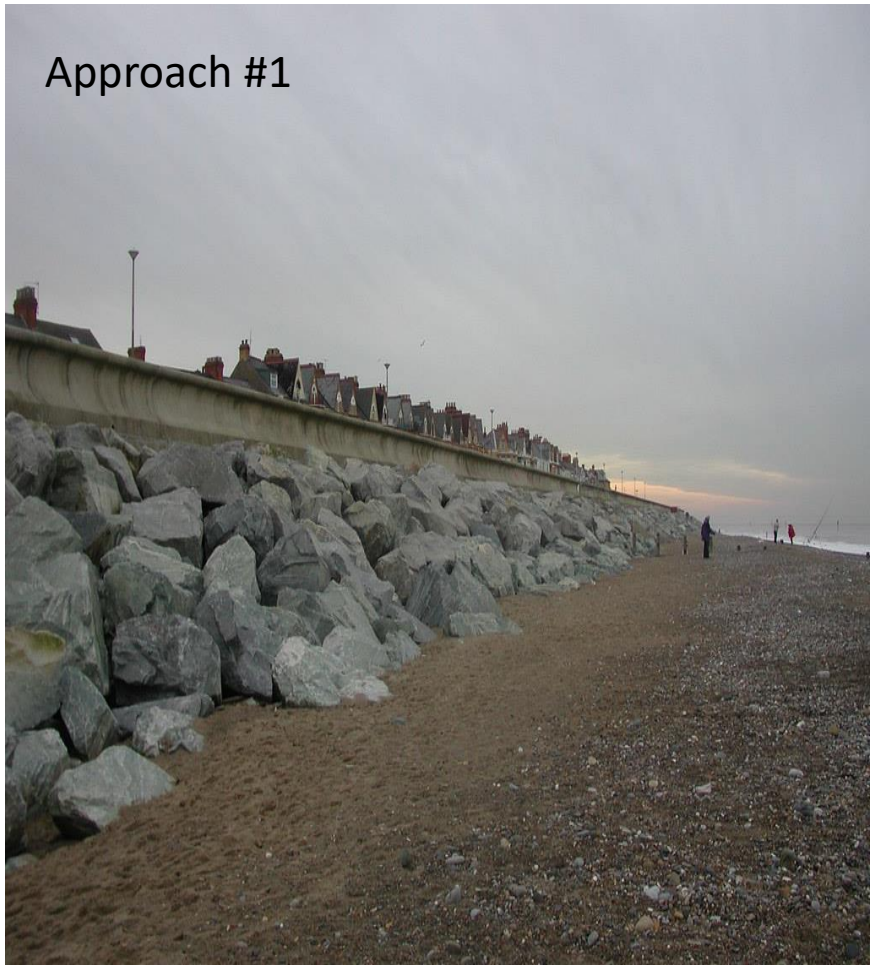


Economics

Human Dimensions

Health

Shoreline Erosion Control



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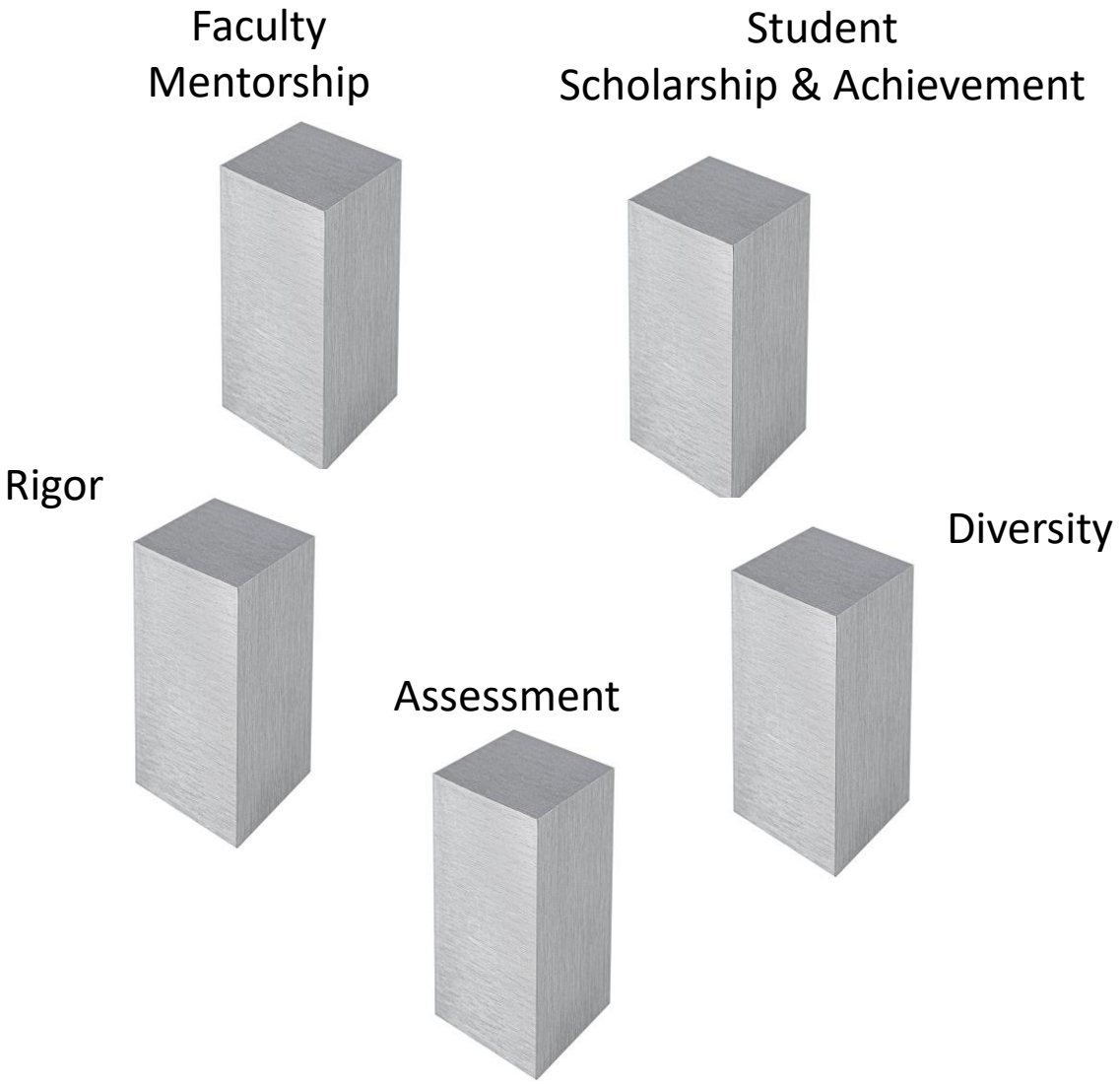
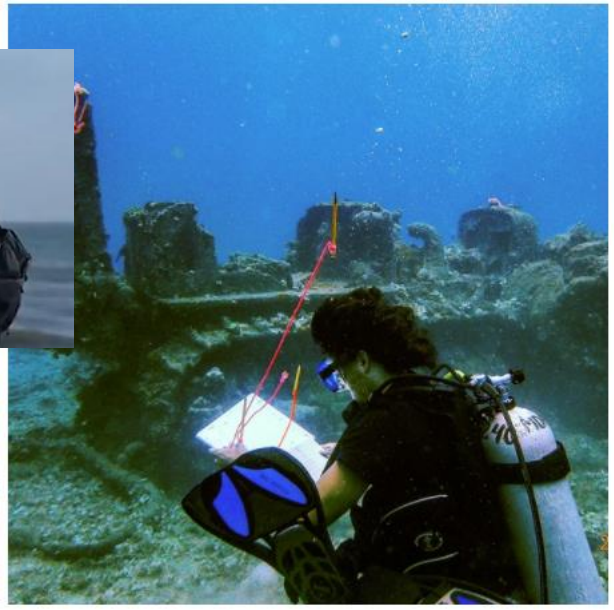
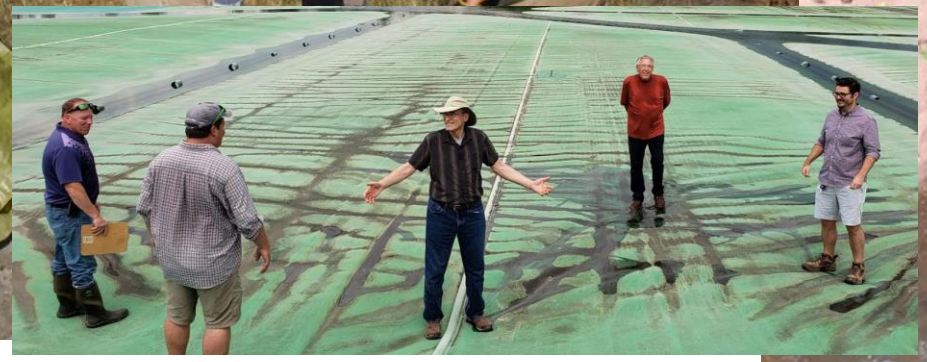
Pillars of a Successful PhD Program



Faculty Mentorship





Student Scholarship and Achievement

- Numerous regional and national recognition including
  - Knauss Fellowship
  - Science Ambassador Scholarship
  - Coastal Zone Outstanding Presentation Award

