Proposal to Request Established Status for the Provisional Associate in Science in Natural Science (ASNS) Degree

February 2018
Table of Contents

I. Program Overview and History ............................................................ 3
II. Program Organization and Objectives ........................................... 4
    A. Target ....................................................................................... 4
    B. Access .................................................................................... 5
    C. Curriculum ............................................................................. 6
    D. Support .................................................................................. 19
    E. Program Learning Outcomes .................................................... 20
III. Assessment of Student Learning .................................................. 21
IV. Adequacy of Program Resources ................................................. 22
    A. Faculty .................................................................................... 22
    B. Budget and Resources ............................................................ 29
V. Program Efficiency .......................................................................... 31
VI. Evidence of Program Quality ......................................................... 32
VII. Compatibility of Program Outcomes with Strategic Plan .............. 33
VIII. Future Goals ............................................................................. 38
IX. Conclusion .................................................................................... 39
X. Appendices – Resource Template for each campus
I. Program Overview and History

The first ASNS degree program in the UH system was launched by Kapi'olani Community College in 2010. The ASNS was soon expanded to include Leeward CC and UH Maui College. In 2013, the ASNS was further approved for implementation at the remaining four UHCCs: Hawaii CC, Honolulu CC, Kauai CC, and Windward CC. This consolidated proposal reports on the efforts of those final five campuses to have introduced the ASNS: Hawaii CC, Honolulu CC, Kauai CC, UH Maui College, and Windward CC.

From its inception, the ASNS was designed to mirror the first two years of study towards the STEM Bachelor’s degree. It has always focused on four-year transfer as its first and foremost goal. The original ASNS degree program was provisionally approved by the University of Hawaii Board of Regents with two “concentration” options: Life Sciences and Physical Science. All seven ASNS campuses offer these two concentrations. A third concentration, Engineering, was subsequently added and is now available at HonCC, KapCC, KauCC, LCC, UHMC, and WCC. A fourth concentration, Information & Communication Technology, is the most recent addition and is offered by KapCC, LCC, UHMC, and WCC.

The National Science Foundation (NSF) reports that 50% of bachelor’s and 45% of master’s degree recipients in science, engineering and health are awarded to students who attended a two-year college (http://www.nsf.gov/statistics/infbrief/nsf11317/, accessed July 2016). With half of the students obtaining STEM degrees having attended community colleges, it is imperative that these students have a clear program of study and support in their efforts. The approval of an ASNS degree across all seven UHCCs ensures students will have the necessary coursework for advanced study in their respective STEM majors, thus reducing potential pitfalls that would increase time to graduation.

Across the UHCCs, ASNS students enjoy a variety of specialized resources to enhance their academic experiences. Counselors help track student progress, provide outreach, and coordinate STEM-centric campus activities. On many campuses, ASNS students have access to trained Learning Resource Center tutors, Math, Chemistry and Physics tutors, and Peer Mentors and/or Supplemental Instruction for many STEM courses. These tutors and peer mentors provide peer-led support and assistance with succeeding in rigorous STEM coursework. Undergraduate research opportunities have also been made available to students through externally funded sources such as the NASA space grant, Pre-Engineering Education Collaborative (PEEC) grants, Tribal Colleges and Universities Program’s Hālau Ola Honua, and the Louis Stokes Alliances for Minority Participation Bridges to the Baccalaureate (LSAMP B2B) grant. These grant programs have generated millions of dollars in supplemental funding to directly support the development of curriculum and programs, hire staff and faculty, and substantially increase the enrollment of STEM ASNS majors.

The ASNS program represents one of the very best examples of the University working as a system. It provides the College and UH System the ability to identify and track the progress and success of students majoring in STEM in order to make more informed decisions regarding resource allocation and strategic planning, provide focused services in academic support and counseling, and increase transfer of students into STEM majors at four-year institutions. A comprehensive analysis of the success of our ASNS graduates at four-year UH institutions
indicates our graduates have higher success rates at four-year UH institutions compared to AA Liberal Arts graduates who transferred from a UHCC during the same timeframe.

The ASNS program has grown steadily on all UHCC campuses.

Number of Declared ASNS Majors by Campus

<table>
<thead>
<tr>
<th></th>
<th>2013-14</th>
<th>2014-15</th>
<th>2015-16</th>
<th>2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hawaii CC</td>
<td>2</td>
<td>23</td>
<td>41</td>
<td>57</td>
</tr>
<tr>
<td>Honolulu CC</td>
<td>0</td>
<td>22</td>
<td>46</td>
<td>66</td>
</tr>
<tr>
<td>Kauai CC</td>
<td>13</td>
<td>15</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td>UH Maui College</td>
<td>32</td>
<td>51</td>
<td>53</td>
<td>52</td>
</tr>
<tr>
<td>Windward CC</td>
<td>33</td>
<td>118</td>
<td>143</td>
<td>156</td>
</tr>
</tbody>
</table>

II. Program Organization and Objectives

The vision of the Associate in Science in Natural Science (ASNS) degree program is to address the critical need for professionals trained in STEM fields by providing a well-defined pathway for students to obtain baccalaureate degrees at four-year UH institutions and beyond. The ASNS is a 60-credit degree program intended to provide the first two years of a baccalaureate degree in a multitude of STEM fields including the physical and biological sciences and engineering. The ASNS program combines a core of rigorous scientific study with a strong background in general education.

A. **Target**

The ASNS program targets all students interested in pursuing a career in the STEM fields but notably attracts significant amounts of students from underrepresented and non-traditional demographics. This ensures the pipeline of locally-educated students from Hawaii have the opportunity to pursue a STEM education.

The strategic plans of the University of Hawai‘i System, the University of Hawai‘i Community College System, and the UHCC campuses include strategic outcomes for increasing enrollment of Native Hawaiian and underrepresented students. The diverse student body of the UHCCs has served as an ideal place from which to recruit underrepresented groups onto a path leading to a STEM degree and STEM profession.
Overall Native Hawaiian Enrollment by Campus, Fall 2016

<table>
<thead>
<tr>
<th>Campus</th>
<th>Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hawaii CC</td>
<td>48%</td>
</tr>
<tr>
<td>Honolulu CC</td>
<td>26%</td>
</tr>
<tr>
<td>Kauai CC</td>
<td>35%</td>
</tr>
<tr>
<td>UH Maui College</td>
<td>33%</td>
</tr>
<tr>
<td>Windward CC</td>
<td>51%</td>
</tr>
</tbody>
</table>

B. Access

The ASNS program utilizes a variety of methods to recruit students interested in pursuing a career in the STEM professions. This has included visits to local high schools, presentations to the incoming freshman classes, and direct recruitment in core ASNS courses. Counselors are available to assist students with both personal and academic issues such as registration, course selection, and career guidance.

Additional recruitment assistance has been provided through the ASNS program’s relationship with the NSF-sponsored 'IKE (Indigenous Knowledge in Engineering) program – one of just five such programs in the U.S. ‘IKE recruits students for participation in Summer Engineering Experiences offered at Leeward CC, Kapi'olani CC, Honolulu Community College, UHMC, Windward CC, and UH Mānoa. While recruiting students for these summer engineering experiences, grant-funded 'IKE project specialists also work to build a pipeline of talented underrepresented students for the ASNS program.

Other projects such as Windward CC’s Pacific Center for Environmental Studies and Agripharmatech program provide dual-credit and early college opportunities in environmental science and plant biotechnology to high school students. The college also participates in various grants such at Bridges to Baccalaureate (LSAMP), PEEC II, INBRE and NSF-TCUP Hālau Ola Honua which offer peer mentoring and undergraduate research experiences.

Hawaii CC has provided full 2-year merit-based scholarships for five new ASNS students at the Palamanui campus. We work with the LSAMP (Louis Stokes Alliance for Minority Participation in Science) program to provide paid summer internship opportunities to ASNS students to encourage interest in research-based science. LSAMP funds are also used to provide stipends for peer-mentors in required science and math courses.

Honolulu CC’s Summer Engineering Academy (SEA) targets high school students. The SEA is an intensive summer program that offers students the opportunity to learn, think, and solve problems like an engineer. Students apply their knowledge of math and science to practical projects. Through lab work, group projects, lectures, and assignments, students learn how engineers approach real-world problems. Students meet other students with similar interests,
collaborate on testing theories, and find solutions to engineering problems.

Kauai CC offers early college courses in pre-calculus and calculus and a summer math Boot Camp to facilitate both entry to and timely completion of the ASNS degree. The college participates in the NSF-TCUP Hālau Ola Honua grant to increase geosciences majors and Native Hawaiian STEM graduates in particular. Additionally, Kauai CC offers Akamai Internships through the Hawaii Space Grant Consortium.

UH Maui College offers early college courses in various math classes in Maui County. The college participates in various grants such as Bridges to Baccalaureate, PEEC II, and Inbre which participate in peer mentoring/undergraduate research experience.

C. Curriculum

The ASNS degree fulfills most of the General Education Core Requirements in place at UH Mānoa. The ASNS curriculum requires a minimum of 60 credits of 100 and 200 level courses as specified, and students must have a minimum 2.0 grade point average in courses required for the degree. The same Diversification (DA/DH/DL, DP, DB, DS, DY) and Foundation (FW, FS, FG) designations for the AA Liberal Arts degree are used. The Foundation requirements will be met in full, including Symbolic Reasoning (FS, 3 credits/1 course), Written Communication (FW, 3 credits, 1 course), and Global Multicultural Perspectives (FG, 6 credits, 2 courses). The specific Foundation and Diversification requirements courses may change as new courses are developed and qualified for the Foundation and Diversification categories.

Through the ASNS, many of the Diversification requirements are met, including Biological (DB, 3 credits, 1 course except Engineering), Physical (DP, 3 credits, 1 course), and Laboratory (DY, 1 credit, 1 course). Diversification Arts, Humanities, and Literature (DA/DH/DL, 1 courses, 3 credits) and Social Sciences (DS, 1 courses, 3 credits) are met with 1 course required of each.

Students complete specific concentration requirements appropriate for their major depending on their pathway (Biological Science, Physical Science, Engineering, and Information & Communication Technology). The concentration requirements are specific to each concentration, designed to align with the first two years of study of typical STEM baccalaureate degrees.

