

UH Hilo, BS in Aeronautical Science

Review Date: July 15, 2019

Responses to questions posed by the Reviewer are highlighted in green and cyan. Those in cyan are in areas where there have been additions to or revisions of the original narrative.

Section I: Program and Institutional Overview

A. Program Overview

On/Off Campus, New Site, Start Date, International, Distance Ed, Language

The University of Hawai'i at Hilo (UH Hilo) has been approved by the University of Hawai'i Board of Regents to initiate a Bachelor of Science Degree in Aeronautical Sciences. The program is approved for two concentrations:

1. **Commercial Professional Pilot Training (CPPT):** The first three years of the program will be offered on site at the UH Hilo campus and in the fourth year, students will receive their flight training at a flight provider, obtain their Federal Aviation Administration (FAA) licensure as a Commercial Multi Engine Instrument Rated Pilot upon which time UH Hilo will award credit for the flight training and FAA licenses leading to graduation. **The 4th year of this concentration will be offered off-site at ATP Flight School.**
2. **Commercial Aerial Information Technology (CAIT):** This program will share the first three years of curriculum with the CPPT concentration and the fourth year will be on-site taking courses that expand on our current Unmanned Aircraft Certificate to give students the qualifications necessary to attain commercial Unmanned Aircraft licenses when available. **The 4th year of this concentration will be offered on-site at UH Hilo.**

This program will be offered face-to-face and the primary language of instruction is English.

WSCUC Reviewer Comment: Please identify the location of the 4th year of each concentration.

In the section above, the institution has provided updated information that is highlighted in cyan.

Anticipated start date: Courses will be offered in Fall 2019, program will be available upon WSCUC approval.

B. Institutional Context (CFRs 1.1, 1.2, 2.2, 2.2a, 2.2b, 4.6, 4.7)

Instructional Description, Program Alignment with the Mission

WSCUC Reviewer Comment: Please note: this section is entitled "Institutional Context"

The University of Hawai'i at Hilo is characterized as a comprehensive, regional university. Scholarship and research are an important part of faculty work and student engagement,

but the primary focus is on providing high-quality baccalaureate and limited postgraduate education.

While UH Hilo actively recruits residents of Hawai‘i Island, its programs are also attractive to prospective students from other islands, the mainland U.S., and internationally. Students across the State may select UH Hilo not only for its distinctive undergraduate programs, but for its rural setting, its intimate character, or for an interest in leaving home without leaving the State.

The UH Hilo mission:

‘A‘ohe pau ka ‘ike i ka hālau ho‘okahi.

One learns from many sources.

The purpose of our university *‘ohana* (family) is to challenge students to reach their highest level of academic achievement by inspiring learning, discovery and creativity inside and outside the classroom. Our *kuleana* (responsibility) is to improve the quality of life of the people of Hawai‘i, the Pacific region and the world.

The idea for the Aeronautical Sciences program at UH Hilo was suggested by members of the community involved in aviation-related fields who saw the need for students on Hawai‘i island to obtain education leading towards a career in professional aviation in Hawai‘i.

WSCUC Reviewer Comment: Please provide responses to each of the 3 questions in Section I.B.

1. Provide a brief description of the institution including the broader institutional context in which the new program or site will exist. Connect the anticipated substantive change with the mission, purpose, and strategic plan of the institution.

UH Hilo’s mission is to challenge students to reach their highest level of academic achievement by inspiring learning, discovery and creativity inside and outside the classroom. We are reminded of this by the proverb ‘A‘ohe pau ka ‘ike i ka halau ho‘okahi/One learns from many sources, which serves as strong guidance for our decision-making. Our kuleana/responsibility is to improve the quality of life of the people of Hawai‘i, the Pacific and the world.

Given this mission and direction, UH Hilo’s program array demonstrates the campus’ priority for programs that take advantage of the unique physical and social characteristics of the island and that serve students who seek opportunities for highly engaging and experiential learning. The proposed Bachelor of Science in Aeronautical Sciences aligns with UH Hilo’s focus on professional programs that prepare students for the workforce, including accounting, business, education, nursing, pharmacy, and counseling psychology, by now including a pathway to commercial aviation. The proposed program also aligns with UH Hilo’s focus on the application of science in such fields as agriculture,

conservation biology, geography, geology, environmental sciences, marine science, and astronomy, using tools for information development, such as GIS, data visualization and data science. The proposed program will add to our students' toolkit for data collection, information creation, and information communication, and strengthen both undergraduate and graduate research across those fields.

The proposed Bachelor of Science in Aeronautical Sciences program will leverage UH Hilo's strength in undergraduate STEM disciplines, strongly coupled with experiential learning, in an area where there is high projected workforce need in the State.

2. To demonstrate prior experience, list the number, variety and longevity of other programs at the proposed degree level and/or modality, and include a brief summary or profile of one of these programs.