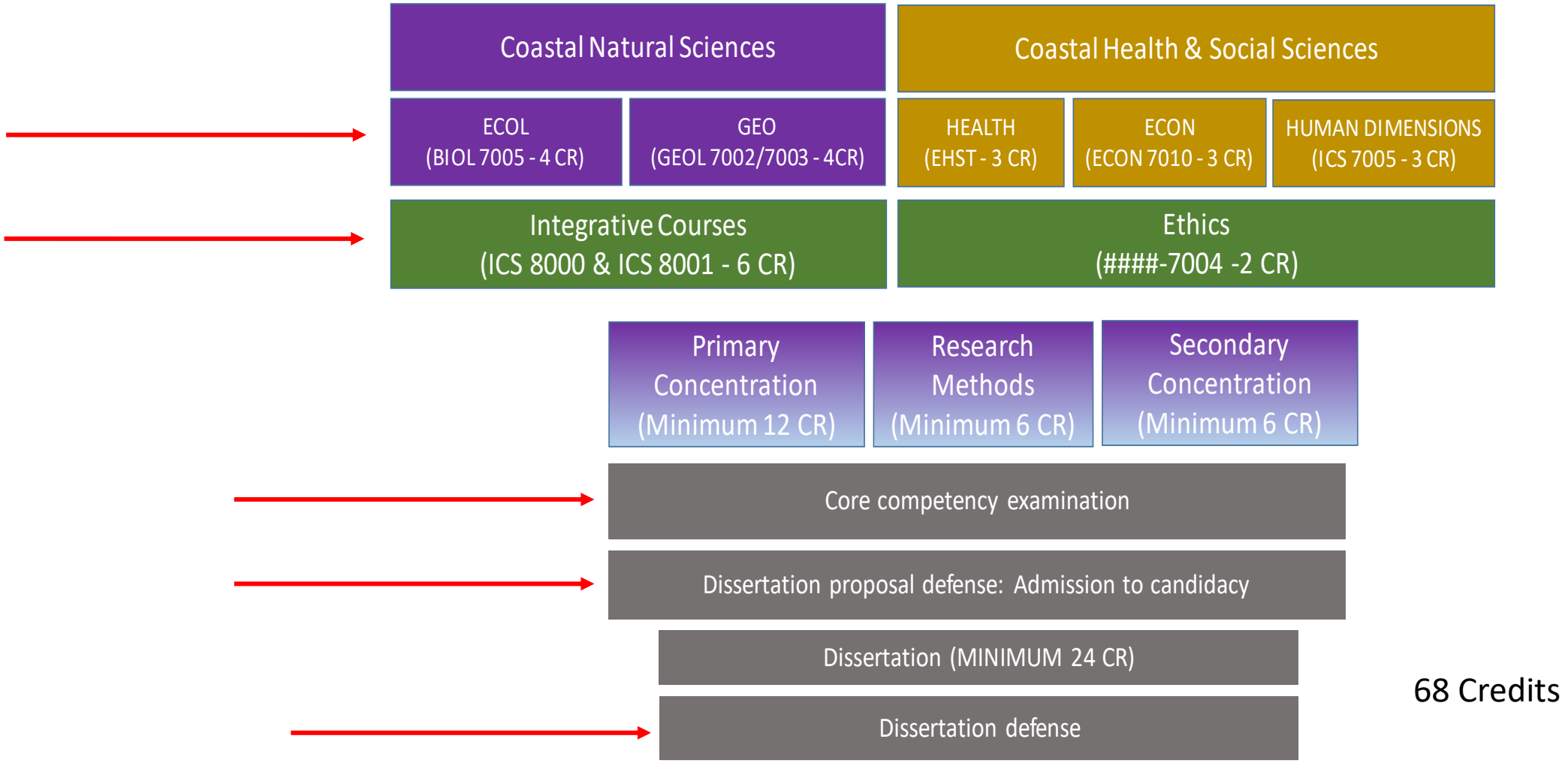
Dr. Susan Lovelace
(alum)
Assistant Director
Development and Extension
SC Sea Grant

- Highly Active in publishing, presenting and engagement activities

soundrivers.org

Assessment

Integrated Coastal Sciences PhD Curriculum Map



68 Credits

Assessment (Proposal/Dissertation Writing)

Evaluation of Dissertation and Dissertation Proposals
Student Name: _____
Dissertation Title: _____

Is the dissertation or the dissertation proposal acceptable: _____ points

- As submitted (100 points)
- After minor typographical and stylistic corrections (90 points)
- After minor substantive changes (80 points)
- After substantial revisions (70 points)
- Not acceptable (60 point)

Please qualify the rating above by providing written specific scores under each category in the fields below.

1) Original Coastal Research - is the student's dissertation research innovative and timely? If not, please specify how the dissertation or proposed research could demonstrate more innovation and timeliness?

_____ out of 20

Comments:

2) Thematic Knowledge - Has the student demonstrated an adequate basic knowledge of coastal natural and social sciences? If not, please specify knowledge that the student is lacking in areas of coastal natural or social sciences.

_____out of 20

Comments:

3) Interdisciplinary Knowledge - does the dissertation address interdisciplinary thinking bridging natural and social sciences across a coastal or marine resource? If not, please specify how the student could improve the interdisciplinary nature of their research.

_____ out of 20

Comments:

4) Quantitative Skills Mastery – has the student conducted research that demonstrates knowledge and mastery of quantitative skills appropriate for their ICS/CRM concentration area (e.g. GEO, BIO, ECON, Human Dimensions)? If not, please specify how the person could improve their quantitative skills.

_____ out of 20

Comments:

5) Quality of Writing – Is the writing lucid and well-organized? If not, please specific how the person can improve their writing.

_____ out of 20

Assessment (Proposal/Defense Oral Presentation)

Duration of speech: _____

Overall grade / score: _____ / 100 possible

Place points earned under each category (i.e. I – V). Place a + or -, and provide comments in each subcategory based on the student's performance.

I. Organization (25 points possible) Points given:_____

1. Clear and compelling attention-getter used:_____
2. Thesis statement clear: _____
3. Shows audience relevance of topic:_____
4. Clearly states credibility:_____
5. Preview statement clearly sets up speech body effectively:_____
6. Pattern of organization is distinct and easily recognizable:_____
7. Pattern of organization is appropriate to topic, purpose, occasion & audience:_____
8. Uses strong transitions, internal previews & internal summaries:_____
9. Restates main points in conclusion:_____
10: Closes with impact:_____

Comments:

II. Content (25 points possible) Points given:_____

1. Main points clearly identified:_____
2. Main points show only one idea: _____
3. Main points are balanced:_____
4. Uses correct number of sources:_____
5. Cites sources throughout speech:_____

III. Delivery (30 points possible) Points given:_____

1. Engaging eye contact:_____
2. Clear articulation and correct pronunciation: _____
3. No "ahs," "uhms," "uhs," or other vocal interrupters:_____
4. Uses vocal variety and intensity:_____
5. Uses appropriate can culturally sensitive language:_____
6. No profanity or other offensive language used:_____
7. Uses appropriate facial expressions:_____
8. Uses written prompts (on-screen text, note cards, etc.) in extemporaneous style:_____
9. Uses the pause effectively:_____
10: Rate is appropriately monitored:_____

Comments:

IV. Visual aids (10 points possible) Points given:_____

1. Visual aid design:_____
2. Visual aid use during speech: _____

Comments:

V. Outline (10 points possible) Points given:_____

Rigor

Case study: Along Hatteras Island lies one of North Carolina's most vulnerable roads. Highway 12, which has connected generations of communities on the Outer Banks to the mainland, is exposed to natural barrier island processes such as overwash and inlet formation during hurricanes. Inlets support marsh establishment and fisheries, and provide flood protection by allowing water from terrestrial floods to drain to the Atlantic Ocean. However, taxpayers have spent over $30 million since the 1990's repairing damage to NC 12 and slowing natural inlet formation, in order to preserve access and local livelihoods. As sea level continues to rise along the NC coast, inlet formation on Hatteras Island will become more commonplace.