**Hawaii Community College**
Hawaii CC offers the ASNS with a concentration in Biological Science or Physical Science

**Honolulu Community College**
Honolulu CC offers the ASNS with a concentration in Biological Science, Physical Science, or Engineering

**Kauai Community College**
Kauai CC offers the ASNS with a concentration in Biological Science, Physical Science, or Engineering
UH Maui College
UH Maui College offers all four ASNS concentrations: Biological Science, Physical Science, Engineering, or Information & Communication Technology

Windward Community College
Windward CC offers all four ASNS concentrations: Biological Science, Physical Science, Engineering, or Information & Communication Technology

Following are the program requirements for the various concentrations offered at the five UHCC institutions covered by this proposal. There are minor variations between campuses in the structure of general education requirements, while STEM-specific courses tend to align well between campuses.

UNIVERSITY OF HAWAI’I, HAWAI’I COMMUNITY COLLEGE
ASSOCIATE IN SCIENCE IN NATURAL SCIENCE (ASNS) with CONCENTRATIONS in Biological Science and Physical Science.

Biological Science Course Requirements:
- BIOL 171 & 171L
- BIOL 172 & 172L
- CHEM 161 & 161L
- CHEM 162 & 162L
- PHYS 151 or PHYS 170 and 151L or 170L
- MATH 205
- ENG 100
- ENG 102
- ICS 101
- SPCO 251
- Cultural Environment Elective (3 credits)
  - ASAN 120, 121, 122
  - DNCE 153, 185, 190V, 256, 285, 290V
  - ECED 256
  - ENG 103, 105, 204, 205, 215, 255, 256, 257A, 257E
  - HAW 101, 102, 201, 202
  - HIST 120, 151, 152, 153, 154, 241, 242, 274, 281, 282, 284, 288
  - HUM 100, 160, 275
  - JOUR 205
  - JPNS 101, 102, 121, 122
  - LING 102, 121, 235
  - MUS 102
- PHIL 100, 101, 102, 120, 211, 213, 255
- REL 150, 151, 152, 153
- SPCO 231, 233

- Natural Environment (11 credits)
  - AG 122, 141, 175, 175L, 200, 250
  - ASTR 110, 281
  - BIOC 241
  - BIOL 100, 100L, 101, 101L, 141, 141L, 142, 142L, 156, 156L, 281
  - BOT 101, 101L, 105, 105L, 130, 130L
  - CHEM 100, 100L, 151, 151L
  - GEOG 101, 101L, 122, 170, 170L, 180, 180L
  - GG 101, 101L
  - MICR 130, 130L
  - OCN 201, 205
  - PHRM 203
  - PHYS 100, 100L, 105
  - SCI 124, 124L
  - ZOOL 101, 101L

- Social Environment (3 credits)
  - AG 157, 230
  - ANTH 121, 150, 200, 235
  - ASAN 120, 121, 122
  - ECON 120, 130, 131
  - ECED 105, 131
  - FAMR 230
  - GEOG 102
  - HD 234
  - HSER 110, 140, 141, 248, 256
  - HWST 201
  - ICS 100
  - IS 101
  - POLS 110
  - PSY 100, 170, 214, 230, 270, 275
  - SOC 100, 208, 218, 251, 265, 289, 290
  - SPCO 151, 260
  - SSCI 111, 150, 160, 250
  - SUBS 141, 248, 268
  - WS 151, 256

Physical Science Course Requirements:
- BIOL 172 & 172L
- CHEM 161 & 161L
- CHEM 162 & 162L
- PHYS 170 & 170L
- PHYS 171 & 171L
- MATH 205
- MATH 206
- ENG 100
- ENG 102
- ICS 101
- SPCO 251
- Cultural Environment Elective (3 credits)
  - ASAN 120, 121, 122
  - DNCE 153, 185, 190V, 256, 285, 290V
  - ECED 256
  - ENG 103, 105, 204, 205, 215, 255, 256, 257A, 257E
  - HAW 101, 102, 201, 202
  - HIST 120, 151, 152, 153, 154, 241, 242, 274, 281, 282, 284, 288
  - HUM 100, 160, 275
  - JOUR 205
  - JPNS 101, 102, 121, 122
  - LING 102, 121, 235
  - MUS 102
  - PHIL 100, 101, 102, 120, 211, 213, 255
  - REL 150, 151, 152, 153
  - SPCO 231, 233
- Natural Environment (11 credits)
  - AG 122, 141, 175, 175L, 200, 250
  - ASTR 110, 281
  - BIOL 100, 100L, 101, 101L, 141, 141L, 142, 142L, 156, 156L, 281
  - BOT 101, 101L, 105, 105L, 130, 130L
  - CHEM 100, 100L, 151, 151L
  - GEOG 101, 101L, 122, 170, 170L, 180, 180L
  - GG 101, 101L
  - MICR 130, 130L
  - OCN 201, 205
  - PHRM 203
  - PHYS 100, 100L, 105
  - SCI 124, 124L
  - ZOOL 101, 101L
- Social Environment (3 credits)
  - AG 157, 230
  - ANTH 121, 150, 200, 235
  - ASAN 120, 121, 122
  - ECON 120, 130, 131
  - ECED 105, 131
  - FAMR 230
  - GEOG 102
UNIVERSITY OF HAWAI'I, HONOLULU COMMUNITY COLLEGE
ASSOCIATE IN SCIENCE IN NATURAL SCIENCE (ASNS) with CONCENTRATIONS in Biological Science, Physical Science, and Engineering

The ASNS degree is awarded to students who complete the following:
1. 60 credits, all in courses numbered 100 and above.
2. General Education and Concentration requirements, as indicated below.
3. 12 credits must be earned at Honolulu Community College toward ASNS.
4. Cumulative grade point average of 2.0 or higher for all courses numbered 100 or above completed at Honolulu Community College.
5. Two writing intensive courses required (a third is recommended for UH Manoa transfer)
6. One course to fulfill HAP focus.

Program Requirements: Natural Science AS Degree – Biological Sciences Concentration

Program Prerequisites:
ENG 100 or ESL 23, OR Placement in ENG 100;
MATH 25 or Placement in MATH 103

General Education Courses
Foundations Requirements **
ENG 100 Composition I (FW) MATH 103 College Algebra (FS) Two courses from FGA, FGB, FGC
Diversification Requirements **
Select three Diversification courses below; two courses should also satisfy the Writing Intensive (WI) Focus Requirement, and one course should also satisfy the HAP Focus Requirement.
Select an additional 3 credits if the DB/DP course is used to fulfill an Elective requirement, to satisfy the total minimum of 60 credits required for this degree.
Diversification requirement
One course from DA, DH, DL
One course from DS
One course from DB or DP
Core requirements
BIOL 171 BIOL 171L BIOL 172 BIOL 172L CHEM 161 CHEM 161L CHEM 162 CHEM 162L MATH 205 PHYS 151 or PHYS 170 PHYS 151L or PHYS 170L PHYS 152 or PHYS 272 PHYS 152L or PHYS 272L

Electives
AG 100 AG 199 BIOC 141 BIOC 142 BIOL 123 BIOL 124 BIOL 124L BOT 101 BOT 101L BOT/HWST 105 BOT 130 BOT 130L GEOG 101 GEOG 101L GG 101 GG 101L GG 103 ATMO 101 ATMO 101L MICR 130 MICR 130L OCN 201 OCN 201L ZOOL 101 ZOOL 200 ZOOL 200L

Program Requirements: Natural Science AS Degree – Physical Sciences Concentration

Program Prerequisites:
ENG 100 or ESL 23, OR Placement in ENG 100;
MATH 25 or Placement in MATH 103

General Education Courses
Foundations Requirements **
ENG 100 Composition I (FW) MATH 103 College Algebra (FS) Two courses from FGA, FGB, FGC
Diversification Requirements **
Select three Diversification courses below; two courses should also satisfy the Writing Intensive (WI) Focus Requirement, and one course should also satisfy the HAP Focus Requirement. Select an additional 3 credits if the DB/DP course is used to fulfill an Elective requirement, to satisfy the total minimum of 60 credits required for this degree.
Diversification requirement
One course from DA, DH, DL
One course from DS
One course from DB or DP

Core requirements
CHEM 161 CHEM 161L CHEM 162 CHEM 162L MATH 205 MATH 206 PHYS 151 or PHYS 170 PHYS 151L or PHYS 170L PHYS 152 or PHYS 272 PHYS 152L or PHYS 272L

Electives
AG 100 AG 199 BIOC 141 BIOC 142 BIOL 123 BIOL 124 BIOL 124L BOT 101 BOT 101L BOT/HWST 105 BOT 130 BOT 130L GEOG 101 GEOG 101L GG 101 GG 101L GG 103 ATMO 101 ATMO 101L MICR 130 MICR 130L OCN 201 OCN 201L ZOOL 101 ZOOL 200 ZOOL 200L

Program Requirements: Natural Science AS Degree – Engineering Concentration

Program Prerequisites:
ENG 100 or ESL 23, OR Placement in ENG 100;
MATH 25 or Placement in MATH 103

General Education Courses
Foundations Requirements **
ENG 100 Composition I (FW) MATH 103 College Algebra (FS) Two courses from FGA, FGB, FGC

Diversification Requirements **
Select three Diversification courses below; two courses should also satisfy the Writing Intensive (WI) Focus Requirement, and one course should also satisfy the HAP Focus Requirement. Select an additional 3 credits if the DB/DP course is used to fulfill an Elective requirement, to satisfy the total minimum of 60 credits required for this degree.

Diversification requirement
One course from DA, DH, DL
One course from DS
One course from DB or DP

Core requirements
CHEM 161 CHEM 161L CHEM 162 EE 150 MATH 206 MATH 231 MATH 232 PHYS 170 PHYS 170L PHYS 272 PHYS 272L CE 270 or EE 211

Electives
AG 100 BIOC 141 BIOC 142 BIOL 123 BIOL 124 BIOL 124L BOT 101 BOT 101L
BOT/HWST 105 BOT 130 BOT 130L CE 270 CE 271 EE 211 EE 213 GEOG 101 GEOG 101L GG 101 GG 101L GG 103 ICS 111 ATMO 101 ATMO 101L MICR 130 MICR 140
OCN 201 OCN 201L PHYS 151 PHYS 151L PHYS 152 PHYS 152L PHYS 274 ZOOL 101 ZOOL 141 ZOOL 141L ZOOL 142 ZOOL 142L ZOOL 200 ZOOL 200L

UNIVERSITY OF HAWAI‘I, KAUAI COMMUNITY COLLEGE
ASSOCIATE IN SCIENCE IN NATURAL SCIENCE (ASNS) with CONCENTRATIONS in Biological Science, Physical Science, and Engineering.