UH Hilo currently offers 36 degrees at the bachelor level which include BA, BS and BBA in the on-site modality. An example of a degree offered within the same college is the Bachelor of Science in Agriculture. The program currently offers tracks in Animal Science: Livestock Production, Animal Science: Pre-Veterinary, Aquaculture, Tropical Horticulture, and Tropical Plant Science and Agroecology. The program blends comprehensive classroom instruction with practical, technology-based education through use of the University of Hawai'i at Hilo Agricultural Farm Laboratory and on-campus laboratory facilities. CAFNRM graduates skilled agriculturalists who can further develop and promote agriculture in the State of Hawai'i, the United States, the Pacific Basin, and other countries. The College is especially interested in moving agriculture in the tropical and semitropical areas of the Pacific Basin toward more economical and self-sustaining methods. The CAIT track for the Aeronautical Sciences BS will integrate well due to the expected high use of UAS in agriculture.

See Attachment:
(I.B CAFNRM Agriculture, BS Degree)

3. If this is the first degree program at this level, provide the rationale for the change in degree level and description of what the institution has done to build an appropriate academic culture at that level (i.e., research expectations, opportunities, and funding for faculty, research opportunities for graduate students, appropriate library resources.)

A total of 36 other programs already exist at the Bachelors level at UH Hilo. Because UH Hilo is a predominantly Bachelors degree granting institution all of our support services are structured to help students and faculty in these programs.

C. Accreditation History (CFR 1.8)

1. *What other degree programs have been reviewed by the Substantive Change Committee in the past 12 months and/or planned for review in the next 12 months? Provide a brief summary of issues noted by WSCUC in prior substantive change reviews since the*

institutions last comprehensive review and the institutions response to these issues, even if the programs reviewed were at a different degree level or offered in a different discipline.

UH Hilo has not submitted substantive change proposals in the last 12 months. Since our last comprehensive review in 2013-2014, we have submitted one substantive change for the MA Heritage Management, which was given a one-year interim approval on June 29, 2015 per the following recommendations:

1. All syllabi must present institutional policies as outlined in the proposal template (e.g. grading policy, program outcomes aligned with course outcomes). (CFRs 2.3, 2.12)
2. The program must ensure that written communication and information literacy competencies are appropriate for graduate level work. (CFR 2.2b)
3. The program should consider including indirect measures of student learning in its assessment plan (e.g. employment data/placement). (CFRs 4.1, 4.4)
4. The program's fulfillment of WSCUC's assessment standards is minimal. The institution should strengthen its assessment framework with a clear, detailed and systematic institutional data collection plan including direct and indirect measures of student learning. A clearly articulated institutional assessment plan can be applied to all programs with specific program applications aligned with assignments and capstone experiences. The plan should include how data is collected, where it is housed, how it is aggregated and disaggregated for analysis, and who and when program evaluation based upon the data will occur. (CFRs 4.1, 4.4).
5. UHH should submit a progress report to WSCUC on August 1, 2016 describing its revised Institutional Assessment Plan and the details of that plan when applied to the new Master's in Heritage Management. (CFRs 4.1, 4.4)

A more comprehensive assessment plan for the MA Heritage Management program was submitted and deemed to have rectified some of the specific concerns regarding that program. The University has also developed a webpage for the housing of the ongoing cycles for assessing Core Competencies at the undergraduate level: <https://hilo.hawaii.edu/blog/accreditation/core-competency-programmatic-assessment-indicators/>.

The Graduate Council has been working on developing comprehensive assessment at the post-baccalaureate level. As of 2017, they developed Graduate Learning Outcomes: <https://hilo.hawaii.edu/uhh/accreditation/documents/GraduateLearningGoalsandObjectivesGC02.10.17.pdf>. They have also developed rubrics for key Core Competencies that are built upon the undergraduate level outcomes. Those will be uploaded within the year as the grad programs move to start these assessments across all programs within the next academic year.

WSCUC Reviewer Comment: Please note that reviewers are not required to search websites for responses to the template prompts. If the information is important to the response, please attach or summarize in the narrative.

See Attachments:

I.C.1 Core Competency & Programmatic Assessment Indicators (Undergraduate)- WASC Institutional Accreditation

I.C.1 Graduate Learning Goals and Objectives GC 02.10.17

WSCUC Reviewer Comment: Please provide responses to each of the 5 recommendations listed above describing the action taken to date.

