I. Certificate Name and Description:

- Name of the certificate - Post-baccalaureate Certificate in Aquaculture
- Managing department college, department, and oversight committee membership.
- Specify whether the certificate is affiliated with an existing degree program or is a stand-alone certificate.

II. Certificate Requirements – Any changes to the originally approved certificate must be approved by the Graduate College.

List the certificate requirements, including number of credit hours required and any special requirements for completion.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name Description</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>VSC 556</td>
<td>Aquaculture</td>
<td>3</td>
</tr>
<tr>
<td>SWES 575</td>
<td>Biology and Culture of Algae</td>
<td>4</td>
</tr>
<tr>
<td>VSC 565</td>
<td>Shrimp Pathology</td>
<td>3</td>
</tr>
<tr>
<td>SWES 910</td>
<td>Aquaculture Research (Intern)</td>
<td>5</td>
</tr>
</tbody>
</table>

1. Select one of four options

<table>
<thead>
<tr>
<th>Option Code</th>
<th>Course Name Description</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWES 575</td>
<td>Aquatic Plants and the Environment</td>
<td>4</td>
</tr>
<tr>
<td>SWES 525</td>
<td>Environmental Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>ECOL 582</td>
<td>Ichthyology</td>
<td>3</td>
</tr>
<tr>
<td>Other elective course</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

| Total Units | 16-17 |

- List current and new courses needed to meet certificate requirements. **NONE**
- Describe any courses that will be offered via distance learning or other distributed methods? **NONE**
- Student Learning Outcomes -
  The students completing this program will have additional skills and experience that will improve their ability to handle advanced projects and tasks in commercial and governmental aquaculture programs. They will have several advanced skill sets that will allow them to coordinate field research, operate a pathology lab, maintain algae cultures, or manage a hatchery or commercial farm. **NONE**

III. Student Admittance/Advising/Completion – Student must have no less than a bachelor's degree for a post-baccalaureate, a master's degree for a Post-Master's certificate or be currently enrolled in a graduate level program.
• Are there prerequisites or standardized tests required for admission?
  
  B.S. Degree in appropriate field, passing TOEFL score for International Students, GRE grades must be submitted.

• Is concurrent enrollment in a degree program allowed, required?
  
  No

• Is there a residency requirement?
  
  No

• Will transfer credit be accepted? How many credit hours maximum? (May not exceed 6)
  
  Yes, up to 6 units could be transferred

• What provisions are included for student advising?
  
  A program coordinator (Pablo Gonzalez will be responsible)

• May a student transfer from a certificate to a degree program? What are the provisions?
  
  Yes. The student would need to meet all the department requirements for admission and then complete the requirements. Funds from the TIES program may or may not be available.

IV. Certificate and Student Outcomes

• Provide a plan and frequency for assessing the intended certificate outcomes both for students and the certificate.
  
  The program will be reviewed at the end of the Aquaculture TIES program in Dec. 2007. We will determine the efficacy based on the success of graduates in the field in Mexico and future options for funding and student participation.

V. Is there sufficient student demand for the certificate?

• What is the anticipated student enrollment for this certificate?
  
  The funding will support two students per year. Additional students would be welcome if they have funding. Max of 5 students per yer.

• Will there be any collaboration with other departments or universities to maximize resources?
  
  Yes. Veterinary Science and Wildlife and Fisheries Science will offer courses of interest.

• Program demand/need.
  
  Funds for the program are included in the Aquaculture TIES grant. Professionals from Arizona Game and Fish and other natural resource agencies will also be potential clients/students.

VI. Expected Faculty and Resource Requirements

• List the name, rank, highest degree and estimate of level of involvement of all current faculty who will participate in the program.
Kevin Fitzsimmons, Professor/Research Scientist, PhD, 20% of time to administer the Aquaculture TIES project.

- Describe additional faculty needed for the first three years of the certificate.
  NONE

- Give the present numbers of FTE students and FTE faculty in the department or unit in which the certificate is offered.
  80 FTE students, 24 FTE Faculty

- Give the proposed numbers of FTE students and FTE faculty for the next three years in the department or unit in which the certificate is offered.
  80 FTE students, 24 FTE Faculty

VII. Submit a supporting letter from the college dean and department head verifying that the proposed certificate has received faculty approval through appropriate procedures and that the unit has the resources to support the certificate as proposed.
Dr. David E. Cox  
Associate Dean  
Academic Programs  
College of Agriculture and Life Sciences  
Forbes 201  
CAMPUS

Dear Dave,

As you are no doubt aware, the Graduate College has expressed considerable interest in offering certificate programs and professional master’s degrees, in addition to traditional degree programs. To this end, they have requested that departments submit proposals for their review.

The SWES Department has developed several such proposals, and we are now ready to formally submit the Graduate Certificate in Aquaculture proposal for your consideration and approval. The Aquaculture Certificate was conceived and developed by Dr. Kevin Fitzsimmons, whose research and background in aquaculture is substantial. In addition to his appointment as a Professor and Research Scientist in SWES, Dr. Fitzsimmons is also the President of the World Aquaculture Society. The certificate is in response to the expressed needs of students primarily from Mexico, and will be funded in part by the TIES program.

Dr. Fitzsimmons has taken a conservative, and in my view, a very realistic approach to enrollment and program assessment. He anticipates TIES funding for two students per year, with a maximum of five students. The program will be reviewed at the end of the Aquaculture TIES program in December 2007, to determine the efficacy of the program, based on the success of graduates in the field in Mexico, as well as future options for funding and student participation. A copy of the Aquaculture Certificate Proposal is attached for your review.

We request that you provide us with a supporting letter, verifying that the proposed certificate has received approval through appropriate procedures and that SWES has the resources to support the proposed Aquaculture Certificate. We would appreciate your prompt review as we would like to submit the proposal as soon as possible to the Graduate College.

Thank you for your support, and please don’t hesitate to contact me if you have questions.

Sincerely,

[Signature]

Jefrey C. Silvertooth  
Professor and Head of Department

Encl.