General Program Prerequisites: Kauai CC has an open door policy so that once students are admitted to the College they can designate themselves as Natural Science students and be in the program.

Biological Science and Physical Science Concentrations
The ASNS degree for Biological or Physical Science concentrations is awarded to students who complete the following:
- 60 credits, all in courses numbered 100 and above.
- General Education and Concentration requirements, as indicated below.
- 12 credits must be earned at Kauai Community College toward ASNS.
- Cumulative grade point average of 2.0 or higher for all courses specifically required by the ASNS concentration.
- One writing intensive course
General Education Courses:

Foundations Requirements
- ENG 100 Composition I or any course designated as FW (FW) Two courses from FGA, FGB, FGC

Diversification Requirements
- Any One Social Science course (DS)
- Any three credits total of coursework from Diversification of Arts (DA), Humanities (DH), or Literature (DL)
- Biological Science Concentration only: BIOL 171 Introduction to Biology I (DB)
- Physical Science Concentration only: Any course designated as DB or DP

Electives (Biological Science and Physical Science Concentrations)
- Any transfer-level courses to reach a total of 60 credits for the degree

Core Program Requirements:
Natural Science AS Degree – Biological Sciences Concentration
- BIOL 171L BIOL 172 BIOL 172L CHEM 161 CHEM 161L CHEM 162 CHEM 162L MATH 205 MATH 206 PHYS 151 or PHYS 170 PHYS 151L or PHYS 170L PHYS 152 or PHYS 272 PHYS 152L or PHYS 272L

Natural Science AS Degree – Physical Sciences Concentration
- CHEM 161 CHEM 161L CHEM 162 MATH 205 MATH 206 PHYS 170 PHYS 170L PHYS 272 PHYS 272L

Engineering Concentration
The ASNS degree for the Engineering concentration is awarded to students who complete the following:
- 60 credits, all in courses numbered 100 and above.
- General Education and Concentration requirements, as indicated below.
- 12 credits must be earned at Kauai Community College toward ASNS.

General Education Courses for Engineering Concentration

Foundations Requirements
- ENG 100 Composition I or any course designated as FW (FW) MATH 205 Calculus I (FS) Two courses from FGA, FGB, FGC

Diversification Requirements
- SP 251 Principles of Effective Public Speaking (DA)
- Three credits of any courses / courses designated as DH or DL
- Principles of Microeconomics ECON 130 or Principles of Macroeconomics ECON 131 (DS)
- Physical Sciences (DP and laboratory sciences (DY): CHEM 161 CHEM 161L CHEM 162 CHEM 162L

Electives (courses with asterisk* are strongly suggested)
- ASTR 110, BIOL 171, BIOL 171L, BIOL 172, BIOL 172L, EE 213*, EE 260*, EE 296*,
ICS 111*, MATH 100, MICR 130, MICR 140, OCN 201, PHYS 151, PHYS 151L, PHYS 152, PHYS 152L, ZOOL 141, ZOOL 141L, ZOOL 142, ZOOL 142L

Core Program Requirements: Natural Science AS Degree – Engineering Concentration
- EE 160 EE 211 MATH 206 MATH 231 MATH 232 PHYS 170 PHYS 170L PHYS 272 PHYS 272L

UNIVERSITY OF HAWAI’I MAUI COLLEGE
ASSOCIATE IN SCIENCE IN NATURAL SCIENCE (ASNS) with CONCENTRATIONS in Biological Science, Physical Science, Engineering, and Information & Communication Technology.

The ASNS degree is awarded to students who complete the following:
1. 60 credits, all in courses numbered 100 and above.
2. General Education and Concentration requirements, as indicated below.
3. 12 credits must be earned at UH Maui College toward ASNS.
4. Cumulative grade point average of 2.0 or higher for all courses numbered 100 or above completed at UH Maui College.
5. Two writing intensive courses required (a third is recommended for UH Manoa transfer)
6. Foundation requirements 13 credits
   1. FW, ENG 100
   2. FS, MATH 205
   3. Choose two courses from different groups
      • FGA, HIST 151
      • FGB, HIST 152 or GEOG 102 or SSM 101
      • FGC, MUS 107 or REL 150
7. Diversification requirements 14 credits
   1. Arts, Humanities, Literatures: 3 credits minimum
      • DA, ART 101, 105, 107D, 113, 115, 123BCD, 223, 243, 244; ART/ICS 161, ART/ICS 205, ART 218/ICS 261, ART 221/ICS 214; BUS/COM 130; DRAM 101, 221, 222, 260, 280; ENG 104; HAW 104; HWST 205A/E/I, 222; MUS 108, 114, 144H, 121C/D/F/G/Z, 122C/D, 123, 124, 132, 180, 203, 216, 253; SP 151, 251; TCOM 261
      • DH, ANTH 235/HIST 288; ART 270, HIST 241, 242, 253, 281, 282, 284; HUM 100, 400; HWST 100BCD, 107, 111, 207, 213, 231, 262, 270, 286, 291; HWST/ MUS 176; LING 102; MUS 106, 167, 271, 272; PHIL 100, 102, 109, 301, 323; SPAN 180v
      • DL, ENG 209, 210, 250, 251, 252, 254, 255, 257, 257E, 316; FIL 261; HAW 261
   2. Social Sciences: 3 credits minimum
      • DS, ANTH 150, 165, 200, 210, 225, 281; BOT 105/HWST 211; COM 145, 210, 459; COM 215/PSY 253, COM/PSY 353; ECON
120, 130, 131; FAMR 230; PACS 108; POLS 110, 180; PSY 100, 170, 202, 212, 213, 240, 250, 251, 260; SOC 100, 218, 231, 251; SSM 301, 401.

3. Natural Sciences: 8 credits minimum
   • DP, CHEM 161 and CHEM 162
   • DY, CHEM 161L and CHEM 162L

Concentration Specific Requirements

- Biological Sciences ASNS Requirements
  - BIOL 171/L, BIOL 172/L, PHYS 151 or PHYS 170, PHYS 152 or PHYS 272
  - Electives (17+ credits to meet 60 credit minimum), AG 122(3), 174(3), 200(4), 265(4); ANTH 210(3), 210L(1), 215(3); AQUA 362(3); ASTR 110(3), 110L(1); BIOC 241(3), 244(3); BIOL 100(3), 105(4), 124(3), 124L(1), 151(3), 152(3), 200(4), 282(3), 331(3), 424(3); BIOL 101/SCI 121(4); BIOL 102/BOT 101(4); BIOL 103/ZOOL 101(4); CHEM 272(3), 272L(1), 273(3), 273L(1); FSHN 185(3), 285(3); GEOG 101(3), 101L(1); GIS/ICS 150(4), 180(4); GG 101(4), 103(3); ICS 110(3), 111(3); MATH 103(3), 115(3), 135(3), 140(3), 206(4)*, 231(3)*, 232(3)*; MICR 130(3), 140(2); OCN 201(3), 201L(1); PHRM 203(3); PHYS 151(4), 152(4), 170(5), 272(4); SCI 122(4); SSM 101(3), 201(3), 202(3), 275(3), 302(3), 375(3), 402(3); ZOOL 141/L(3,1), 142(4), 200(4); any course listed under the Diversification (DA, DH, DL, DS) designations. *Recommended.

- Physical Sciences Requirements
  - MATH 206, PHYS 170, PHYS 272
  - Biological Elective: 3 credits minimum, AG 122, 174, 200, 253, 265; ANTH 215; AQUA 362; BIOL 100, 105, 124, 151, 152, 171, 172, 200, 282, 331, 424; BIOL 101/SCI 121(4); BIOL 102/BOT 101(4); BIOL 103/ZOOL 101(4); FSHN 185, 285; MICR 130; PHRM 203; ZOOL 141/L(3,1), 142, 200
  - Concentration electives: 17+ credits, AG 122(3), 174(3), 200(4), 265(4); ANTH 210(3), 210L(1), 215(3); AQUA 362(3); ASTR 110(3), 110L(1); BIOC 241(3), 244(3); BIOL 100(3), 105(4), 124(3), 124L(1), 151(3), 152(3), 200(4), 282(3), 331(3), 424(3); BIOL 101/SCI 121(4); BIOL 102/BOT 101(4); BIOL 103/ZOOL 101(4); CHEM 272(3), 272L(1), 273(3), 273L(1); FSHN 185(3), 285(3); GEOG 101(3), 101L(1); GIS/ICS 150(4), 180(4); GG 101(4), 103(3); ICS 110(3), 111(3); MATH 103(3), 115(3), 135(3), 140(3), 206(4)*, 231(3)*, 232(3)*; MICR 130(3), 140(2); OCN 201(3), 201L(1); PHRM 203(3); PHYS 151(4), 152(4); SCI 122(4); SSM 101(3), 201(3), 202(3), 275(3), 302(3), 375(3), 402(3); ZOOL 141/L(3,1), 142(4), 200(4); any course listed under the Diversification (DA, DH, DL, DS) designations. *Recommended.
● Engineering Requirements
  o EE 106, MATH 206, PHYS 170, PHYS 272, MATH 231, MATH 232, EE 211
  o Concentration Electives: 6+ credits, AG 122(3), 174(3), 200(4), 265(4); ANTH 210(3), 210L(1), 215(3); AQUA 362(3); ASTR 110(3), 110L(1); BIOC 241(3), 244(3); BIOL 100(3), 105(4), 124(3), 124L(1), 151(3), 152(3), 200(4), 282(3), 331(3), 424(3); BIOL 101/SCI 121(4); BIOL 102/BOT 101(4); BIOL 103/ZOOL 101(4); CHEM 272(3), 272L(1), 273(3), 273L(1); FSHN 185(3), 285(3); GEOG 101(3), 101L(1); GIS/ICS 150(4), 180(4); GG 101(4), 103(3); ICS 110(3), 111(3); MATH 103(3), 115(3), 135(3), 140(3), 231(3)*, 232(3)*; MICR 130(3), 140(2); OCN 201(3), 201L(1); PHRM 203(3); PHYS 151(4), 152(4); SCI 122(4); SSM 101(3), 201(3), 202(3), 275(3), 302(3), 375(3), 402(3); ZOOL 141/L(3,1), 142(4), 200(4); any course listed under the Diversification (DA, DH, DL, DS) designations. *Recommended.