The MA Heritage Management program sent a Progress Review to WSCUC on August 2, 2016. Responses to each of the recommendations were made in this order:

1. All syllabi for the program were revised to incorporate both course learning outcomes and program outcomes, which were aligned to our existing institutional learning outcomes. All syllabi for the program were then sent to WSCUC in addition to the progress report for evaluation.
2. The program worked with the Graduate Council to redesign the Information literacy Rubric to ensure competencies were appropriate for the post-baccalaureate level of study. A “rubric” for the MA Heritage Management was embedded in the body of the progress report—the rubric (which also serves as a curriculum matrix) notes which classes are identified for the development and assessment of key skills (i.e. “SLO--Developing graduate-level information literacy through Professional Networks”; Activity—Prepare a presentation suitable for a professional conference; Descriptors of various levels of performance; emphasis in ANTH 602, 631, 700).
3. The program also developed a Graduate Employment Survey to include the collection of data on: job title, employer contact information; description of duties; salary; required credentials, etc.
4. The institution developed Core Competency Assessment at the undergraduate level that is required for all programs on a yearly basis at the senior/upperclassmen level. All programs identify one capstone or other senior-level course and assess all students in that course per direct evaluation of a student artifact, i.e. research paper for Written Communication, or in the case of Quantitative Reasoning performance on a multiple-choice test similar to the CLA. Data is then sent to the Assessment Support Committee which analyzes the data and reports findings and recommendations to programs and to the Faculty Congress. These are then posted on our Core Competency Assessment Website, which disaggregates data by years and by programs. As of this current academic year, we have data for Written Communication (AY 2013-2014; AY 2017-2018); Quantitative Reasoning (AY 2014-2015; AY 2018-2019); Oral Communication (AT 2016-2017); and Information Literacy (AY 2015-2016). Data represents over 90% reporting by all

undergraduate programs. The Institution has also developed graduate level assessment in Core Competencies with data from all graduate programs (including MA Heritage Management) now posted for Written Communication (AY 2017-2018).

5. The MA Heritage Management progress report to WSCUC was submitted on August 2, 2016. This report along with all of the original attachments have been uploaded to a new folder called “MA Heritage Management Progress Report” that is in the Attachments Folder for this Proposal.

2. *Provide the institutions response to issues noted by WSCUC in prior commission or other committee action letters or visiting team reports that are relevant to the proposed substantive change. Contact your WSCUC staff liaison if you need more information*

In the March 6, 2015 letter to Chancellor Donald Straney, the Commission outlined the following requirements for a Spring 2017 Interim Report:

1. The status of the enrollment management efforts, specifically new student enrollment goals and retention targets identified in the institutional reports;
2. Demonstration that the educational effectiveness and assessment efforts are ongoing and have advanced across all programs offered by Hilo and through the co-curricular programs of the campus. It is important that this effort also include the integration of the core competencies throughout the major programs offered at the undergraduate level;
3. An update on the financial strength of the institution particularly as it relates to enrollment management success and negotiations with the University of Hawaii system and state legislature;
4. The status of the institutional research office, development of a data warehouse, and use of data to inform decision-making; and
5. Demonstration of a commitment to fully support the distance education programs, including the need to provide learning outcomes assessment and faculty development and support to advance the online education objective.

Upon submission of the Interim Report in 2017, reviewers noted “the greatest progress took place in the areas of educational effectiveness and assessment”; however, the panel cited “each of the remaining areas were lacking in significant progress.”

WSCUC Reviewer Comment: Please provide responses to each of the 5 recommendations listed above describing the institution’s action taken to date.

A section of the narrative preceding this comment was updated and is highlighted in cyan to give context to the recommendations made to the Institution and the Institution’s response to the recommendations.

The institution since has moved forward to address the above stated recommendations:

1. Enrollment management efforts: In addition to sustained efforts in expanding student mentoring and peer tutoring, expanding student employment on campus, working with

the community college to create pathways for transfer students, and targeted awarding of institutional financial aid (school-based scholarships), UH Hilo has embarked on developing and piloting new initiatives to build enrollment. For example, UH Hilo adopted third-party services to support recruitment processes, including the EAB/Royall recruitment platform to assist with increasing prospects, Signal Vine to maintain contact with students in the admission pipeline, and Raise.me, a microscholarship platform aimed at connecting Hawai'i high school students to UH Hilo. Strategic hires (i.e. an additional admissions counselor, an associate housing director, etc.) in Student Affairs have also been made these past two years; Student Affairs is in the process of implementing a Transfer Success Center and is further developing a First-Year Experience unit to better concentrate on freshmen and transfer students. The institution is also in the process of developing a robust undergraduate distance learning program to target rural areas of the State.

2. Educational effectiveness and assessment as a sustained ongoing effort: As stated in the expanded description of the MA Heritage Management subchange above, the feedback we received from WASC encouraged us to further develop Core Competency assessment at the undergraduate level. We now have data on 4th year student achievement reported on our accreditation website for five competencies spanning six years across 90% of programs in Written Communication, Oral Communication, Quantitative Reasoning, and Information Literacy with Critical Thinking simultaneously embedded in each. The data as well as program responses to that data (i.e. "closing the loop"--revision of curriculum, rethinking sequencing of courses, etc.) are compiled yearly using an adapted form of the Inventory of Educational Effectiveness Indicators. Our findings for Oral Communication in AY 2016-2017 have been provided in the attachments folder.

See attachment:

I.C.2.1 Summary of Assessment of Oral Communication.

We also undertook graduate level assessment, starting with a drafting of competency descriptors and rubrics that built upon the undergraduate curriculum. UH Hilo has posted data on graduate level Written Communication now posted for eight exiting theses (5 MA and 2 PhD) from eight different programs for AY 2017-2018.