Develop a framework that a) presents the economic, ecological, social and geologic dimensions of this issue, and b) propose an integrated research question that would allow you to evaluate the economic, social, and environmental tradeoffs associated with maintaining NC 12 in the 21st century. Please consider the following in your answer:

1. Expand on the description above by describing the background/broader context of continuing to rebuild NC 12, drawing on material from the four core courses. To receive full credit, you must give equal treatment to each disciplinary perspective.
2. Describe how each of the components interact and how a change to one part of the system may impact other components or overall system functioning; you may include a causal loop diagram, systems map, stocks-and-flows diagram, etc. that shows positive and negative feedbacks within the system.
3. Outline a research approach for understanding feedbacks within this system that includes:
   a. An integrated research question
   b. Methods/Approach: identify the necessary disciplines or subdisciplines you would draw on to address your research question, including descriptions of any theories or theoretical frameworks that relate to the issue; describe the necessary data types and method of acquisition (primary or secondary) and where would you find/how would you collect the data; describe the analytical methods/analyses you would need to perform, and describe what approach you would use to integrate your data
   c. Describe the challenges you anticipate with integrating these data
   d. Describe who would be interested in your results and for what purpose

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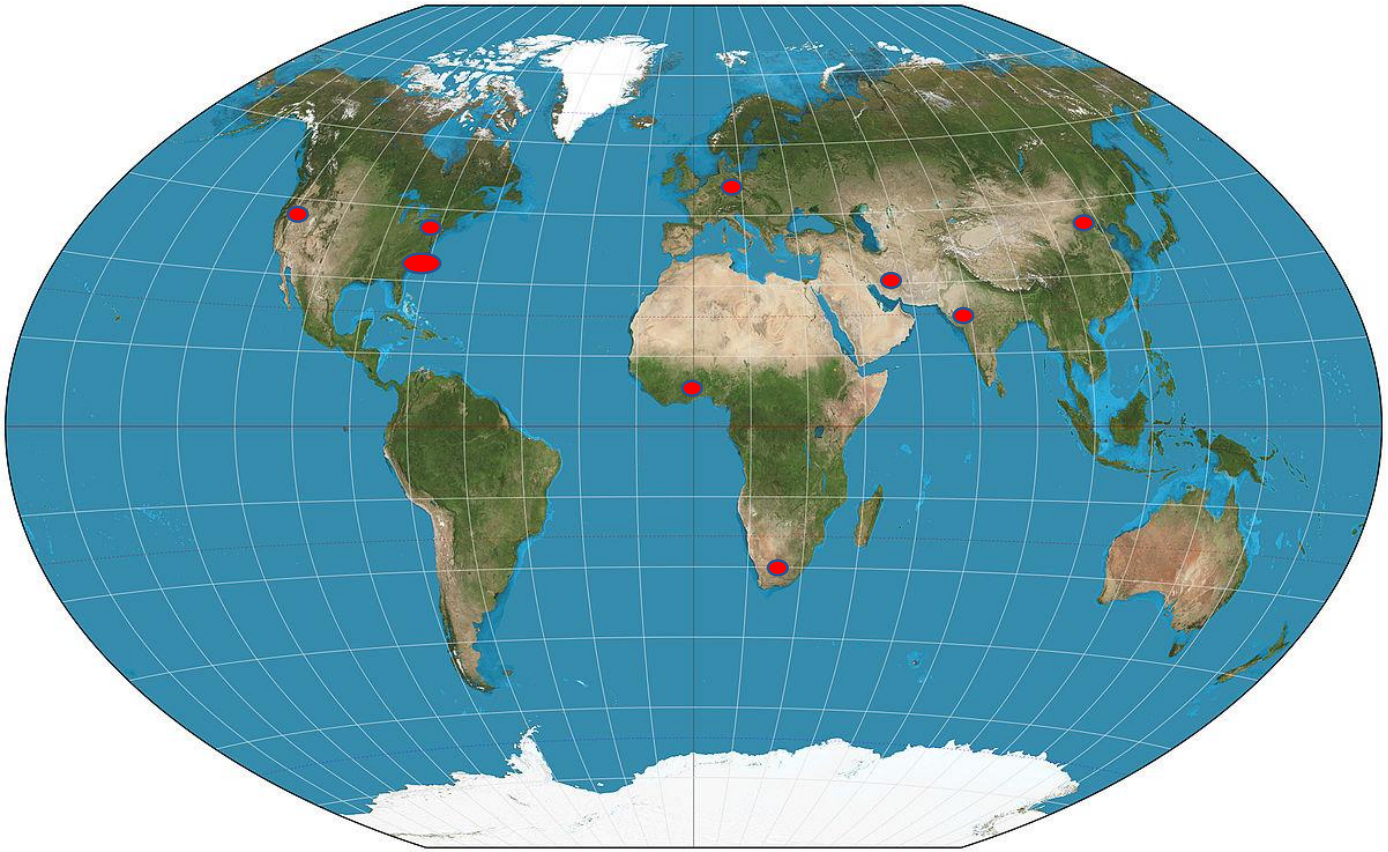
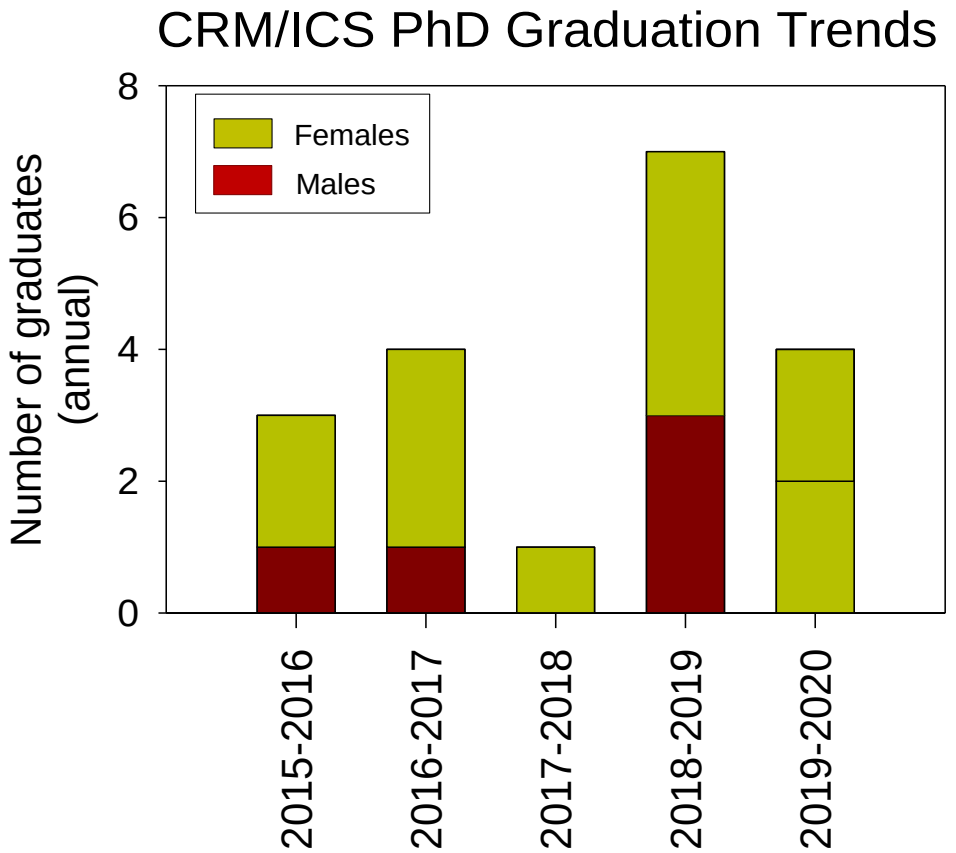
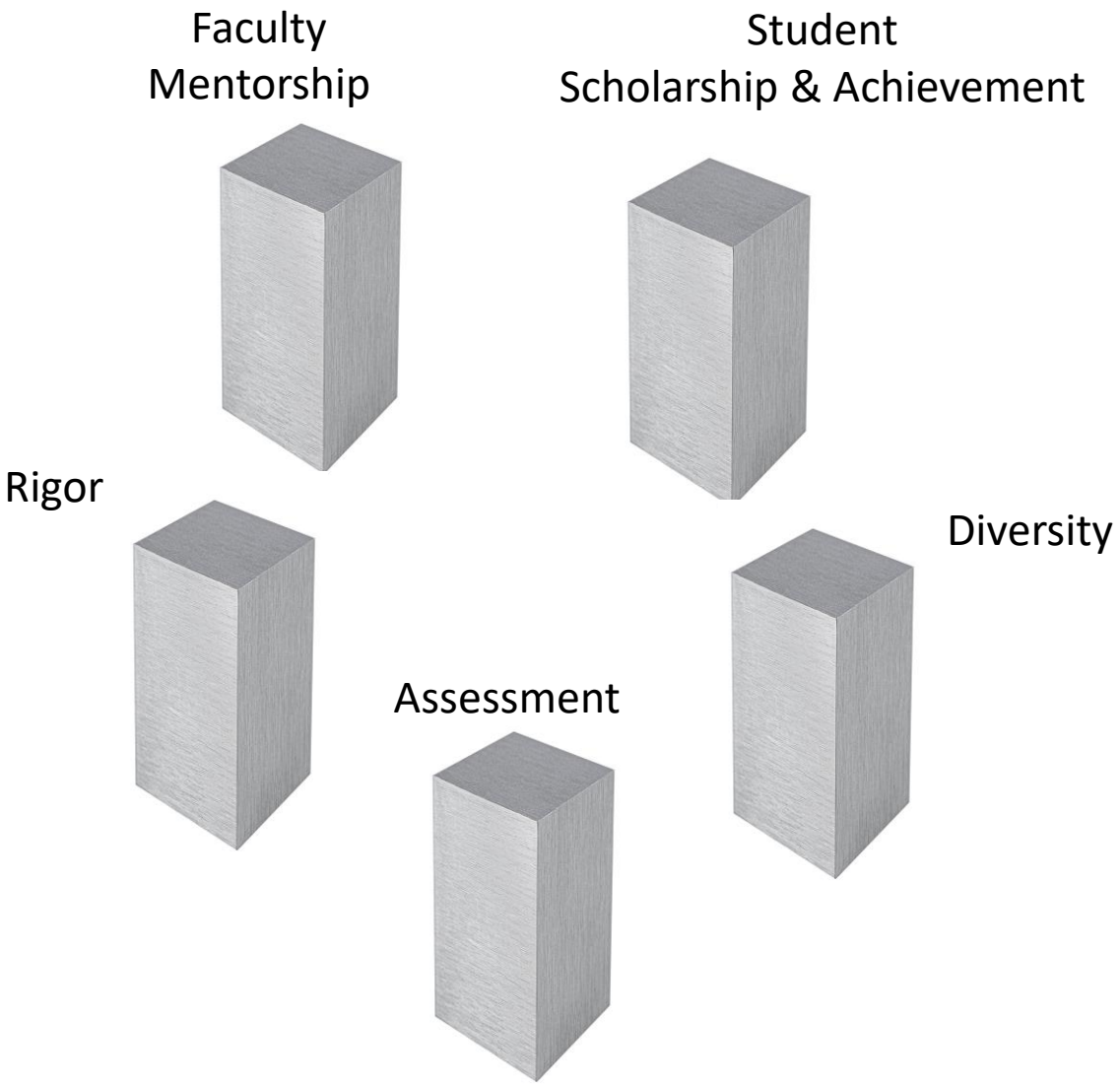
Diversity