● Information & Communication Technology Requirements
  o ICS 111, ICS 141, ICS 211, ICS 212, ICS 241
  o Biological Science Elective: 3 credits minimum, AG 122, 174, 200, 253, 265; ANTH 215; AQUA 362; BIOL 100, 105, 124, 151, 152, 171, 172, 200, 282, 331, 424; BIOL 101/SCI 121(4); BIOL 102/BOT 101(4); BIOL 103/ZOOL 101(4); FSHN 185, 285; MICR 130; PHRM 203; ZOOL 141/L(3,1), 142, 200.
  o Concentration Electives: 12 credits, AG 122(3), 174(3), 200(4), 265(4); ANTH 210(3), 210L(1), 215(3); AQUA 362(3); ASTR 110(3), 110L(1); BIOC 241(3), 244(3); BIOL 100(3), 105(4), 124(3), 124L(1), 151(3), 152(3), 200(4), 282(3), 331(3), 424(3); BIOL 101/SCI 121(4); BIOL 102/BOT 101(4); BIOL 103/ZOOL 101(4); CHEM 272(3), 272L(1), 273(3), 273L(1); ETRO 140(4); FSHN 185(3), 285(3); GEOG 101(3), 101L(1); GIS/ICS 150(4), 180(4); GG 101(4), 103(3); ICS 101(3), 110(3), 169(3), 171(3), 184(3), 281(3), 282(3); MATH 103(3), 115(3), 135(3), 140(3), 206(3), 231(3)*, 232(3)*; MICR 130(3), 140(2); OCN 201(3), 201L(1); PHRM 203(3); PHYS 151(4), 152(4); SCI 122(4); SSM 101(3), 201(3), 202(3), 275(3), 302(3), 375(3), 402(3); ZOOL 141/L(3,1), 142(4), 200(4); any course listed under the Diversification (DA, DH, DL, DS) designations. *Recommended.

UNIVERSITY OF HAWAI’I, WINDWARD COMMUNITY COLLEGE
ASSOCIATE IN SCIENCE IN NATURAL SCIENCE (ASNS) with CONCENTRATIONS in Biological Science, Physical Science, Engineering, and Information & Communication Technology.

To earn an Associate in Science (A.S.) Degree, Windward Community College students must complete 60 credits in courses numbered 100 or above with a grade-point average of at least 2.0. Credits must be earned in the required areas. The courses listed are 3 credits,
except as noted in parentheses next to the entry.

Foundation Requirements
Written Communication (FW) (3 Credits)
   ENG 100: Composition I
Global and Multicultural Perspectives (FG) (6 Credits from 2 different groups)
   Group A - ANTH 151, ART 175, HIST 151
   Group B - ANTH 152, ART 176, GEOG 102 (if taken at WCC Fall 2015 or later), HIST 152
   Group C - REL 150
Symbolic Reasoning (FS)
The requirement will be fulfilled by the MATH requirement in the concentration

Diversification Requirements
Arts, Humanities and Literature (DA, DH, or DL) (3 Credits)
Social Sciences (DS) (3 Credits)
Biological or Physical Sciences (DB, DP) (3 Credits)
   Required for Physical Science and Information and Communication Technology

Elective Requirements
Natural Science Electives
   Required for Biological Science and Physical Science Concentrations. Natural Science Electives and required in addition to the required Concentration courses (not required for Engineering and Information and Communication Technology Concentrations).
   6 credits of transfer-level Natural Sciences courses (DB, DP, DY) and/or:
      EE 160
      ICS 111, 141, 211, 241
      MATH 100, 103, 115 and higher
      SCI 295V
General Electives
   Transfer-level courses (100 and 200-level courses) in any field to achieve a total of 60 credits.
   Students are encouraged to take electives that will prepare them for their major.

Concentrations
The Associate of Science in Natural Science has four concentrations: Biological Science, Physical Science, Pre-Engineering, and Information & Communication Technology.

Biological Science (minimum 28 credits)
The biological science concentration is designed for students entering into fields such as Biology, Botany, and Zoology.

   BIOL 171: General Biology I (3 credits)
   BIOL 171L: General Biology Lab I (1 credit)
   BIOL 172: General Biology II (3 credits)
   BIOL 172L: General Biology Lab II (1 credit)
   CHEM 161: General Chemistry I (3 credits)
CHEM 161L: General Chemistry Laboratory I (1 credit)
CHEM 162: General Chemistry II (3 credits)
CHEM 162L: General Chemistry Laboratory II (1 credit)
MATH 205: Calculus I (4 credits)
BIOL 265/265L: Ecology & Evolutionary Biology/Lab (3/1) OR BIOL 275/275L: Cell & Molecular Biology / Lab (3/1) OR CHEM 272/272L: Organic Chemistry I / Lab (3/2) OR PHYS 151/151L: College Physics I/Lab (3/1)

For students pursuing the Biological Science Concentration, CHEM 161 fulfills the DP (Physical Science Diversification) for the Biological or Physical Sciences Diversification Requirements.

**Physical Science** (minimum 25 credits)
The physical science concentration is designed for students entering into fields such as Astronomy, Chemistry, Geology, Oceanography, and Physics.

CHEM 161: General Chemistry I (3 credits)
CHEM 161L: General Chemistry Laboratory I (1 credit)
CHEM 162: General Chemistry II (3 credits)
CHEM 162L: General Chemistry Laboratory II (1 credit)
MATH 205: Calculus I (4 credits)
MATH 206: Calculus II (4 credits)
PHYS 151: College Physics I (3 credits) OR PHYS 170: General Physics I (4 credits)
PHYS 151L: College Physics I Laboratory (1 credits) OR PHYS 170L: General Physics I Laboratory (1 credit)
PHYS 152: College Physics II (3 credits) OR PHYS 272: General Physics II (3 credits)
PHYS 152L: College Physics II Laboratory (1 credit) OR PHYS 272L: General Physics II Laboratory (1 credit)

Students pursuing the Physical Sciences concentration must take at least one Biological Science course (DB) as one of the Biological or Physical Sciences Diversification Requirements.

**Engineering** (minimum 33 credits)
The Engineering Concentration is designed for students entering into engineering fields.

CHEM 161: General Chemistry I (3 credits)
CHEM 161L: General Chemistry Laboratory I (1 credit)
CHEM 162: General Chemistry II (3 credits)
MATH 205: Calculus I (4 credits)
MATH 206: Calculus II (4 credits)
MATH 231: Calculus III (3 credits)
MATH 232: Calculus IV (3 credits)
PHYS 170: General Physics I (4 credits)
PHYS 170L: General Physics I Laboratory (1 credit)
PHYS 272: General Physics II (3 credits)
PHYS 272L: General Physics II Laboratory (1 credit)
CE 270: Applied Mechanics I (4 credits) OR EE 160: Programming for Engineers (4 credits) OR EE 211: Basic Circuit Analysis I (4 credits) OR PHYS 274: Introduction to Modern Physics (3 credits) OR SCI 295V: Introduction to STEM Research (variable credits)

Students pursuing the Engineering Concentration do not have a Biological and Physical Sciences Diversification Requirement.

*Information and Communication Technology* (minimum 31 credits)
The Concentration in Information and Communication Technology is a transfer program designed for students interested in pursuing academic study and a career in fields related to computer science, including database design, website creation, and mobile applications.

This requires one of the following three course sequences:

<table>
<thead>
<tr>
<th>CHEM 161: General Chemistry I (3 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 161L: General Chemistry Laboratory I (1 credit)</td>
</tr>
<tr>
<td>CHEM 162: General Chemistry II (3 credits)</td>
</tr>
<tr>
<td>CHEM 162L: General Chemistry Lab (3 credits)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PHYS 151: College Physics I (4 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 151L: College Physics I Laboratory (1 credit)</td>
</tr>
<tr>
<td>PHYS 152: College Physics II (3 credits)</td>
</tr>
<tr>
<td>PHYS 152L: College Physics II Laboratory (1 credit)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PHYS 170: General Physics I (4 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 170L: General Physics I Laboratory (1 credit)</td>
</tr>
<tr>
<td>PHYS 272: General Physics II (3 credits)</td>
</tr>
<tr>
<td>PHYS 272L: General Physics II Laboratory (1 credit)</td>
</tr>
</tbody>
</table>

and:

<table>
<thead>
<tr>
<th>MATH 205: Calculus I (4 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 206: Calculus II (4 credits)</td>
</tr>
<tr>
<td>ICS 111: Introduction to Computer Science I (3 credits)</td>
</tr>
<tr>
<td>ICS 141: Discrete Mathematics for Computer Science I (3 credits)</td>
</tr>
<tr>
<td>ICS 211: Introduction to Computer Science II (3 credits)</td>
</tr>
<tr>
<td>ICS 212: Program Structure (3 credits) OR ICS 215: Introduction to Scripting (3 credits)</td>
</tr>
<tr>
<td>ICS 241: Discrete Mathematics for Computer Science II (3 credits)</td>
</tr>
</tbody>
</table>
D. Support

Once enrolled at a University of Hawai‘i Community College, students are supported by a Counselor who assists them with admissions, financial aid procedures, and course selection, and ensures they are on track for degree completion and transfer to a four-year university.

Supporting students outside of the classroom is a crucial part of enhancing student success. A multitude of areas on campus provide ideal learning environments for peer-to-peer and faculty-to-student interaction. These areas include the Learning Resource Center, and Math Lab. Tutoring and peer-led academic and personal support services are available on many UHCCs as well.

Undergraduate research opportunities are available to students through externally funded sources such as the Pre-Engineering Education Collaborative (PEEC) grant, Hālau Ola Honua (PAGE) grant, Hawaii Space Grant and the Louis Stokes Alliances for Minority Participation (LSAMP) Bridges to the Baccalaureate grant. Research experiences increase student engagement and connect learners with faculty as well as with the scientific research process.

E. Program Learning Outcomes

PLOs are similar at Hawaii CC, Honolulu CC, Kauai CC, and Windward CC. On these campuses, the successful ASNS graduate will be able to demonstrate the following program learning outcomes (PLOs) in addition to the General Learning Outcomes for the AA Liberal Arts degree. Upon successful completion of the AS-NS Degree Program, students will be able to:

1. Analyze data effectively using the most currently available technology.
2. Communicate scientific ideas and principles clearly and effectively.
3. Analyze and apply fundamental mathematical, physical and chemical concepts and techniques to scientific issues.
4. Apply fundamental concepts and techniques in their chosen field of study, such as biology, chemistry, geology, engineering, etc.