See attachment:

I.C.2.2 Summary of Assessment at the Graduate Level which includes the rubric and the results).

This progress was reported to WASC in our Annual Report through our submission of the Inventory of Educational Effectiveness Indicators that was required for our Mid-Cycle Review (May 2019). The IEEI has been uploaded to the proposal attachments folder.

See attachment:

I.C.2.3 IEEI 2019 FINAL.

3. Financial strength of the institution: The institution recognizes it has experienced protracted enrollment decline since 2013; however, efforts have been made to ensure long-term strategic fiscal planning and allocation by managing and balancing expenditures against variable tuition revenue. Yearly, UH Hilo receives Performance-Based funding from the UH System when it meets certain targets—these monies are used for one-time allocations to encourage enrollment growth and retention (i.e. hiring of lecturers in high demand courses needed for graduation; casual hires to contact and re-enroll students who suddenly stop out; multi-media marketing; and Wi-Fi infrastructure enhancements). Budget prioritization is realized through strategic hiring in high demand fields such as data science, allied health, and agribusiness. UH Hilo continues to monitor its reserves, which are well above the 5% minimum set by the System. Any use of reserves is for one-time strategic initiatives and not for recurring operational costs.
4. Institutional Research Office & data-driven decision making: UH Hilo is increasing the capacity of the research office with current recruitment for the Director of Institutional Research position, after several recruitment attempts since 2015, and now with an upgraded position. Anticipated fill date is January 2020. The UH System currently manages all data centrally through Banner and the System Office of Institutional Research Analysis Office routinely extracts common reports of campuses through its website. That data is regularly used in budgeting and allocation; tuition revenue projection is refined by projecting census date headcount, using historical enrollment patterns from current date to census date, and taking into account the full-time/part-time mix of each of the tuition revenue classes. These classes include undergraduate, graduate and professional programs, by resident and non-resident breakdown.
5. Distance Learning: UH Hilo currently offers a number of degrees online. The BA Communication, the BA Psychology, and the BSN and RN to BSN (Nursing) programs were approved via subchange for full DL delivery. UH Hilo also offers four graduate programs via DL--the Doctor of Nursing Practice, the Masters of Counseling Psychology, MA Indigenous Language and Culture Education, and the Masters of Teaching. In response to WASC recommendations, the institution has made efforts to increase faculty development. Over the past two years, UH Hilo has brought in consultants such as Patrick Smith (Assistant Director of Distance Learning for the Texas State University System) to offer workshops on best practices in DL teaching and learning. The UH System is currently enhancing our online learning platform to offer low stakes assessment such as quizzes and indirect (student/self) assessments via journals, field experience rite-up, and class discussions. The institution is also restructuring the DL service unit to report to the Director of Library and Information Technology that will thus combine the management of DL classrooms in the library with DL instructional and technological support.

3. *If the proposed program is accredited by a professional accrediting agency, or is related to a program that is accredited by a professional accrediting agency, list the agency, year accredited and attach as a PDF a copy of the executive summary to the most recent team evaluation report and agency action. Also, indicate whether the specialized agency needs to review and approve the proposed program prior to implementation of when in the programs schedule that the review will be scheduled. Provide similar information for licensure purposes.*

This program will not be accredited by a professional accrediting agency and is not related to a program accredited by a professional accrediting agency.

Section II: Program Need & Approval

A. Program Need (CFRs 1.1, 1.7, 1.8, 2.1, 2.12, 4.1–4.3, 4.6, 4.7)

1. *Describe the program need/rationale framed by the institution's mission and strategic goals.*

Hawai‘i is heavily dependent on the aviation industry to support the economic driver of tourism and to transport large amounts of freight to and between the islands. Advances in aeronautics will continue to be increasingly important to monitor and manage remote lands, agriculture, natural hazards, fisheries, and the immense marine resource of the Northwest Hawaiian Islands. The B.S. degree in Aeronautical Sciences will provide an opportunity for residents of Hawai‘i and other Pacific Islands to meet future needs in the commercial aviation industry and the rapidly expanding field of Unmanned Aviation Systems (UAS). UAS technology fits well within UH Hilo’s current mission of applied science and agriculture research, data science, and astronomy. These fields are tied together by the ever increasing need for environmental data with high spatial and temporal resolutions, which are not generally available by other means.

The bachelor of Science in Aeronautical Sciences is designated to serve as a pivot toward aeronautical science and its application that will integrate with UH Hilo’s existing STEM program strengths in general education as well as in agriculture, conservation biology, natural hazards, marine and terrestrial resources, astronomy, and GIS education and research. The program fits well with UH Hilo’s goal to become the 21st Century Technology Hub for Hawai‘i Island and select nations in the Asian-Pacific Basin.

The concentration in Commercial Aerial Information Technology will provide the training and background to attain current FAA licensing for the currently highly restricted commercial UAS operations of small drones, as well as preparation for future full integration of large UAS operations into commercial airspace. In addition, students will learn about sensor technologies, data collection, and data interpretation for a variety of applications spanning land use management, agriculture, and law enforcement.

