UHWO AUTHORIZATION TO PLAN (ATP) AN ACADEMIC PROGRAM

1. School/College and Department/Unit:

   University of Hawai‘i West O‘ahu, Division of Mathematics and Natural Sciences

2. Chair/Convener of Planning Committee:

   Dr. Jacqueline Honda, Acting Vice Chancellor for Academic Affairs

3. Program Category: New

4. Degree or Certificate Information:

   a. Bachelor of Arts, Biology

   b. List similar degrees or certificates offered in the UH System:
      
      UHM: BA Biology
      UHH: BA Biology, Cell and Molecular Track

5. Planning:


   b. Activities to be undertaken during the planning phase:
      
      i. May 2016 – June 2016: Math and Sciences faculty at UHWO will (1) finalize the specifics of the curriculum, (2) develop a budget, (3) make recommendations about any additional faculty or other personnel needed to implement, and (4) prepare new course forms and accompanying outlines and student learning outcomes, for submission to the UHWO curriculum committee. The Math and Science faculty will also work with Maile Sing, UHWO Articulations Officer, to develop articulation agreements with the community colleges to facilitate the transfer of students with the AS NS degree to our BA Biology.
      
      ii. June 2016 – September 2016: Math and Science faculty will finalize the program proposal and present it to the BOR and to the UHWO curriculum committee.

   c. Submission date of program proposal: Fall 2016

   d. Workload/budget implications during planning period:
      
      i. Between May 2016 and June 2016, planning will be conducted by a voluntary planning team. One of the current math/science faculty may be granted 0.25 FTE for leading the planning process for these programs, at the discretion of the UHWO administration. No other impact on workload or budget is anticipated during the planning period.

      ii. Faculty positions: UHWO currently has three faculty members in biology, one in chemistry, and four in mathematics, for an FTE of 8 in Math and Science. This core faculty has the expertise needed to offer (1) all the lower division "majors" courses in
biology, chemistry, and mathematics (2) most of the lower division biology courses required for the proposed pre-Nursing program, (3) some of the upper division curriculum for the newly proposed secondary education program in math and science, and (4) most of the courses which will be required as the BA core. While most of the needed expertise is present with current faculty, 8 FTE is clearly not sufficient in numbers to support all three programs for a planned student body of 3500. Therefore, the faculty will work with the UHWO Academic Development Plan committee for new faculty positions in math and science in the new ADP for 2016-2020.

iii. The existing UHWO Academic Development Plan included in their proposal 1 FTE each in earth sciences, physical sciences, and biological sciences, which should have been sufficient to begin offering both the secondary education program in sciences and the Bachelor of Arts in Biology. However, only the biology position was actually made available. The UHWO Academic Development Plan is currently in revision (Spring 2016).

6. Program Description (Objectives and Relationship to Mission):

The proposed Bachelor of Arts in Biology degree will be focused on meeting the educational needs for leeward O'ahu for careers in science. There will be 2 broad objectives of the BA Biology degree program: one to prepare students for professional careers requiring additional training (Pre-Medicine, Pre-Dental, Pre-Pharmacy, or other graduate work). The other objective will be to provide the training for students entering the Secondary Education degree program or those desiring a more general biology preparation. This second objective will prepare students not only for teaching positions, but also careers with federal agencies (EPA, NOAA, USFWS, Army Resource Management Program, etc.), State and County government (DLNR, DOH, DOT, DBEDT, etc.), and educational and non-governmental organizations (such as Malama na Honu, The Hawai'i Nature Center, The Nature Conservancy, and news services), that hire students with a BA in Biology.