UH Maui College also has similar PLOs for the ASNS. At UHMC, the successful ASNS graduate will be able to demonstrate the following program learning outcomes (PLOs) in addition to the General Learning Outcomes for the AA Liberal Arts degree. These outcomes are similar to the PLOs at other UHCC campuses. At UHMC, upon successful completion of the AS-NS Degree Program, students will be able to:

1. Explain the natural and technological world using reflection and quantitative analysis including preparation of a plan to collect, process, and interpret data; evaluation of the plan, procedures, and findings; and communication of the conclusions;
2. Explain scientific knowledge and understanding to different audiences for a range of purposes; and
3. Apply scientific knowledge, skills, and understandings to problems and issues in daily life.

III. Assessment of Student Learning

Each course has a series of Student Learning Outcomes (SLOs) that are designed to evaluate attainment of course competencies. Course SLOs are aligned against larger goals for the program as a whole (“Program Learning Outcomes” or “PLOs.”) STEM faculty develop methods for evaluation and regularly analyze/update the curriculum. Policy calls for all courses to be assessed every five years, although it is common to see more frequent assessments.

Student performance in ASNS courses is measured on a standard grading system (A = 90-100%, B = 80-89%, C = 70-79%, D = 60-69%, F = 59% or below).

The table below illustrates the course SLOs for CHEM 161 and the ways that they align to the ASNS PLOs.

<table>
<thead>
<tr>
<th>Course (CHEM 161, General Chemistry)</th>
<th>ASNS Program Learning Outcomes</th>
</tr>
</thead>
</table>
| SLO1: Demonstrate skills in employing the scientific method. | PLO2: Communicate scientific ideas and principles clearly and effectively  
PLO3: Analyze and apply fundamental mathematical, physical and chemical concepts and techniques to scientific issues  
PLO4: Apply fundamental concepts and techniques in their chosen field of study, such as biology, chemistry, geology, engineering, etc. |
| SLO2: Demonstrate understanding of the elements and principles of chemistry. | PLO1: Analyze data effectively using the most currently available technology |
| SLO3: Extract practical information from theoretical information, with emphasis on computational skill. | PLO1: Analyze data effectively using the most currently available technology |
| SLO4: Demonstrate an appreciation for the impact and influence of chemistry on our lives, and learn how we can cope with our environment using our knowledge of chemistry. | PLO3: Analyze and apply fundamental mathematical, physical and chemical concepts and techniques to scientific issues |

The table below further illustrates the course SLOs for CHEM 272 and how they align (“map”) to ASNS PLOs.

<table>
<thead>
<tr>
<th>Course (CHEM 272, Organic Chemistry)</th>
<th>ASNS Program Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLO1: Apply the concepts of precision and accuracy toward stating the reliability of any measured value and</td>
<td>PLO1: Explain the natural and technological world using reflection and quantitative analysis including preparation of a plan to collect,</td>
</tr>
</tbody>
</table>

in rounding the result of mathematical operations to the proper number of figures. process, and interpret data; evaluation of the plan, procedures, and findings; and communication of the conclusions
PLO2: Explain scientific knowledge and understanding to different audiences for a range of purposes

SLO2: Given a problem statement, identify what is desired and what is given, select the appropriate mathematical or physical relationship required to solve the problem and apply the dimensional approach toward solving it.
PLO3: Apply scientific knowledge, skills, and understandings to problems and issues in daily life

SLO3: Classify and identify the various categories of matter on the basis of its physical and chemical properties, and composition.
PLO1: Explain the natural and technological world using reflection and quantitative analysis including preparation of a plan to collect, process, and interpret data; evaluation of the plan, procedures, and findings; and communication of the conclusions

SLO4: Apply the concepts of the modern atomic theory in interpreting the arrangement of electrons within atoms, the calculation of energy changes and the frequency or wavelength of light emitted or absorbed by atoms.
PLO3: Apply scientific knowledge, skills, and understandings to problems and issues in daily life

SLO5: Apply the periodic trends exhibited by the elements in predicting their physical and chemical properties.
PLO2: Explain scientific knowledge and understanding to different audiences for a range of purposes
PLO3: Apply scientific knowledge, skills, and understandings to problems and issues in daily life

SLO6: Write the chemical formulas and names of binary and ternary compounds.
PLO3: Apply scientific knowledge, skills, and understandings to problems and issues in daily life

SLO7: Draw the structure and predict the shape of molecules.
PLO3: Apply scientific knowledge, skills, and understandings to problems and issues in daily life

IV. Adequacy of Program Resources

A. Faculty

Faculty resources are sufficient at each of the five UHCCs addressed in this proposal. At each institution, full-time faculty members are complemented by part-time Lecturers who, together, are able to offer a complete program of study to ASNS students. Faculty who contribute directly to courses included in the core of the ASNS programs on these five campuses include:

Hawaii Community College
The ASNS degree program is part of the Math and Natural Sciences Department. The Department has 11 full-time faculty members as of Fall 2017. These faculty members were chosen for their content expertise and excellence in the classroom and deliver a high quality educational experience and provide effective student support that enables students to successfully complete the program and transfer to four-year institutions.
<table>
<thead>
<tr>
<th>Faculty</th>
<th>Discipline</th>
<th>ASNS Courses Taught</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marilyn Bader</td>
<td>Mathematics</td>
<td>MATH 26, MATH 100, MATH 120</td>
</tr>
<tr>
<td>Drew Kapp</td>
<td>Geography</td>
<td>GEOG 101, GEOG 102, GEOG 122</td>
</tr>
<tr>
<td>Roberta Brashears-Kauffers</td>
<td>Biology</td>
<td>BIOL 141/L, BIOL 142/L, MICR 130/L</td>
</tr>
<tr>
<td>Laura Brezinsky</td>
<td>Biology</td>
<td>BIOL 100</td>
</tr>
<tr>
<td>Toni Cravens</td>
<td>Mathematics</td>
<td>MATH 76, MATH 115, MATH 135, MATH 140, MATH 205, MATH 206</td>
</tr>
<tr>
<td>Bernhard Laurich</td>
<td>Astronomy, Chemistry, Physics</td>
<td>ASTR 110, CHEM 100/L, CHEM 151/L, PHYS 100, PHYS 105</td>
</tr>
<tr>
<td>Ruria Namba</td>
<td>Biology</td>
<td>BIOL 100/L, BIOL 141/L, BIOL 142/L, BIOL 171/L, BIOL 172/L, MICR 130/L</td>
</tr>
<tr>
<td>Michelle Phillips</td>
<td>Biology</td>
<td>BIOL 101/L, BIOL 171/L, BIOL 172/L</td>
</tr>
<tr>
<td>Pamela Scheffler</td>
<td>Agriculture, Biology, Geography, Environmental Science</td>
<td>AG 175/L, AG 275/L, BIOL 156/L, BIOL 171/L, BIOL 172/L, SCI 124/L</td>
</tr>
<tr>
<td>Orlo Steele</td>
<td>Agriculture, Biology, Botany, Geography</td>
<td>AG 245/L, AG 291, BOT 101/L, BOT 105/L, GEOG 170/L</td>
</tr>
<tr>
<td>Jackie Stradtmann-Carvalho</td>
<td>Mathematics</td>
<td>MATH 26, MATH 100, MATH 135, MATH 140, MATH 205, MATH 206</td>
</tr>
<tr>
<td>Wane Sugikawa</td>
<td>Mathematics</td>
<td>MATH 26, MATH 100, MATH 103</td>
</tr>
<tr>
<td>Lecturers are routinely hired on an as-needed basis</td>
<td>Various</td>
<td>Chemistry, Physics, Astronomy, Geology, Geography, Botany, Agriculture, Mathematics</td>
</tr>
</tbody>
</table>

Honolulu Community College
The ASNS degree program is part of the Science, Technology, Engineering and Math Departments. The Department has 14 full-time faculty members as of Fall 2017. Most of the faculty members in the STEM Department teach classes in the ASNS program. These
faculty members were chosen for their content expertise and excellence in the classroom. Faculty members in the program deliver a high quality educational experience and provide effective student support that enables students to successfully complete the program and transfer to four-year institutions.

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Discipline</th>
<th>ASNS Courses Taught</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ruth Bajor</td>
<td>Mathematics</td>
<td>Math 103</td>
</tr>
<tr>
<td>Mingjing Chi</td>
<td>Mathematics</td>
<td>Math 103</td>
</tr>
<tr>
<td>Michael Ferguson*</td>
<td>Chemistry</td>
<td>CHEM 151/L, 161/L, 162/L</td>
</tr>
<tr>
<td>Sterling Foster</td>
<td>Mathematics</td>
<td>MATH 103, 135, 140</td>
</tr>
<tr>
<td>Clarise Ikeno</td>
<td>Mathematics</td>
<td>Math 103</td>
</tr>
<tr>
<td>Michael Kaczmarski</td>
<td>Mathematics</td>
<td>MATH 103, 135, 140</td>
</tr>
<tr>
<td>Shidong Kan</td>
<td>Physics</td>
<td>PHYS 151/L, 152/L, 171/L ASTR 110</td>
</tr>
<tr>
<td>Femar Lee</td>
<td>Mathematics</td>
<td>MATH 103</td>
</tr>
<tr>
<td>Sang Lee</td>
<td>Mathematics</td>
<td>MATH 103</td>
</tr>
<tr>
<td>Steven Mandraccia</td>
<td>Mathematics</td>
<td>MATH 103, 135, 140, 205, 206, 231, 232</td>
</tr>
<tr>
<td>Michelle Nathan</td>
<td>Oceanography</td>
<td>OCN 201, 201L ZOOL 200, 200L</td>
</tr>
<tr>
<td>Brent Rubio</td>
<td>Chemistry</td>
<td>CHEM 151/L, 161/L, 162/L, BIOC 141</td>
</tr>
<tr>
<td>Paul Sherard</td>
<td>Physics</td>
<td>ASTR 110</td>
</tr>
<tr>
<td>Gretel Sia</td>
<td>Mathematics</td>
<td>MATH 103, 135, 140</td>
</tr>
</tbody>
</table>
Lecturers are routinely hired on an as-needed basis

Various

Chemistry, Physics, Astronomy, Oceanography, Geology, Biology, Microbiology, Physiology, Zoology, Botany, Agriculture, Mathematics

Faculty outside of Natural Sciences and Mathematics also teach ASNS courses on an as-needed basis

John Delay

Geography

BOT 105, GEOG 101

Jerald Keaulana

Language Arts, Hawaiian

BOT 105

Vern Takabayashi

Information & Computer Science

ISC 111, EE 150

* Michael Ferguson held a dual appointment between Honolulu Community College and Maui College Fall 2017. Prior to Fall 2017 he was only at Honolulu Community College and after Fall 2017 he is only at Maui College.