The concentration in Commercial Professional Pilot Training provides a simple, direct pathway to earn all the FAA licenses and certificates required to pursue a commercial Airline Transport Pilot license and begin a career as a commercial airline pilot.

2. Describe the methods used to collect evidence (surveys, focus groups, documented inquiries, etc.) that supports the enrollment projections and the conclusion that interest in the program is sufficient to sustain it at expected levels. Evidence should demonstrate interest in this program specific to your institution, as well as broader trends and employment outlook. Please provide a summary of the findings, not the full study.

During the past six years we have participated in numerous aviation, aeronautical, aerospace, and career day events throughout Hawaii and interest in educational pathways towards careers in commercial drone operations and as a commercial airline pilot have consistently been strong.

At the 'Imiloa Astronomy Center 3th Birthday - Aviation Day held on our campus this past February there were over 2,400 visitors, about 600 of whom attended our sponsored presentations by a Hawaiian Airlines pilot and a recently retired American Airlines pilot on career opportunities with a bachelor's degree in Aeronautical Science that leads to FAA commercial licenses.

The University of Hawai'i System Industry Sector Workforce Analysis https://uhcc.hawaii.edu/workforce/occupation_profile.php?soc=53-2011 and the US Dept. of Labor <https://www.bls.gov/oes/current/oes532011.htm> project strong local and national demand for pilots and related aeronautical professions. Over the next decade Hawai'i is projected to see over 200 new airline pilot, co-pilot and flight engineer position openings per year along with a similar number of replacement openings. The regional airlines are already aggressively recruiting pilots straight from flight schools while the field of commercial UAS pilots is so new that there are very few predictions on job numbers. However the FAA anticipates exponential growth in the sales of commercial UAS aircraft in the coming decade. In response the University of North Dakota and Purdue University have recently established UAS concentrations within their existing B.S. degrees in Aeronautics.

WSCUC Reviewer Comment: Please note that panel members are not required to search databases/websites for information relevant to this proposal. If the information is important to support this response, please summarize in the narrative or provide an attachment.

Please See Attachments:

II.A.2 Hawai'i Industry Sectors Workforce Analysis

II.A.2 US Dept of Labor Occupational Employment and Wages Airline Pilots, Copilots, and Flight Engineers

3. *Attach the recruitment and/or marketing plan for the program, including the geographic scope of the program. Financial resources committed to marketing this program should be clearly explained in the budget. Note that all materials regarding this program should clearly state, "Pending WSCUC approval" prior to Commission ratification. Include a hyperlink to the program website, if available.*

The Admissions Office is prepared to fully promote new student enrollment in the Aeronautical Sciences program upon receiving WSCUC program approval. In addition to integrating and highlighting Aeronautical Sciences in our standard recruitment strategies and activities (recruitment visits, college fairs, campus events, campus visits, etc) and recruitment materials and channels (print, web, social media, email, etc), the Admissions office will initiate targeted promotion to announce the launch of the new program. Content specific email messages will be sent to prospective students, high school counselors, and community college transfer advisors. Recruitment staff will also actively partner with the Aeronautical Sciences Educational Specialist to identify and attend special educational events and opportunities to promote the new program. These activities will operate in cooperation with a general University marketing plan to announce and promote the new program.

The instructional personnel for the program will take part in the routine High School and Community College recruitment events throughout the State in partnership with the UH Hilo Admissions Office. They will also participate in aviation, aeronautical, and aerospace career days. In addition, an active effort will be made to attract students from select island nations in the Asian-Pacific Basin with a strong projected need for pilots.

In the future, the program faculty will look to establish relationships with regional airline carriers for professional development, independent private flight providers, local government agencies, and local military installations which could provide additional recruitment opportunities.

Program Website: <https://hilo.hawaii.edu/depts/aeronautics/>

WSCUC Reviewer Comment: Panel members are required to review a formal marketing plan with estimated costs for each activity in the plan. Total costs for marketing should be represented in the attached budget.

See Attachment: II.A.3 UH Hilo Aeronautical Science Marketing Plan

4. *If the program is planned to be offered for a finite period, provide the enrollment projections for the length of the program. If the program is planned to be offered continuously, provide enrollment projections including projected attrition rates for the first three years. These enrollment projections should be reflected in the budget.*

Enrollment has been analyzed for 3 different cohort sizes: 17, 25, 30. The cohort of 17 is considered the smallest feasible size to run the program sustainably. The commitment to

the University of Hawaii Board of Regents was to average at least 17 students in incoming cohorts or stop out the program. We also modeled cohorts of 25 and 30 students for economic viability and class size. The May 2019 reviewer felt that 30 students was an attainable long term enrollment target for this program.