This program is consistent with the mission of UHWO to serve leeward and central O'ahu by offering degrees in the liberal arts and professional studies which support "the continuing development of the region through both innovative educational offerings and public service activities." With its emphasis on quality teaching, UHWO is ideally positioned to develop a science degree of increasing interest in the community, allowing students here to stay in their community for their education. The UHWO Strategic Development Plan specifically states that "our distinctions as an institution enable us to play a major role in supporting the State of Hawai'i's initiatives to enhance the economy though expertise in business, education, professional studies, STEM-related disciplines, new technologies, and health sciences." (page 9, UHWO Strategic Plan 2015-2020).

7. Program Justification (Needs and Rationale):

From the President of the United States to the Governor of the State of Hawai'i there have been repeated calls for more workers skilled in Science, Technology, Engineering and Mathematics (STEM) fields. President Obama gave a speech on January 6, 2010 on the Educate to Innovate Campaign, emphasizing the importance of STEM education. In his words:

"Whether it's improving our health or harnessing clean energy, protecting our security or succeeding in the global economy, our future depends on our reaffirming America's role as the world's engine of scientific discovery and technological innovation. And that leadership
tomorrow depends on how we educate our students today, especially in math, science, technology, and engineering.”

The Governor of Hawai‘i David Ige also highlighted the importance of careers in science in his address on grants to support STEM in Hawai‘i on January 8, 2016:

“This initiative will help prepare our students for careers in fast-growing segments of our state’s economy and expand high-quality employment opportunities for our residents,” Gov. Ige said. “I deeply appreciate the private sector’s investment in Hawai‘i’s students, teachers and the University of Hawai‘i. The investment will further build the state’s innovation economy and workforce.”

http://www.hawaii.edu/news/2016/01/08/6-8-million-in-grants-promote-stem-jobs-for-hawaii/

As Governor Ige pointed out, by 2017, Hawaii is projected to need 16,000 more workers with STEM skills each year, but the state currently ranks 47th among the states in the number of STEM-related degrees awarded per 100,000 residents.

There is obvious need for Biology positions as reflected in data from the Department of Labor (www.careerinfonet.org). Shown below are DOL statistics for projected growth in numbers of jobs between 2012 and 2022 for a sample of the jobs available to students with a BA in Biology in Hawai‘i. Secondary and Middle School Teachers are close to the top in terms of job availability.

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2022</th>
<th>Projected annual job openings</th>
<th>Median salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary School Teachers</td>
<td>4,260</td>
<td>4,440</td>
<td>130</td>
<td>$54,800</td>
</tr>
<tr>
<td>Middle School Teachers</td>
<td>1,820</td>
<td>2,020</td>
<td>60</td>
<td>$54,300</td>
</tr>
<tr>
<td>Biological Technicians</td>
<td>720</td>
<td>660</td>
<td>20</td>
<td>$30,100</td>
</tr>
<tr>
<td>Life, Physical, &amp; Social Science Technicians</td>
<td>640</td>
<td>650</td>
<td>30</td>
<td>$51,000</td>
</tr>
<tr>
<td>Forest &amp; Conservation Technicians</td>
<td>150</td>
<td>160</td>
<td>10</td>
<td>$39,000</td>
</tr>
</tbody>
</table>

8. Description of resources required and status of sources:

a. Faculty: In January 2016, 1 FTE Assistant Professor in Biology was hired to support the PIKO Pre-Nursing program. We are anticipating additional positions as requested by the expired Academic Development Program to be proposed in the new ADP. We are requesting an additional tenure track faculty in Biology in FY 18-19 and FY 20-21 to support the expansion of this program in the new ADP.

b. Library resources (including an evaluation of current resources and an estimate of the cost of additional resources as required): We currently have a number of scientific journals available through our EBSCO plan at the UHWO Library. Additional materials have been purchased
with PIKO funding to support the new Anatomy and Physiology and other courses required for the Pre-Nursing program.

c. Physical facilities (space, labs, equipment, etc.): The new Kapolei campus offers a full Chemistry lab, a Physical Sciences Lab, and a Biology lab, all with adjacent preparation rooms. We have purchased equipment through Title III grants and have acquired much of the equipment required to support the BA. The next building will be the Allied Health and Administration complex and will include another 3 fully furnished labs for Molecular Biology, Anatomy and Physiology, and Microbiology, equipped with all of the major equipment required for these courses.

d. Additional resources required (staff, assistantships, etc.): Although we currently have 1 part-time student assistant, more will be required to help with lab preparation. In addition, when the new building is completed, we will require an additional APT to serve as Lab Manager for those labs.