Kauai Community College

The ASNS degree program is part of the Science and Math (SAM) Division. The Division has 15 full-time faculty members as of Fall 2017. Just two regular full-time faculty members and two grant-funded teaching positions in the SAM Division teach science courses in the ASNS program. The required math courses are taught by math faculty assigned on a rotating basis. The table below features only those who have taught courses contributing to the ASNS degree. These faculty members were chosen for their content expertise and excellence in the classroom. Faculty members in the program deliver a high quality educational experience and provide effective student support that enables students to successfully complete the program and transfer to four-year institutions.
<table>
<thead>
<tr>
<th>Faculty</th>
<th>Discipline</th>
<th>ASNS Courses Taught (BOLD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kelene Keating</td>
<td>Biological Sciences</td>
<td>BIOL 110V, <strong>BIOL 171</strong>, <strong>BIOL 171L</strong>, <strong>BIOL 172</strong>, <strong>BIOL 172L</strong>, SCI 121, SCI 121L</td>
</tr>
<tr>
<td>Richard Carney</td>
<td>Mathematics</td>
<td>Early College Math</td>
</tr>
<tr>
<td>Loni Delaplane</td>
<td>Mathematics</td>
<td>All levels of Math (i.e. <strong>MATH 140X</strong>, <strong>MATH 205</strong>, <strong>MATH 206</strong>, <strong>MATH 243</strong>, <strong>MATH 244</strong> for ASNS)</td>
</tr>
<tr>
<td>Gigi Drent</td>
<td>Mathematics</td>
<td>All levels of Math</td>
</tr>
<tr>
<td>Ryan Girard</td>
<td>Mathematics</td>
<td>All levels of Math</td>
</tr>
<tr>
<td>Jon Kalk</td>
<td>Mathematics</td>
<td>All levels of Math</td>
</tr>
<tr>
<td>Erin Millard</td>
<td>Mathematics</td>
<td>All levels of Math</td>
</tr>
<tr>
<td>Brad Dempsie</td>
<td>Physical Sciences</td>
<td><strong>PHYS 170</strong>, <strong>PHYS 170L</strong>, <strong>PHYS 272</strong>, <strong>PHYS 272L</strong></td>
</tr>
<tr>
<td>Michael Hannawald</td>
<td>Physical Sciences</td>
<td>ASTR 110, <strong>ASTR 110L</strong>, CHEM 151, CHEM 151L, CHEM 161, CHEM 161L, CHEM 162, CHEM 162L, PHYS 151, PHYS 151L, PHYS 152, PHYS 152L, PHYS 170, PHYS 170L, PHYS 272, PHYS 272L</td>
</tr>
<tr>
<td>Stephen Taylor</td>
<td>Physical Sciences</td>
<td>ASTR 110, GG 101, GG 101L, OCN 101, OCN 120, OCN 199V, OCN 201, PHYS 101, <strong>PHYS 151</strong>, <strong>PHYS 151L</strong>, <strong>PHYS 170</strong>, <strong>PHYS 170L</strong>, SCI 122, SCI 122L, SCI 199V</td>
</tr>
</tbody>
</table>

**UH Maui College**
The ASNS degree program is part of the Science, Technology, Engineering and Math Departments. The Department has 23 full-time faculty members as of Fall 2017. The majority of the faculty members in the STEM Department teach classes in the ASNS program. These faculty members were chosen for their content expertise and excellence in the classroom. Faculty members in the program deliver a high quality educational
experience and provide effective student support that enables students to successfully complete the program and transfer to four-year institutions.

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Discipline</th>
<th>ASNS Courses Taught</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amirhossein Amiraslani</td>
<td>Mathematics</td>
<td>MATH 140, 205, 206, 231, 232</td>
</tr>
<tr>
<td>Bret Bessac</td>
<td>Biology/Biochemistry</td>
<td>ZOOL 141, 141L, 142, 142L, BIOC 241, 244</td>
</tr>
<tr>
<td>Tom Blamey</td>
<td>Mathematics</td>
<td>MATH 115</td>
</tr>
<tr>
<td>Timothy Botkin</td>
<td>Sustainable Sciences Management</td>
<td>SSM 101, 201, 275</td>
</tr>
<tr>
<td>Sean Calder</td>
<td>Biological Sciences</td>
<td>BIOL 100, 101, 103, MICR 130, 140, ZOOL 101</td>
</tr>
<tr>
<td>Elisabeth Dubuit</td>
<td>Engineering</td>
<td>EE 160, 211</td>
</tr>
<tr>
<td>Ann Emmsley</td>
<td>Agriculture</td>
<td>AG 122, 174, 200, 253, 265</td>
</tr>
<tr>
<td>Michael Ferguson</td>
<td>Chemistry</td>
<td>CHEM 161, 161L, 162, 162L</td>
</tr>
<tr>
<td>Donna Harbin</td>
<td>Mathematics</td>
<td>MATH 103, 135</td>
</tr>
<tr>
<td>Mark Hoffman</td>
<td>Engineering</td>
<td>EE 211</td>
</tr>
<tr>
<td>Sally Irwin</td>
<td>Biological Sciences</td>
<td>BIOL 151, 152, 171, 171L, MICR 130, 140</td>
</tr>
<tr>
<td>Meagan Jones</td>
<td>Sustainable Sciences Management</td>
<td>SSM 275, 302, 375, 402</td>
</tr>
<tr>
<td>Daniel Kruse</td>
<td>Information and Computer Sciences</td>
<td>ICS 101, 111, 211, 212</td>
</tr>
<tr>
<td>Nicholas Okamoto</td>
<td>Mathematics</td>
<td>MATH 103, 140, 205, 206, 231, 232</td>
</tr>
<tr>
<td>Buddhi Rai</td>
<td>Physics</td>
<td>PHYS 151, 152, 170, 272</td>
</tr>
</tbody>
</table>
Lecturers are routinely hired on an as-needed basis

### Windward Community College

WCC’s ASNS program resides within the Department of Natural Science and is offered as a joint effort of two academic departments which report to the same Academic Dean: Natural Sciences and Math/Business. Full-time faculty contributing to the ASNS include 5 from Natural Sciences, 3 from Math, and 2 from ICS. These faculty collaborate to offer a full complement of STEM programs of study including all four concentrations of the ASNS. WCC is the second smallest UHCC campus but offers the third largest ASNS program.

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Discipline</th>
<th>ASNS Courses Taught</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joseph Ciotti</td>
<td>Physics and Astronomy</td>
<td>PHYS 151, 151L, 152, 152L, 170, 170L, 272, 272L</td>
</tr>
<tr>
<td>Leticia Colmenares</td>
<td>Chemistry</td>
<td>CHEM 161, 161L, 162, 162L, 272, 272L</td>
</tr>
<tr>
<td>David Krupp</td>
<td>Marine and Biological Sciences</td>
<td>BIOL 171, 171L, 172, 172L, 265, 265L</td>
</tr>
<tr>
<td>Hongwei Li</td>
<td>Biology, Botany, Microbiology</td>
<td>BIOL 275, 275L</td>
</tr>
<tr>
<td>Ingelia White</td>
<td>Botany and Microbiology</td>
<td>BIOL 275, 275L</td>
</tr>
<tr>
<td>Jean Okumura</td>
<td>Mathematics</td>
<td>MATH 140, 205, 206 231</td>
</tr>
<tr>
<td>Jody Storm</td>
<td>Mathematics</td>
<td>MATH 140, 205, 206 231</td>
</tr>
<tr>
<td>Navtej Singh</td>
<td>Mathematics</td>
<td>EE 160, MATH 140, 205, 206 231</td>
</tr>
<tr>
<td>Laura Sue</td>
<td>ICS</td>
<td>ICS 111</td>
</tr>
<tr>
<td>David Maxson</td>
<td>ICS</td>
<td>ICS 111, 141, 211, 212, 215, 241</td>
</tr>
</tbody>
</table>
Other Lecturers are routinely hired on an as-needed basis

<table>
<thead>
<tr>
<th>Various</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL, CHEM, CE, EE, ICS, MATH, PHYS</td>
</tr>
</tbody>
</table>

B. Budget and Resources

Hawaii Community College
One biology faculty member and one math faculty member are housed on the Palamanui campus in Kona, all other faculty members listed in the previous section have offices on the Manono campus in Hilo. All faculty provide support and instruction to the student body. In addition to on campus course offerings, a small selection of courses are also offered via distance education (online and Vidcon).

At the time of the program proposal, many of the courses required for the ASNS degree were being taught and the addition of new courses (such as CHEM 161 & 162) has been absorbed through the department budget, therefore, no additional funding was required. Furthermore, science labs, including physics, astronomy, optics, marine sciences, microbiology, anatomy/physiology, human biology, and chemistry will ensure quality STEM facilities in support of robust STEM offerings at HawCC, including the ASNS degree program, on into the future.

Honolulu Community College
All faculty members listed in the previous section have offices on the main Honolulu Community College campus and provide support and instruction to the student body. In addition to on campus course offerings, a small selection of courses are also offered via distance education (online and cable). HonCC has initiated using “Lab Kits” so students from remote parts of the state can participate in lab-based ASNS courses.

Since all of the courses required for the ASNS degree were already being taught at the time of the program proposal, no additional funding was required. Furthermore, science labs, including physics, astronomy, optics, marine sciences, microbiology, anatomy/physiology, human biology, and chemistry will ensure quality STEM facilities in support of robust STEM offerings at HonCC, including the ASNS degree program, on into the future.

Kauai Community College
All faculty members listed in the previous section have offices on the main Kauai Community College campus and provide support and instruction to the student body. In addition to on campus course offerings, a very small selection of courses are also offered via distance education (online).

Science labs, including physics, astronomy, marine sciences, microbiology, anatomy/physiology, human biology, and chemistry will ensure quality STEM facilities in support of robust STEM offerings at Kauai CC, including the ASNS degree program, on into the future. A moderate equipment cost is upcoming as it is anticipated the fume hood in the chemistry lab will need replacement soon.
All of the courses required for the ASNS degree except BIOL 171, BIOL 171L, BIOL 172, BIOL 172L were already being taught at the time of the initial program proposal and the biology instructor was funded by a donation for several years. The instructor is currently employed full time through general funds, though more than half of her teaching load is focused on degree programs other than the ASNS.