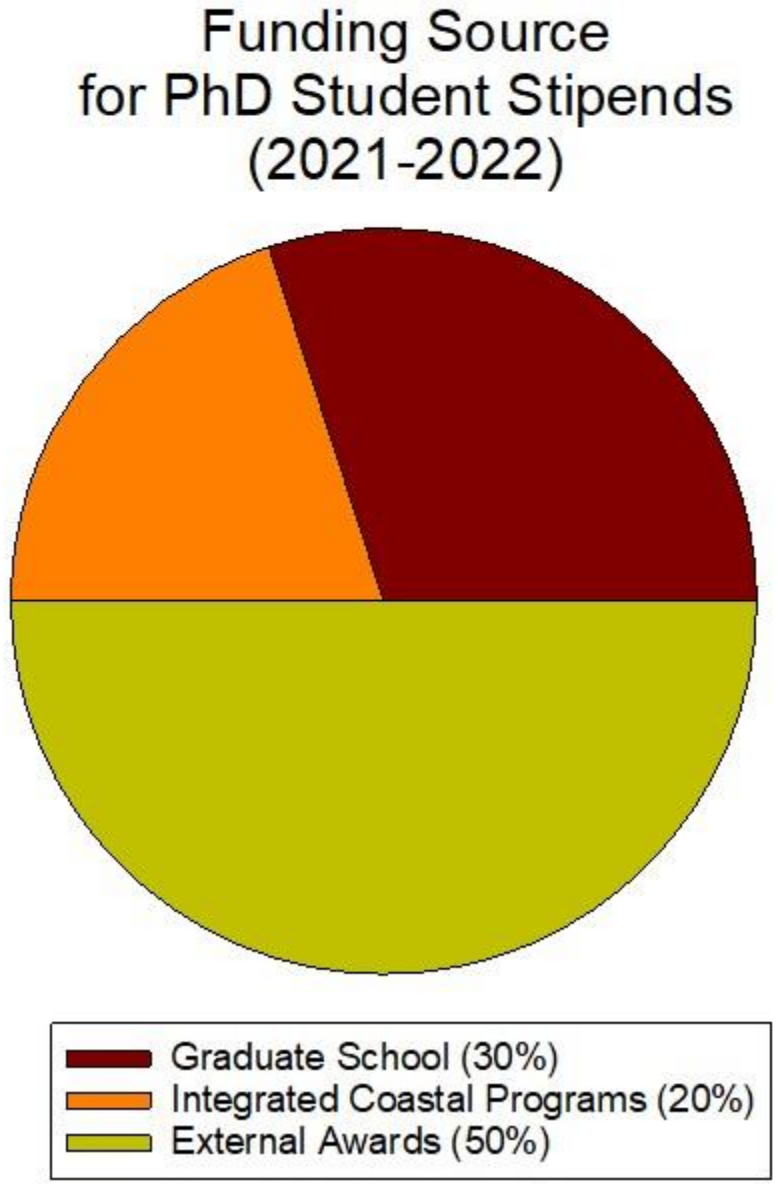



CRM/ICS PhD Graduation Trends
Number of graduates (annual)
Females
Males
0
2
4
6
8
2015-2016
2016-2017
2017-2018
2018-2019
2019-2020