Retention and persistence were calculated using factors reasonable for the rest of the UH Hilo population (1st year=70%, second year=80%, third year=90%). We feel these numbers are conservative for the aviation program as students enter with a defined interest and will be part of a cohort to provide additional support. The minimum enrollment required for the program is a combined cohort of 17 students for both concentrations that produces 17, 12, and 9 students in the 1st through 3rd years. A cohort of 30 produces a much healthier enrollments of 30, 21, 17. Our conservative expected enrollment of 25 students per year produces class sizes of 25, 18, 15 for years 1 to 3 with a cumulative enrollment of 58 students in the third year.

We have also been working with the 7 University of Hawaii Community College campuses across the islands to allow transfer of CC students into this program. These students would need to declare their interest upon enrollment as Freshman in the community college and would be assigned to that cohort and advised by UH Hilo faculty while doing coursework on their home campus. Our expected enrollments would increase by a projected 6 students in the third year due to transfers. This will result in projected classes sizes for a 25 student cohort of 25, 18, 20 for years 1-3 with a cumulative enrollment of 64 students.

See Attachments:

II.A.4 Three Year Program Enrollment Estimates

II.A.4, V.A.1 Budget Models for UH Hilo Aeronautical Sciences BS

B. Planning/Approval Process (CFRs 1.8, 4.1, 4.2)

Describe and document new program development and approval process at the Institution External or internal partners

1. Describe the planning and approval process within the institution (and system, if applicable), indicating how the faculty and other groups (administrators, trustees, stakeholders, system office, etc.) were involved in the review and approval of the new site or program. Attach documentation of necessary approvals. CSU campuses must attach a letter of approval from the Chancellor's office.

New programs at UH Hilo first obtain Approval to Plan (ATP) status, this status is approved at the campus level by the Faculty Congress Curriculum Review Committee and Vice Chancellor for Academic Affairs (VCAA) and at the University of Hawai'i system level by the Council of Chief Academic Officers (CCAO) which is comprised of VCAA's from all 10 UH system campuses and the Council of Chancellors, which is comprised of the 3 Chancellors from the 4 year campuses as well as the Vice President for Community Colleges and the Vice President for Academic Planning and Policy at the system level.

Once ATP status is granted, the program proposal is started. The program proposal must be approved on the campus level by the Department Chair, Dean, Faculty Congress and the VCAA. At the UH system level the proposal must be approved by the CCAO and the Board of Regents. The Board of Regents approved the proposal for a new provisional Bachelor of Science program in Aeronautical Sciences on November 15, 2018.

See Attachment: II.B.1 AERS UH BOR Proposal Full

WSCUC Reviewer Comment: Please provide documentation for each step of the new program approval process (the process of curriculum approval following the ATP process) at UH-H including department Chair approval, Dean approval, faculty congress approval, CSAA approval, CCAO approval, and Board of Regents approval. Documentation may include meeting minutes, formal memos or resolutions, formal letters of approval, etc.

See attachments:

II.B.1 CAFNRM AERS Approvals

II.B.1 Fac Congress Minutes March 20, 2015

II.B.1 CCAOMeetingSummary_June2014 ATP Approval

II.B.1 CCAOMeetingSummary_April2015 Full Proposal Approval

II.B.1 UH BOR Academic and Student Affairs Subcommittee Minutes 1 Nov 2018

II.B.1 UH BOR Full Minutes 15 Nov 2018

II.B.1 AERS UH BOR Proposal Full

2. Describe the external and/or internal partners contributing and/or participating in this proposal, if applicable. Attach any Memoranda of Understanding (final and signed) between the requisite parties. If this is the first program offered 50% or more online at the institution, or if the LMS provider has recently changed, please provide the contract with the provider. If the program will be offered under contract with an institution or organization not certified to participate in Title IV, HEA programs, please see WSCUC's [Agreements with Unaccredited Entities Policy and Guidelines](#) and explain how this arrangement conforms with the policy.

The CPPT concentration requires that 30 credit hours (25%) of the degree program be earned at an outside flight provider for flight training. This requires awarding credit for flight coursework completed at an unaccredited school. Initially we have identified ATP Flight School as a qualified flight provider, which operates flight training programs at numerous branches across the nation. The program has aligned program and course learning outcomes with ATP Flight School to allow administration of flight training course that can be awarded for degree credit at UH Hilo to fulfill the requirements for the 4th year of the CPPT track. Currently, a MOA with ATP Flight Schools has been finalized by UH Hilo and APT administration and has been sent for final signatures.

A team from UH including the UH System Vice President for Administration, the UH Hilo Interim Vice Chancellor Academic Affairs, the UH Hilo Curriculum Specialist, and UH Hilo's Aviation Consultant visited the ATP Flight School (ATP) site in Mesa Arizona on July 15-July 17, 2018 and have had numerous email exchanges and phone conferences

since then. The purpose of the visit was to assure that ATP had the facilities and staff capable of delivering the program envisioned by UH Hilo. The entire UH team was highly impressed with the large fleet of aircraft (>30), the large well-organized and well scheduled maintenance program, the professional environment, and the teaching facilities. ATP is a FAA certified flight instruction provider and delivers flight training courses for Arizona State University as part of their Professional Flight BS program. Our visit, discussions about program learning and assessment alignment, and the partnership with ASU all indicate that ATP delivers flight training that meets university standards. We feel that ATP provides the professional cultural we desire, has significant resources devoted to the program, and will provide our students the highest quality flight training available.