9. Five-Year Business Plan. Please provide a five-year projected budget for the program that includes:

a. Annual costs to implement the program: Please see Cost Revenue template (f).

b. Projected enrollment and estimate tuition revenue: Please see Cost Revenue template (f).

c. How will the program be funded? This program will be funded with tuition revenues and additional grants. UHWO has previously received three Title III grants that heavily supported development of STEM capacity in terms of equipment and curriculum development. In 2015 we received a National Science Foundation grant through the Tribal Colleges and Universities Program (TCUP) to support success of students in Math and Science with funding for student tutors, curriculum development, and undergraduate research projects mentored by science and math faculty. We anticipate that, upon completion of this grant, we will qualify for additional types of grant opportunities through TCUP if we have a degree program in place.

d. Does the current or proposed budget include funds or a request for funds for the proposed program? Yes. The Academic Development Plan is being revised and should reflect the need for additional faculty positions. We have grant money to support some of the activities, and we are currently considering the institution of lab fees to provide additional funds for purchase of “disposable” lab supplies used in classrooms.

e. Given a “flat budget” situation, how will the proposed program be funded? Tuition revenues generated by a new degree program and the new campus facility will provide funding for this program. Once the BA Biology is approved, we will qualify to apply for additional grant funding through the National Science Foundation TCUP program.
f. Mini Cost Revenue Template

<table>
<thead>
<tr>
<th>YEAR</th>
<th>FY 17-18 YR1</th>
<th>FY 18-19 YR2</th>
<th>FY 19-20 YR3</th>
<th>FY 20-21 YR4</th>
<th>FY 21-22 YR5</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROGRAM COSTS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty w/o fringe$^1$</td>
<td>$34,000</td>
<td>68,000</td>
<td>68,000</td>
<td>102,000</td>
<td>102,000</td>
</tr>
<tr>
<td>Other personnel costs w/o fringe$^2$</td>
<td>5,000</td>
<td>5,000</td>
<td>60,000</td>
<td>60,000</td>
<td>60,000</td>
</tr>
<tr>
<td>Library$^3$</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Equipment/Supplies$^4$</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL Expenses</td>
<td>39,000</td>
<td>73,000</td>
<td>128,000</td>
<td>162,000</td>
<td>162,000</td>
</tr>
</tbody>
</table>

| REVENUES | | | | | |
| Projected Enrollment | 10 | 20 | 30 | 40 | 40 |
| No. of Courses$^5$ | 4 | 10 | 14 | 20 | 20 |
| No. of Credits$^6$ | 8 | 22 | 37 | 47 | 47 |
| SSH | 80 | 440 | 1110 | 1880 | 1880 |
| Tuition Rate/Credit | 306 | 312 | 318 | 324 | 330 |
| Total Revenue from Tuition | 24,480 | 34,320 | 58,830 | 76,140 | 77,550 |
| Other Sources of Income$^7$ | (80,000) | (80,000) | (100,000) | (100,000) | (100,000) |
| TOTAL Revenues | 92,000 | 114,320 | 158,830 | 176,140 | 177,550 |

$^1$ We currently have 3 full-time tenure track Biology faculty, one of whom is tasked with offering the pre-nursing curriculum; these faculty also cover the lower division, general education offerings which are the first of the classes needed for the BA program. First new hire for this program should occur in FY 18-19, with a second in FY20-21, and starting in the second year the Biology tenure track faculty shall offer at least 8 upper-division courses per year.