Pillars of a Successful PhD Program



Faculty External Awards Supporting Student Stipends



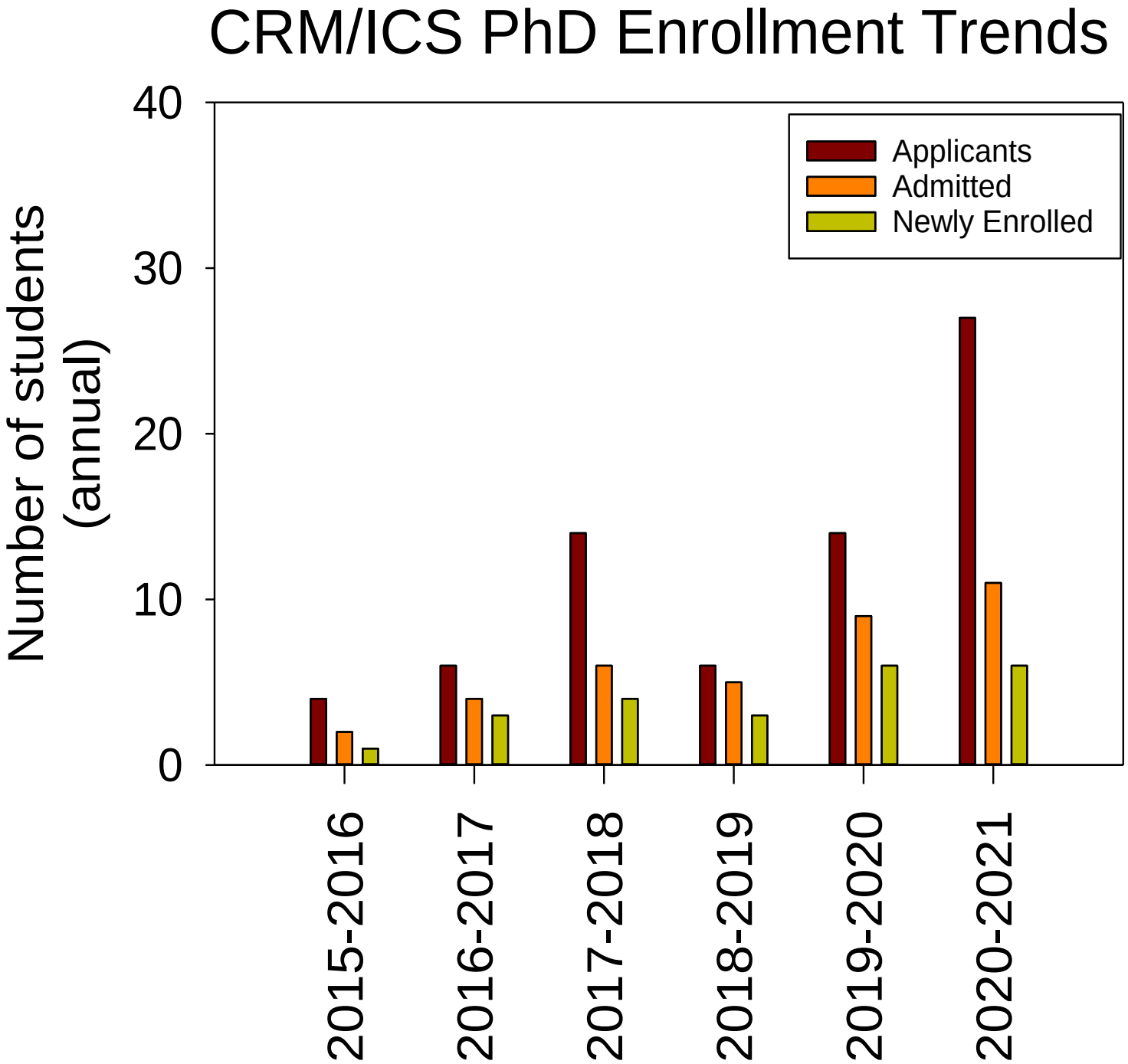
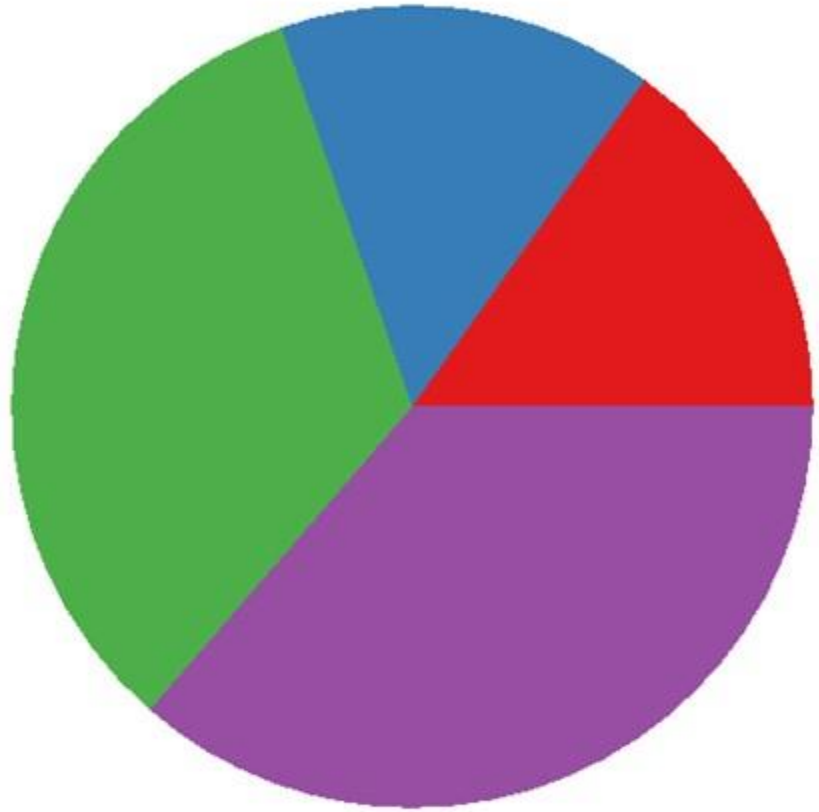

CRM/ICS PhD Enrollment Trends
Number of students (annual)
0
10
20
30
40
Applicants
Admitted
Newly Enrolled
2015-2016
2016-2017
2017-2018
2018-2019
2019-2020
2020-2021

