



Environmental Technologies Certificate

B. 2018-2019 New Certificate Program Proposal Form

General Catalog Information

****Read before you begin****

1. PRINT the [Certificate Program Proposal Form Instructions](#)
2. Turn on the help text before starting this proposal by clicking on the  icon in the top right corner of the heading.
3. FILL IN all fields required marked with an *. You will not be able to launch the proposal without completing required fields.
4. LAUNCH proposal by clicking  in the top left corner.

Select *Program* below. Do not check Shared Core.

Type of Program* Program
 Shared Core

Refer to latest Senate Policy on Certificate Program Requirements:

<http://senate.csuci.edu/policies/2010-2011/index.htm>

Program Owner*

Add the Certificate Title in the catalog format following the example below. The title must include the total number of units for the certificate.

Example: Spanish: Certificate in Healthcare Interpreting - 15 units

Certificate Title:* Environmental Technologies Certificate

Status:* Active-Visible

Program Level:*

Program Type:*


The following information will be published verbatim to the catalog. Using catalog format, provide Certificate description, learning outcomes, requirements and pre-requisites.

Description* We are on the cusp of an amazing era of change for our society and planet; the opening millennium of the Anthropocene and the opening century of the Earth's sixth mass extinction event. At the same time, we are in the midst of the fourth industrial revolution which has helped birth a new era of robotic instruments, individualized manufacturing, the open source movement, and crowd sourcing. Students interested in both of these threads can complete our Environmental Technologies Certificate and work to harness some of these new technologies to help begin to respond to the daunting challenge of these cumulative threats to our biosphere. This program leverages a deep network of experts, exponential science and technology, and entrepreneurship to help bring new conservation innovations to scale and to provide novel and cost-effective data to managers on the front lines of our resource challenges. Graduates will be extremely qualified for positions as entry-level field technicians, aerial and underwater drone pilots, sales, and program managers in both private and public sectors.



Follow these steps to create the New Certificate Curriculum Schema under Prospective Curriculum:

First, ALL needed courses must be added (new courses) and/or imported (existing courses) = Step 1. below. Second, the New Certificate Curriculum schema will be created by adding cores (e.g.: Requirements, Required Core, Electives, Pre-requisites, etc.) and populating with added or imported courses = Step 2. below.

Step 1. Adding and /or Importing Courses

Click on . There are two options to add courses to the New Certificate: "Add Course" and "Import Course." For courses that already are in the catalog, click on "Import Course" and find the courses needed. For new courses that are in the Curriculum Approval Process click on "Add Course"-- a box will open asking you for the Prefix, Course Number and Course Title. All new courses must have a New Course Proposal Form submitted in addition to this form.

Step 2. Creating Curriculum Schema

To create the New Certificate Curriculum Schema, Cores will need to be created and the courses above will need to be added. Click on  "View Curriculum Schema." Click on "Add Core" or "Import Core." Click on "New Core," complete the "Title" field for your core (e.g.: Electives), and the "Description" field if applicable. Click on "Add Courses." When you click on "Add Courses" it will bring up the list of courses available from Step 1. Select the courses you wish to add and click "Add Course." For removing courses click on the  and proceed.

Identify all required lower- and upper-division courses, including required electives.

Core - 12 units

**ESRM 100 Introduction to
Environmental Science and Resource
Management**

**ESRM 203 Introduction to
Environmental Statistics**

**ESRM 303 Data Visualization and
Climate Communication**

[After]

[Before]Choose one from the following:

ESRM 228 Maps to Apps: Exploring GIS

**ESRM 328 Introduction to Geographic
Information Systems**

Upper Division Electives - 6 units

**[Before]Choose at least 6 units from the
following:**

**ESRM 370 Fundamentals Of Remotely
Piloted Systems**

**ESRM 371 Coastal Monitoring With
Remotely Piloted Systems**

**ESRM 399 Conservation Mechatronics
Studio**

**ESRM 428 Intermediate Geographic
Information Systems**

**ESRM 433 Satellites to Sensors: Remote
Sensing of the Environment**

Justification

How does the Certificate support the University's Mission and Strategic Goals?*

Our ESRM Program leads a collaborative multi-program effort to design, craft, and utilize the next generation of robotic and sensor technologies across the coastal zone. This effort has been fostered under our Aerial and Aquatic Robotic Research Group umbrella, but is now straining under the weight of the growing numbers of students from across campus who seek to be involved in this effort. They are also clamoring for additional training options and ways for their experience to manifest on their resumes. We, therefore, feel it is time to launch a certificate for students across campus in what we term Environmental Technologies.

Our recent graduates are currently employed in various drone and ROV companies across the state from San Francisco to San Diego.