Two physical scientists were working overloads and a new physical scientist hired through the NSF TCUP Hālau Ola Honua grant will alleviate and spread the teaching load. The grant lasts from 2017-2021. As ASNS enrollment grows the college may need to hire a physical scientist to continue the recent position beyond 2021.

**UH Maui College**

All faculty members listed in the previous section have offices on the main UH Maui College campus and provide support and instruction to the student body. In addition to on campus course offerings, a small selection of courses are also offered via distance education (online and cable). UH Maui College furthermore has education centers on the islands of Molokaʻi and Lanaʻi along with education centers at Hana and Lahina on the island of Maui along with the main campus in Kahului. However, for the most part students still need to travel to the Kahului campus to complete lab coursework. Many non-lab based courses are offered via distance education via Hawaii Interactive Television System (HITS) or through online modality. UHMC has initiated using “Lab Kits” so students from remote parts of the county can participate in lab-based ASNS courses.

Since all of the courses required for the ASNS degree were already being taught at the time of the program proposal, no additional funding was required. Furthermore, Ike Leʻa, science labs, including physics, astronomy, optics, marine sciences, microbiology, anatomy/physiology, human biology, and chemistry will ensure quality STEM facilities in support of robust STEM offerings at UHMC, including the ASNS degree program, on into the future.

**Windward Community College**

All faculty members listed in the previous section have offices on the Windward Community College campus and provide support and instruction to the student body (except for one Lecturer who teaches ASNS ICS classes using distance learning technologies from an off-island location). In addition to on-campus course offerings, a small selection of lecture courses are also offered via distance education (online and cable).

With the exception of the Engineering (CE & EE) courses, all of the courses required for the ASNS degree were already being taught at the time of the program proposal. Currently, these engineering courses are being supported with extramural funds. The College hopes to secure a full-time tenure-track position in Physics/Engineering in the future to teach these classes.

In terms of facilities supporting ASNS lab instruction, the College provides the following discipline-specific classroom laboratories: Biology/Microbiology (supports, BIOL 171L & 275), Biology/Zoology (supports BIOL 172L & BIOL 265L), Chemistry (supports CHEM 161L, 162L, & 272L), and Physics/Astronomy/Engineering (EE 160 & 211, PHYS 151L,
152L, 170L & 272L, and SCI 295V). These fully-equipped laboratory classrooms are also used for other Natural Science laboratory courses not specifically required for the ASNS, but possibly functioning as elective courses. Three other laboratory classrooms (Botany, Oceanography, and Geology) may also be used to support ASNS required lab courses and electives. Finally, a Title III grant includes funds to convert a conventional classroom into an instructional laboratory supporting biological and environmental science laboratory courses.

V. Program Efficiency

Hawaii Community College
It is important to reiterate that this program is providing a path to University of Hawaii STEM baccalaureate degree programs at no extra cost to HawCC.

Honolulu Community College
It is important to reiterate that this program is providing a path to University of Hawaii STEM baccalaureate degree programs at no extra cost to HonCC.

Kauai Community College
It is important to reiterate that this program is providing a path to University of Hawaii STEM baccalaureate degree programs at no extra cost to Kauai CC. Science and Mathematics division also serves the Liberal Arts AA degree program, the largest single degree program at Kauai CC. Kauai CC is the only institution of higher education on the island and serves a relatively small community and thus has a relatively small student population. The same range of course options necessary to run a degree program at other colleges must be offered at Kauai CC if students here are to have the same opportunities. In turn, the College must maintain the same lab facilities with fewer students, inevitably leading to higher costs per student for all programs. Average class size and fill rate numbers are brought down most by engineering courses which is understandable in that the engineering concentration was just approved for the start of fall 2016 semester.

Kauai CC serves a relatively small community and thus has a relatively small student population. But, it is the only institution of higher education on the island. Kauai CC’s ASNS is vitally important for residents of the State who want to earn science degrees. Enrollment in the ASNS is increasing because residents are learning there is finally a financially viable option for emerging scientists right where they live: on Kauai.

UH Maui College
It is important to reiterate that this program is providing a path to University of Hawaii STEM baccalaureate degree programs at no extra cost to UHMC.

Windward Community College
It is important to reiterate that this program is providing a path to University of Hawaii STEM baccalaureate degree programs at no extra cost to WCC. With the exception of two new disciplines (Civil Engineering and Electrical Engineering) developed to support the new Engineering concentration, all ASNS courses were already offered at the time of the program’s inception.
VI. Evidence of Program Quality

From inception, the ASNS was designed to provide a clearer and more tangible role for the University of Hawaii Community Colleges to support overall System goals to increase the quality and quantity of graduates prepared to enter the STEM workforce. As such, the ASNS has always focused on four-year baccalaureate transfer. In this way, it more closely mirrors the AA in Liberal Arts degree than other AS or CTE programs (which are focused on workforce and career preparation.) While a small number of graduates do enter the STEM workforce upon completion of the ASNS, the vast majority enter the program with aspirations to transfer to upper-division UH campuses and/or to complete the BS degree in a STEM-related field.

The five UHCCs included in this consolidated proposal intend to continue to collaborate to continue to 1) enhance the quality and quantity of STEM curricula offered at our institutions, 2) build viable articulated pathways into emerging STEM degree programs, and 3) increase the number and percentage of students who complete the ASNS in addition to transfer.

Campus highlights related to specific components reflecting various aspects of “program quality” follow:

**Hawaii Community College**

Over the past three years the number of majors in the program has steadily grown from 23 to 57 majors. In 2016/17 the program had 57 majors, which included 22 Native Hawaiian Majors. The course completion rate has ranged from 69%-81% over the past three years. The persistence rate has steadily increased from 45% in the first year to nearly 65% in the 2016/17 year. While numbers are small, the numbers of graduates from the program is increasing and we expect that trend to continue as the program ages. During 2016/17 eight HawCC ASNS majors, including three that completed the degree, transferred into University of Hawaii baccalaureate degree programs. Because HawCC does not yet have the facilities to offer physics labs, we expect to see a higher number of transfers than graduates until labs are offered at our own campus.

**Honolulu Community College**

Over the past three years the number of majors in the program has remained steady at just over 66 majors. In 2016/17 the program had 66 majors, which included 13 Native Hawaiian Majors. The course completion rate lowered nominally from 76 percent in 2015/16 to 70 percent in 2016/17. The persistence rate has remained steady at over 60% for two years. These data indicate that by addressing course completion should be able to increase the number of graduates from the program. During 2016/17 eight HonCC ASNS majors, including two that completed the degree, transferred into University of Hawaii baccalaureate degree programs.

**Kauai Community College**

Enrollment in the ASNS at Kauai CC continues to grow even as overall enrollment is falling at throughout the UH system and the nation. Enrollment grew to 32 students in fall 2017, a gain of 60% from 20 students in 2016-2017. The extraordinary gains were tempered by low graduation rates. Just four students total have earned the ASNS degree. All four transferred to universities in the UH system. A revised curriculum as implemented this fall 2017
semester and is detailed in section II part c. The new curriculum better aligns with Bachelor of Science majors at UH Manoa, offering maximum flexibility to accommodate the broad range of lower division course requirements. The change should facilitate ASNS degree completion and transfer rates.

**UH Maui College**
Over the past three years the number of majors in the program has remained steady at just over 50 majors. In 2016/17 the program had 52 majors, which included 22 Native Hawaiian Majors. The course completion rate rose nominally from 79 percent in 2015/16 to 81 percent in 2016/17. In order to increase the number of graduates the program will need to improve upon the fall `16' to fall `17' persistence rate of 34 percent. These data indicate that by addressing fall to fall persistence and by increasing the number of majors UHMC should be able to increase the number of graduates from the program. During 2016/17 five UHMC ASNS majors, including four that completed the degree, transferred into University of Hawaii baccalaureate degree programs.

**Windward Community College**
Over the past four years the number of majors in the program has increased dramatically from 33 in AY2013-14 to 156 in AY2016-17. Similarly, the number of Native Hawaiian ASNS majors increased from 8 (24.2%) in AY2013-14 to 51 (32.7%) in AY2016-17. The course completion rate has averaged about 73% peaking at 79% in AY2016-17. Since the inception of the program, 50 students have received an ASNS degree. In order to increase the number of graduates, the program seeks to improve upon the Fall-to-Fall persistence rate (35.5% in AY 2016-17).

**VII. Compatibility of Program Outcomes with Strategic Plan**
The ASNS program is consistent with the goals and objectives set forth in the 2015-2021 UHCC Strategic Directions, which are reflected in the University of Hawaii Community Colleges Strategic Plan. The ASNS further aligns with the following initiatives of the UHCCs:

**Hawai'i Graduation Initiative**
Increasing enrollment and completion rates while reducing time to completion:
- Accelerate time to “college-ready” status for students at one or two levels below the college-ready standard.
- Establish clear structured pathways for each degree for both full-time and part-time students.

The primary purpose of the ASNS degree program is to establish a clear pathway for students interested pursuing baccalaureate degrees in STEM. This may reduce the number of credits a student typically takes before transfer. Specifically, the ASNS support HGI by seeking to:
- Continue to serve populations in geographic regions with large Native Hawaiian populations.
• Eliminate achievement gaps for target populations - Pell recipients, Pacific Islanders, Native Hawaiians, Filipino - in enrollment, graduation, STEM degrees and transfer.

The ASNS degree program further addresses the need for increasing enrollment of students interested in pursuing STEM degrees and the graduation of STEM degrees. Program requirements were designed with UH Mānoa and UHCC faculty to ensure articulation. Identifying STEM students allows the college to properly advise and to monitor student progress.

Increase Enrollment of Target Populations
Increasing enrollment and year-to-year retention of recent high school graduates, high school non-completers and GED recipients, Pacific Islanders, working adults, and international students by developing outreach programs to the Pacific Islander communities and related agencies.

The ASNS program regularly develops and participates in community outreach endeavors to increase general knowledge about careers in STEM and how the ASNS degree can serve students toward that goal.

Hawaiʻi Innovation Initiative
Developing and delivering programs and training needed for a qualified workforce in existing and emerging careers.