Table 2. Suggested Timeline for Completion of ICS Program Milestones

	Year 1				Year 2			Year 3				Year 4			
Milestone	FALL	SPRING	SS1	SS2	FALL	SPRING	SS1	SS2	FALL	SPRING	SS-1	SS2	FALL	SPRING	SS-1
Core Course Completion	**X**	**X**			**X**	**X**									
Completion of other courses	**X**	**X**			**X**	**X**			**X**	**X**					
Selection of major professor		→	→												
Core Competency Exam			**X**												
Selection of Advisory Committee		→	→	→											
Dissertation Proposal Defense					→	→	→								
Conduct Research	→	→	→	→	→	→	→	→	→	→	→	→	→	→	
Dissertation Defense														**X**	
Submission of Dissertation to Graduate School														→	→

Alumni Employment (2020)



Future Plans

- Undergraduate and master’s degree feeder programs
- Engagement with HBCU and other diverse platforms
- Facilitating student-led fellowships
- Alum guest speaker series
- Alumni capital for student research needs

Questions??

NRT =
National Science Foundation
Research Traineeship Program

Nationally prestigious program to train graduate students as leaders in the academic and non-academic workforce.

NSF Goals:

- Catalyze interdisciplinary research
- Produce diverse STEM professionals
- Promote transformative graduate education

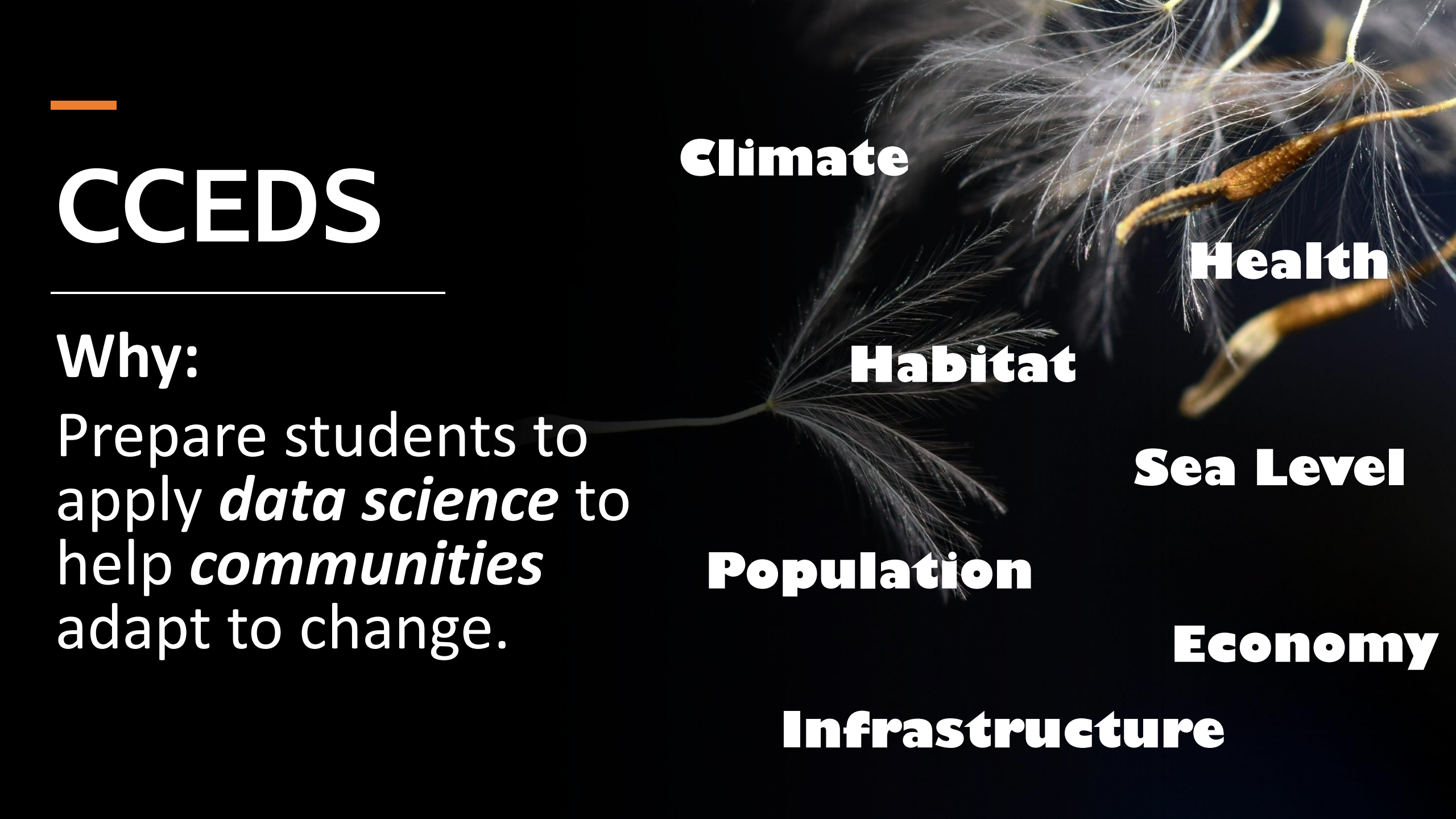
Coastal Community Environmental Data Scholars (**CCEDS**)

~$2M

CCEDS

Why:

Prepare students to apply ***data science*** to help ***communities*** adapt to change.



CCEDS

Key Training Elements:

- Graduate Certificate in Applied Data Science
- Community-Based Research
- Communications Training

CCEDS

Who is this for?

- ECU MS or PhD student from any field relevant to community or env resilience
- Interest in *using* data science in your research
- Desire to make a difference for communities