Faculty and Staff Resources

Existing faculty and staff qualified to teach in and support Certificate, including percent of their work assignment contributing to Certificate:*

Most of these courses already exist in our ESRM curriculum. Each semester, faculty will teach courses related to the certificate as part of the core curriculum and emphases in ESRM. Students will only need to complete 1 to 2 additional classes to receive their certificate, if they choose electives aligned with the certificate and their emphasis. They may choose to focus on UAS technology, GIS, or the integration of both.

Sean Anderson: ESRM 370 (50%)

Kiki Patsch: Independent Study and ESRM 428, 371, 328, & 228 (75%)

Emily Fairfax: ESRM 203, 328, 433 (50-75%)

Lecturers:

Alan Jaegar: ESRM 370 (100%)

Jean Pan: ESRM 370 (100%)

Cynthia Hartley: ESRM 328 and 428 (100%)

Brett Hartman: ESRM 328 (0-50%)

Additional faculty and staff needed to teach in and support Certificate, and areas of expertise needed.*

ESRM would need 3 to 6 additional WTUs each AY to fund this slight addition in workload.

All the experts who would be needed to fill this position are on campus or in our local community.

Facilities, Equipment, Information and Financial Resources

Existing facilities, equipment and information resources available to support Certificate.*

All facilities exist: ESRM Tech Lab, ESRM Modoc Lab, VC Maker Space, Cam Park and Condor Field, etc.

We have extensive use of nearby facilities off campus (e.g. MAST Center at Port Hueneme).

Additional facilities, equipment and information resources needed to support Certificate.*

None for the next 5 years, assuming current growth rates.

Number of Students in Certificate

Estimate number of students enrolled in Certificate in initial, third and fifth years.

Initial Year* 10

Third Year* 20

Fifth Year* 50

Fiscal Support Required:*

No additional financial support needed at this time, other than routine maintenance of laboratory space, etc. However, as with all science programs, continued investment will need to manifest. Currently, equipment needs are support by extramural grants.

Certificate Advisor:*

Sean Anderson

Procedure for Awarding Certificate:*

Students will submit applications in April of each year for certification of the completion of courses.

Desired Year of Implementation:*

Environmental Science & Resource Management

Notes (not required):

DO NOT USE

No DO NOT USE

Originator

Status: *Approved*

Participants

 **Sean Anderson** 10/1/2018 4:39 PM






Activity

Required Participation:
100% required
Required for Approval:
100% required
Date Completed:
10/1/2018 4:39 PM
Changes: *No*
Comments: *No*

Technical Review

Status: *Approved*

Participants

-   **Blake Buller** 10/14/2019 3:24 PM
-  **Janet Rizzoli** 10/14/2019 6:09 PM
-   **Andrea Skinner** 10/11/2019 6:15 PM


Activity

Required Participation:
100% required
Required for Approval:
100% required
Date Completed:
10/14/2019 6:09 PM
Changes: *Yes*
Comments: *Yes*

Program Chair

Status: *Restarted*

Participants

- Kiki Patsch**
- Kiki Patsch**
-  **Andrea Skinner (System Administrator)**
10/15/2019 4:22 PM



Activity

Required Participation:
100% required
Required for Approval:
100% required
Date Completed:
10/15/2019 4:22 PM
Changes: *No*
Comments: *No*
Signature: *Yes*

Program Chair

Status: *Approved*

Participants

  Kiki Patsch 10/16/2019 10:39 AM

Activity

Required Participation:
100% required
Required for Approval:
100% required
Date Completed:
10/16/2019 10:39 AM
Changes: Yes
Comments: Yes
Signature: 10/16/2019

Dean

Status: *Approved*

Participants

 Cynthia Wyels 10/23/2019 4:07 PM

Activity

Required Participation:
100% required
Required for Approval:
100% required
Date Completed:
10/23/2019 4:07 PM
Changes: No
Comments: Yes
Signature: 10/23/2019

AVP for Academic Planning and Undergraduate Initiative

Status: *Approved*

Participants

  Jennifer Perry 12/4/2019 11:10 AM

Activity

Required Participation:
100% required
Required for Approval:
100% required
Date Completed:
12/4/2019 11:10 AM
Changes: No
Comments: Yes
Signature: 12/4/2019

Curriculum Coordinator

Status: *Approved*

Participants

 **Andrea Skinner** 3/4/2020 2:34 PM



Activity

Required Participation:
100% required
Required for Approval:
100% required
Date Completed:
3/4/2020 2:34 PM
Changes: *No*
Comments: *No*

Articulation Officers

Status: *Approved*

Participants

 **Blake Buller** 3/6/2020 3:52 PM
 **Janet Rizzoli** 3/12/2020 4:55 PM


Activity

Required Participation:
100% required
Required for Approval:
100% required
Date Completed:
3/12/2020 4:55 PM
Changes: *Yes*
Comments: *Yes*