• Increased access to STEM programs and provide distance and hybrid education opportunities in STEM education.
• Creation of specific pathways into baccalaureate programs in data science and cybersecurity, biotechnology, engineering, physical sciences, and other demand fields using meta-majors.

The ASNS program allows the UHCCs to identify STEM students and to provide them with the assistance and support they need for academic success. STEM programs are an excellent place to implement non-traditional learning environments such as peer tutoring, place-based learning, and problem-based learning. The program has four concentrations (Biological Science, Physical Science, Engineering, and Information & Communication Technology), each with its own specific requirements to ensure students are prepared to complete their baccalaureate degrees.

Modern Teaching and Learning Environments
Ensuring that students and faculty have the learning and teaching environments appropriate for the 21st century and the sustainability practices to maintain those environments.

• Enhance facilities with appropriate technology and ensure all facilities support 21st century learning and teaching environments.

STEM faculty regularly integrate new technology to better engage students. The UHCCs provide ample opportunities for professional development in this area through faculty
A High Performing System of Higher Education
Providing students with smooth transitions from K-12 through the community colleges to the baccalaureate institutions in a cost-effective manner.

- Expand partnerships with area high schools to continue to align programs with DOE pathways with the community college.

ASNS programs are being implemented in partnership with the Hawaii DOE and with four-year institutions. Best practices to ensure timely and effective transition of students from high school to community college and on to baccalaureate institutions are being implemented across campuses and institutions.

Additionally, the ASNS degree program aligns with institutional Mission Statements and Institutional Learning Outcomes of the various UHCCs:

Hawaii Community College: Mission Statement
Hawai‘i Community College promotes student learning by embracing our unique Hawai‘i Island culture and inspiring growth in the spirit of “E ‘Imi Pono” (seeking excellence). Aligned with the UH Community Colleges System’s mission, we are committed to serving all segments of our Hawai‘i Island community.

Hawaii Community College: Institutional Learning Outcomes
Na nā kānaka ‘imi na’auao o ke Kauhale e (Our Kauhale of lifelong learners will):
- ho’oka’a’ike pono i nā manawa like ‘ole. Communicate effectively in a variety of situations.
- no’ono’o loi ma ka huli ‘ana i ka hā’ina a ho’oholo mana’o me ke na’auao. Utilize critical thinking to solve problems and make informed decisions.
- kōkua i ke kaiaulu, me ka ‘ike a me ka mākau, a me ka mahalo ho’i i nā kānaka ‘ōiwi a me nā mo’omeheu ‘ōiwi o Hawai‘i nei, a me nā mo’omeheu ‘ē a’e o ka honua. Apply knowledge and skills to make contributions to community that are respectful of the indigenous people and culture of Hawai‘i island, as well as other cultures of the world.
- kūlia i ka nu’u ma ka ‘imi na’auao a ma ka ‘oihana ho’i ma o ka huli ‘ana ma nā ‘oihana a me nā kumuwaiwai maika’i. Utilize quality comprehensive services and resources in the on-going pursuit of educational and career excellence.
- ho’opuka a ho’omau i kekahai kaiapuni a’o maluhia me ona kaiapuni ‘oihana e mahalo
Produce and perpetuate safe, healthy learning and professional environments that are respectful of social and individual diversity.

- mālama i ke kaiapuni no ke ola pono ‘ana o ke kanaka a me ke kaiaulu.
  Contribute to sustainable environmental practices for personal and community well-being

Honolulu Community College: Mission Statement
Honolulu Community College provides accessible educational opportunities through an engaging learning environment that values academic excellence and personal growth of all students, with a kuleana (responsibility) to Native Hawaiians and our community, through career, liberal arts, technology, transfer, and professional training programs.

Honolulu Community College: Institutional Learning Outcomes
Honolulu Community College defines the following six core competencies as its Institutional Learning Outcomes:

- Critical Thinking - Effectively analyze arguments, assumptions, and problems and draw conclusions.
- Information Literacy - Form strategies to locate, evaluate, and apply information, and know the ethical and legal issues surrounding information and information technology.
- Effective Communication - Actively express and exchange ideas through listening, speaking, reading, writing, and other modes of interpersonal expression.
- Quantitative Reasoning - Effectively analyze numerical data, solve quantitative problems, and apply mathematical concepts.
- Career Preparation - Demonstrate knowledge and skills to successfully move to a baccalaureate education or selected vocation.
- Community Awareness and Social Responsibility - Demonstrate and apply an understanding of moral and ethical issues that pertain to the environment, social justice, and cultural diversity.

Kauai Community College: Mission Statement
Kaua‘i Community College is a kahua that inspires, engages, and empowers learners and educators to enrich our community and our world.

Kaua‘i CC fulfills its mission by incorporating the following practices. The College:

- Provides open access, affordable education;
- Welcomes and values diversity;
- Delivers educational opportunities on campus in small classes, in the community, internationally, and through distance learning;
- Provides programs that address workforce and community needs;
- Prepares and supports students individually and collectively to succeed in academic endeavors and engage in life-long learning;
- Encourages innovation and promotes sustainability while perpetuating the unique history and culture of Kaua‘i.
Kauai Community College: Institutional Learning Outcomes

- Written Communication: Write in clear and organized Standard American English to present, explain, and evaluate ideas, to express feelings, and to support conclusions, claims, or theses.
- Oral Communication: Speak in understandable and organized Standard American English to explain ideas, to express feelings, and to support conclusions, claims, or theses. Receive, construct meaning from, and respond to spoken and/or nonverbal messages.
- Reading: Read, evaluate, and interpret written material critically and effectively.
- Symbolic Reasoning: Use appropriate mathematical and logical concepts and methods to understand, analyze, and explain issues.
- Integrative Thinking: Use problem-solving skills and creative thinking strategies to make connections among ideas and experiences and to synthesize and transfer learning to new and varied situations.
- Information Literacy: Locate, retrieve, evaluate, and interpret the value of information gained from reading text materials, making observations, and using electronic media, and reflectively use that information.
- Technological Competency: Identify, allocate, and utilize technological resources effectively.
- Teamwork: Participate proactively and interact cooperatively and collaboratively in a variety of settings.
- Respect for Diversity: Demonstrate cognitive, affective, and behavioral skills and characteristics that are respectful of others' opinions, feelings, values, and individual expression.
- Ethics: Demonstrate an understanding of ethical issues in public and personal contexts that can be used to make sound judgments and decisions.

UH Maui College: College Mission
The University of Hawai‘i Maui College inspires students to develop knowledge and skills in pursuit of academic, career, and personal goals in a supportive educational environment that emphasizes community engagement, lifelong learning, sustainable living, Native Hawaiian culture, and global understanding.

UH Maui College: Institutional Learning Outcomes
To qualify for graduation, students demonstrate the following abilities at a level of rigor appropriate for their degree:

- Apply essential skills and knowledge of a technical or academic field to perform tasks, address challenges, and solve problems
- Address social, environmental, or economic issues through work that exemplifies effective interaction in real-world situations
- Integrate multiple perspectives and a broad context of understanding to interpret problems, issues, and artifacts
- Solve problems utilizing mathematical models, methods, and effective quantitative reasoning
- Write and speak effectively to convey ideas that meet the needs of specific audiences and purposes
• Apply creativity and analytical thinking to convey ideas, address challenges, and seek solutions to problems
• Find, evaluate, and share information effectively and responsibly

Windward Community College: Mission Statement
ʻO keia ka wā kūpono e hoʻonui ai ke ʻike me ka hoʻomaopopo i kō Hawaiʻi mau hoʻoilina waiwai. Aia nō hoʻi ma ke Kulanui Kaiāulu o ke Koʻolau nā papahana hou o nā ʻike ʻakeakamai a me nā hana noʻeau. Me ke kuleana koʻikoʻi e hoʻohiki ke Kulanui e kākoʻo a e hoʻokumu i ala e hiki ke kōkua i ka hoʻonui ʻike a nā kānaka maoli. Na mākou nō e hoʻolako, kākoʻo a paipai i nā Koʻolau a kō Oʻahu aʻe me nā hana noʻeau ake a, ka hoʻonaʻauao ʻoihana a me ka hoʻonui ʻike ma ke kaʻialu — hōʻaʻano a e hoʻoulu i nā haumāna i ka poʻokela.

Windward Community College offers innovative programs in the arts and sciences and opportunities to gain knowledge and understanding of Hawaiʻi and its unique heritage. With a special commitment to support the access and educational needs of Native Hawaiians, we provide Oʻahu’s Koʻolau region and beyond with liberal arts, career and lifelong learning in a supportive and challenging environment — inspiring students to excellence.

Windward Community College: Institutional Learning Outcomes
• Global and Cultural Awareness - Develop the ability to perceive how people interact with their cultural and natural environments, through their own worldview and through the worldviews of others, in order to analyze how individuals and groups function in local and global contexts.
• Critical Thinking and Creativity - Make judgments, solve problems, and reach decisions using analytical, critical, and creative thinking skills.
• Communication - Use written, visual, and oral communication to discover, develop, and communicate meaning, and to respond respectfully to the ideas of others in multiple environments.
• Information Literacy - Identify information needed in a variety of situations, and access, evaluate, and use relevant information effectively and responsibly.

VIII. Future Goals

To expand the pool of potential students, to increase the number of program graduates and to improve the quality of the program the ASNS degree program has established the following goals to be implemented across the seven UHCCs:

1. Increase the fall to fall persistence rate to 70 percent by 2022.
2. Increase the number of program graduates to a minimum of 20 per year by 2022
3. Enhance partnerships in Early College high school programs to allow high school students to complete ASNS course work.
4. Expand the offerings of courses to include more distance education offerings.
5. Incorporate more undergraduate research experiences into the curriculum.
6. Administer surveys of ASNS graduates who have transferred to four-year UH institutions.
7. Increase the number of ASNS degrees (graduates) by 3% each year.

IX. Conclusion

Approval of the Associate in Science in Natural Science degree program with established status at Hawaii CC, Honolulu CC, Kauai CC, UHMC, and Windward CC will ensure that all seven University of Hawaii Community Colleges remain a positive force in providing a pathway for Hawaii students to successfully complete their undergraduate work and move on to four-year UH institutions, ultimately enriching the state’s talent pool and enhancing the STEM workforce.

X. Appendices

Program Resource Templates for each of the five campuses are provided as attachments:
1. Hawaii CC
2. Honolulu CC
3. Kauai CC
4. UHMC
5. Windward CC