$^2$ We will need to hire student help for lab preparation, and when the new building (Allied Health) is completed we will need a new APT as Lab Manager in the new building (estimated date of opening FY 19-20).

$^3$ Electronic access to basic science journals through EBSCO has already been acquired.

$^4$ Much of the equipment has been purchased with various Title III and other grants. We will be seeking additional NSF TCUP funding to supplement our current TCUP funding to support additional equipment purchases. The Math/Science Department currently receives a budget for disposable supplies, and we are investigating the possibility of assessing a student lab fee to reduce the required budget for disposables. We have added some supplies for new courses when they are offered for the first time.

$^5$ Based on students enrolled only in the core courses, number of expected core courses for each year. The core includes lower division required Biology majors courses, which are also General Education credits.

$^6$ Note - some of the courses are labs that are 1 or 2 credits. This figure represents credits taken by cohort 1 in year 1, cohort 1 in year 2 + a new cohort of 5 in year 1, etc.

$^7$ Current NSF TCUP grant support will continue during FY 17-18 and FY 18-19. This grant includes funds for student tutors, undergraduate student research stipends, and faculty summer overload for curriculum development and oversight of student research projects. Once we have a degree program we will qualify for additional TCUP funding opportunities in subsequent years. Only the portion of the current grant ($80,000 per year) and estimated portion of future grants ($100,000 per year) that has been allocated for faculty curriculum development and oversight of student research projects is included in the total revenues figure.

10. Impact on current courses or programs: There should be no major impacts on other programs, as the curriculum developed will utilize courses that are currently offered (Chemistry, Physics, and Calculus) in other programs.
11. If this program is multidisciplinary, provide evidence of commitment for support from the colleges, departments, programs and/or individuals expected to participate.

Letters of Recommendation from:
Dr. Kristina Guo, Division Chair, Public Administration (Health Care Administration)
Dr. Mary Heller, Division Chair, Education
Dr. Richard Jones, Associate Professor, Science Education

Reviewed by: (The ATP has completed the campus approval process prior to review by Council of Chief Academic Officers)

Campus Chief Academic Officer:
Comments and Recommendations:

Dr. Jacqueline Honda  
Print Name  
Signature  
Date  

Chancellor: 

Approved  Disapproved

Dr. Doris Ching  
Print Name  
Signature  
Date

Council of Chief Academic Officers (Systemwide Consultation):
Comments/Recommendations:

Print Name  Signature  Date
February 18, 2016

Evelyn Fenny Cox, PhD
Associate Professor of Biology
University of Hawaii-West Oahu

RE: Proposal for New Bachelor of Arts in Biology

Dear Dr. Cox,

I was absolutely delighted to know that you are intending to develop a new Bachelor of Arts program in Biology at the University of Hawaii-West Oahu. Biology is an essential program for all institutions of higher learning, and it is a critical area of need for the state of Hawaii and especially on the leeward side of Oahu. With this program, many students will now be able to continue their education and pursue their baccalaureate degrees in biology.

Since the establishment of 4-year degree programs at UHWO in 2007, and over the years through community and student surveys, we have consistently found STEM and specifically biology programs to be strategic priority areas. We continue to emphasize developing these programs through our strategic plan and academic development plan. I am so pleased to learn that biology will be finally a new degree option for our students to major in. In addition, biology is the gateway program for many other degree programs including nursing, allied health, pre-med, and various other science degrees. Developing a wide range of biology courses will not only directly benefit biology majors, but will also provide additional course options for allied health and health care administration majors. As an example, we have over 250 students in the Health Care Administration concentration. They will take both lower division science courses and upper division elective courses in biology. Furthermore, with the development of several new allied health programs at UHWO, all of these students will need to take a range of biology courses, including general biology, anatomy and physiology, microbiology, cellular and molecular biology. I look forward to working with you to provide additional courses in biology and develop career pathways for allied health students.