Curriculum Committee

Status: *Approved*

Participants

▲ **Curriculum Committee**
 **Andrea Skinner *** 3/25/2020 11:04 AM

Activity

Required Participation:
100% required
Required for Approval:
100% required
Date Completed:
3/25/2020 11:04 AM
Changes: *No*
Comments: *Yes*
Signature: *3/25/2020*
Agenda: *Yes*

** Agenda Administrator*

Senate

Status: *Working*

Participants

Gregory Wood

Activity

Required Participation:
100% required
Required for Approval:
100% required
Time Spent: *11 days*
Changes: *No*
Comments: *No*
Signature: *Yes*



Provost

Status: *Incomplete*

Participants

Elizabeth Say

Step Details

Required Participation:
100% required
Required for Approval:
100% required
Work: *edit, comment*
Signature: *Yes*



President

Status: *Incomplete*

Participants

Erika Beck

Step Details

Required Participation:
100% required
Required for Approval:
100% required
Work: *edit, comment*
Signature: *Yes*

Attachments for Environmental Technologies Certificate

Conservation Mechatronics.pdf (uploaded by Sean Anderson, 10/1/2018 4:38 pm)

Comments for Environmental Technologies Certificate

Andrea Skinner

3/25/2020 11:04 am

Approved by the Math and Science LCC.

Andrea Skinner

3/25/2020 11:03 am

The Math LCC approved:

From: "Gillespie, Blake"

Date: Wednesday, March 25, 2020 at 9:33 AM

To: "Skinner, Andrea" , "Matera, Jaime" , "Abbasi, Bahareh" , "Miller, Jason" , "Fairfax, Emily" , "Mozingo, Nancy"

Cc: "Rizzoli, Janet" , Blake Buller

Subject: Re: ESRM : Environmental Technologies Certificate

Yes, please go ahead. Anyone, chime in if I'm wrong (about this). Thanks!
bg

Janet Rizzoli

3/12/2020 4:53 pm

In consultation with K. Patsch added ESRM 100 to eliminate hidden prerequisites.

Blake Buller

3/6/2020 3:52 pm [1 Reply](#)

Re ESRM 433, possibly add COMP 150 as prerequisite choice w/ PHYS courses like choices offered in ESRM Major?

Re COMP/EMEC 470, requires 29-46 additional units of hidden prerequisites for COMP track & 24-31 additional units of hidden prerequisites for EMEC track, so remove from Cert.?

Re Procedure for Awarding Certificate, who would apps be submitted to? Why wouldn't this process be facilitated through Registrar's Office like with other degrees, minors, certs.?

Janet Rizzoli

3/12/2020 4:52 pm




In consultation with K. Patsch (3-11-20):

-Added COMP 150 as a prerequisite choice for ESRM 433

-Removed COMP/EMEC 470 due to excessive prerequisites

Jennifer Perry	12/4/2019 9:55 am
I agree with Cindy's comments. This is a good example of bundling existing resources to provide a certificate of great relevance to students. In regard to additional resources, the proposal states that "ESRM would need 3 to 6 additional WTUs each AY to fund this slight addition in workload." This is a modest and warranted net addition given the benefits of the program.	
Cynthia Wyels	10/23/2019 2:53 pm
This appears to be a well thought-out new certificate that bundles existing courses and faculty expertise.	
Kiki Patsch	10/16/2019 10:39 am
This certificate is directly in line with the program modifications and new emphases offered by ESRM.	
Blake Buller	10/14/2019 3:24 pm
Approving w/o review so proposal can move on to K. Patsch, per her request on 10.11.19, so she can make ESRM Program's desired changes	
Andrea Skinner	9/17/2019 8:46 am
09-17-19: Per ESRM Program changed the name of the Certificate to Environmental Technologies Certificate. AS	

Signatures for Environmental Technologies Certificate

Program Chair	Status: <i>Approved</i>
 Kiki Patsch	10/16/2019
Dean	Status: <i>Approved</i>
 Cynthia Wyels	10/23/2019
AVP for Academic Planning and Undergraduate Initiative	Status: <i>Approved</i>
 Jennifer Perry	12/04/2019

Curriculum Committee

Status: *Approved*



Andrea Skinner

03/25/2020

Senate

Status: *Incomplete*

Provost

Status: *Incomplete*

President

Status: *Incomplete*

Crosslistings for Environmental Technologies Certificate

Environmental Technologies Certificate (parent proposal)

This proposal does not have any active crosslisted proposals.

Decision Summary for Environmental Technologies Certificate

Senate

Status: *Working*

Step Summary

This step requires **100%** approval from all participants to move forward.

Participants

Gregory Wood

Totals

Users Approved: 0

Users Rejected: 0