The MOU we have developed is designed to allow continued collaboration in curriculum content and delivery and also assures that students who apply early in the 3rd year and meet the standard flight school requirements will be guaranteed placement in the ATP program. This will allow all UH Hilo students to complete their degree in a timely fashion (4 years). There are no financial or other obligations in the MOU. An additional MOU is currently being prepared that covers liability and indemnification as required by the University of Hawaii Board of Regents.

The May 2019 reviewer pointed out that there was no specific oversight mentioned in our degree program for the external provider. One of our Instructor/Specialist faculty will be assigned to track and stay in communication with all of our students enrolled in the external program and also to continually discuss progress with the ATP administration on site.

This arrangement conforms with the policy on Agreements with Unaccredited Entities.

See Attachment: II.B.2 ATP UHH MOA

WSCUC Reviewer Comment: Both MOUs with ATP finalized and signed by all representatives of the University and ATP must be received by WSCUC prior to the panel review.

An additional MOU is currently being prepared that covers liability and indemnification as required by the University of Hawaii Board of Regents prior to the first students attending ATP flight school. We have been informed by the Office of the General Counsel that this MOU was not required to be completed until 2021 and will not be ready by the time of WASC review on July 15, 2019.

Section III: Program Description & Evaluation

A. Curriculum (CFRs 2.1–2.5, 2.8, 3.5, 4.1, 4.4, 4.7)

1. Provide an overall description of the program including the alignment of the program philosophy, curriculum design, and pedagogical methods/instructional theory with the target population, modality and degree nomenclature selected.

Overall Description and Philosophy:

The Bachelor of Science in Aeronautical Sciences will offer students two different pathways into commercial aviation, a Commercial Professional Pilot Training concentration and a Commercial Aerial Information Technology concentration. Both concentrations share a common core of commercial aviation courses for the first 3 years, coupled with a final year of specialization in either 1) Commercial Professional Pilot Training or 2) Commercial Aerial Information Technology.

The first concentration in Commercial Professional Pilot Training (CPPT) provides a simple, direct pathway to earn all the FAA licenses and certificates required to pursue a commercial Airline Transport Pilot license and begin a career as a commercial airline pilot. The Aeronautical Sciences Bachelor's degree is structured in a fashion similar to military pilot training, where intensive flight school follows completion of a college degree. The CPPT concentration is structured as 3 years of university classroom and flight simulator learning, coupled with a final year at a 6-8 month flight school program. Credit for flight school is then transferred back to UH Hilo to complete the degree, saving students the cost of an additional year of college. The concentration is designed to prepare students with both technical and management expertise in the field of commercial aviation along with the opportunity to pass many of the written exams required for FAA licenses and certificates in advance of attending flight school. Students who complete this program will have all the FAA certificates and licenses to be qualified to fly commercial multi-engine aircraft in nearly all conditions and will be eligible for the Airline Transport Pilot certificate upon completion of the requisite flight time.

The second concentration in Commercial Aerial Information Technology (CAIT) will provide the training and background to attain current FAA licensing for the currently highly restricted commercial UAS operations of small drones, as well as preparation for future full integration of large UAS operations into commercial airspace. The first 3 years of the program develop a solid background in commercial aviation that will be needed by commercial UAS pilots as this nascent industry transitions to full blown commercial operations in the near future. The CAIT concentration is designed to be coupled with a focus in Data Science, Geography, a STEM field or Computer Science using available electives.

Curriculum Design:

The curriculum was designed by a team at UH Hilo which was comprised of a Certified Flight Instructor, an Affiliate Faculty member who is a current Hawaiian Airlines Commercial Pilot, and a former Embry-Riddle Aeronautical University Professor who served as a consultant. Following the completion of the curriculum, an external review was conducted in April/May 2019 by the current chair of the Aeronautical Sciences department at Embry-Riddle Aeronautical University in Prescott, Arizona campus to ensure that the curriculum design was consistent with those at other Aeronautical Sciences degree

programs. Currently we have a Certified Flight Instructor hired as a temporary employee who is continuing to assist with curriculum development while we advertise and search to fill an Instructor/Specialist for the program.

The curriculum design is unique among 4 year plans in that all course work is completed prior to students entering a final year of concentrated flight training. While different than most universities, this is the model used for all military flight training. Requiring course completion prior to flight training has several positive advantages:

1. Students are better prepared for flight school as they have been introduced and trained in flying, aeronautical principals, and communication prior to training in aircraft;
2. Having one less year of tuition to pay reduces the cost of an already very expensive program for the students;
3. Many traditional programs that mix flight training and course work are experiencing delays in offering flight training;
4. Concentrated flight training reduces skill erosion between training sessions.