I strongly support the development of a new Bachelor of Arts in Biology at UHWO because it is critical to our mission statement. If I can provide further assistance, please let me know.

Sincerely,

Kristina L. Guo, PhD
Professor and Chair, Division of Public Administration
Professor and Director of Health Care Administration
March 16, 2016

TO: The University of Hawai‘i Council of Chief Academic Officers (CCAO)

FROM: Mary F. Heller, Professor & Chair
       UHWO Education Division

RE: Bachelor of Arts, Biology: Authorization to Plan (ATP)

I am writing in full support of the Division of Mathematics and Natural Sciences plan to develop a new degree program, the Bachelor of Arts (BA) in Biology.

The BA in Biology content curriculum is essential to our recently implemented Bachelor of Education (B.Ed) degree in middle-level and secondary education, with concentration in Biology. Each year the Hawai‘i Department of Education reports having to employ emergency hired, unlicensed teachers to staff Biology and other STEM-related disciplines. The B.Ed, with curricular support from the BA in Biology, serves to meet this critical workforce need that is especially prevalent on Central and Leeward O‘ahu. Our joint efforts are highly consistent with the mission of UHWO to offer degrees in the liberal arts and professional studies in support of “the continuing development of the region through innovative educational offerings and public service activities.”

On behalf of the entire Education Division faculty, I wish to thank the members of CCAO for their consideration of the proposed ATP. We applaud the Division of Mathematics and Natural Sciences faculty for their leadership in forwarding STEM initiatives that will ultimately result in the establishment of programs that will meet the educational and career needs of our growing institution and communities at large.
To the University of Hawai'i Council of Chief Academic Officers

Letter of Support: University of Hawai'i West O'ahu proposal for Bachelor of Arts in Biology

I am writing this letter in support of the approval of the recent proposal being put forward by the University of Hawai'i West O'ahu for the establishment of Bachelor of Arts degree in Biology.

As a member of the Science Education faculty, I can attest to the need of establishing a Biology degree, especially as this will support the Education Division's degree programs in Middle Level General Science and Secondary Biology Education and help University of Hawai'i West O'ahu graduate highly qualified and fully licensable teachers to fill the numerous STEM vacancies in the state of Hawai'i.

Establishing Bachelor of Arts in Biology degree will provide the University of Hawai'i West O'ahu's science education majors the ability to meet a critical need for upper division Biology courses on our own campus. Teacher candidates enrolled in these programs are required to complete a rigorous curriculum and have a minimum of 38 semester hours of sciences in the Middle Level General Science program and 56 semester hours of sciences in the Secondary Biology program that will allow them to meet and exceed the national performance standards set by the National Science Teachers Association (NSTA). The ability to keep our Science Education students on campus makes it much easier for the University of Hawai'i West O'ahu to meet the critical need, producing highly qualified middle school and secondary science teachers for the Hawai'i Department of Education Schools, particularly in the Central and Leeward communities on O'ahu, areas of critical need in the state.

In addition to my faculty role in the Education Division, I am also the Interim Director of UHWO STEM Center of Excellence, and have been instrumental in the development of West O'ahu's BAS in Facilities Management program that is foundational heavy in Engineering, Science, and Mathematics courses. From these additional perspectives I am even more convinced that the University of Hawai'i West O'ahu needs Bachelor of Arts in Biology degree, not only to promote STEM education for our students, but to also provide innovative programs that will secure a scientifically, technologically, and mathematically literate workforce and will strengthen University of Hawai'i System strategic goal of "Increasing UH Degrees in STEM Fields".

Mahalo for your consideration of this Program Proposal and service to the students of Hawai'i.

Sincerely,

Richard M. Jones
Richard M. Jones, Ed.D., Associate Professor Science Education
University of Hawai'i – West O'ahu, E-125
91-1001 Farrington Hwy.
Kapolei, HI 96707
808-689-2340
richard.jones@hawaii.edu