The recent program review reinforces these conclusions and is also very positive about the cohort model, which creating a learning community that reinforces desired behaviors and culture and promotes professionalism. The reviewer was also very positive about combining the the first 3 years of course work for both concentrations and had this to say: “Although there are many institutions that offer professional pilot and UAS programs in the U.S.A., to my knowledge none have the level of integration sought by the program at the University of Hawaii. This will give graduates from the UH-Hilo program unique knowledge and skills, making them very marketable for jobs created in the nexus of these two fields.”

See Attachment: III.A.1, IV.A.1 External Evaluation of Aeronautical Sciences Program

Pedagogical Methods/Instructional Theory w/target population, modality and degree nomenclature selected:

The program has been developed largely face-to-face learning in mind. Each semester students are required to enroll in a simulator lab course which emphasizes hands on learning with direct instructional feedback utilizing flight simulators. Additionally, the fourth year of the program for both concentrations consists of many courses that involve hands on learning both at the off campus flight school and on campus learning to fly UAVs and apply UAS sensor and data technology. We are designing the 2nd year courses in Aviation Safety and Aviation Weather to be offered via distance education in order to allow students at community colleges on other islands to complete the first two years of the program at home to reduce cost. A set of summer simulator courses will be offered to transferring community colleges students so they are prepared to begin the 3rd year curriculum. As part of a state-wide system in an unique island-based environment, it is an important part of our mission to make this program as widely available as possible.

1.a. If 50% or more of the program will be offered via distance education: provide guest login access to the learning management system for at least one course for which a syllabus is provided. The course must be part of the proposed program, not from another program.

N/A

2. How has the curriculum design and pedagogical approach been adapted to the modality of this program?

N/A

3. Attach a list of courses for the major, identifying which are required and including the units earned in each course. Also include the number of elective units required for the program, if any, and provide a link to the institution's GE requirements (for undergraduate programs).

See Attachment: III.A.3 BA-AERS Catalog Program Fall 2019

UH Hilo's General Education Requirements for Undergraduate Programs:
<https://hilo.hawaii.edu/academics/gened/>

4. Describe how library resources will be used in the curriculum.

Library resources will be utilized throughout the curriculum. As part of our General Education curriculum, students are introduced to the various library resources early in their Freshman year at UH Hilo. These resources include print material as well as online databases and audio-visual resources. Resources are worked into the required major courses and students are encouraged to take advantage of the resources available.

WSCUC Reviewer Comment: Please describe specific types of assignments in the proposed program that will require library resources.

Examples of term papers/short literature review assignments with associated oral presentations requiring the use of library resources may include:

1. Analysis of a current or projected trend in aircraft modernization (power plants and advanced fuels, electronic sensor controls, alloys and structural components, etc.) and the potential safety implications in AERS 250.
2. Review of the commercial aviation sector development in a country in the Asian-Pacific region and the flight safety challenges (weather, take-off and landing issues, etc.) of their major airports in AERS 355.
3. An analysis of the psychological factors of flight and decision making in AERS 472.

All of these assignments will require students to use original reports in addition to existing summaries to pool together data into their own summary tables and figures. Students will be

expected to discuss the findings and their implications in both written reports following selected aviation journal standards and oral presentations.

See attachments:

III.A.4 Rubric for Written Communication 4.2013

III.A.4 Rubric for Oral Communication

5. For undergraduate programs, describe the information literacy competencies expected of graduates and how they will be evaluated.

Information literacy is one of the core competencies expected of UH Hilo graduates. General education courses introduce the students to basics of information literacy with the expectation that more advanced and specific aspects are learned in courses required for the major. Campus-wide general education learning outcomes have been established and are assessed for all degree programs at UHH.

Competency in Information Literacy at UHH is defined as:

- Document Conventions: Few errors with citation format
- Appropriateness of Sources: Most of the sources are reliable, credible and appropriate
- Evaluation of Sources: Demonstrates an adequate examination of the information
- Integrating Sources: Adequately synthesizes information but conclusions or interpretations may seem obvious

Developing techniques for researching and distilling critical information will be addressed in the common core classes AERS 251 Aviation Weather, GEOG 201 Interp Geog Data, and AERS 355 Domestic & Intl Navig, 387 Crew Resource Management, 473 Leadership as a Pilot. Students in the CAIT concentration will further develop research skills allowing assessment of appropriate sensor and survey techniques as well as data analysis in GEOG 470 and 480 and AERS 352 and 452.

Primary assessment using the UH Hilo information literacy rubric (<https://hilo.hawaii.edu/uhh/accreditation/2013-2014AccredDocs/documents/wasc/R20132014/RubricforInformationLiteracyUpdated-PF-ADA.pdf>) for the common core classes will be done in AERS 472 Professional Pilot development. Students will be expected to compile a portfolio from prior and new work consisting of at a minimum a well-researched professional flight plan, a weather analysis, a comprehensive flight management plan, and an independent research paper. The portfolios will be assessed by a committee comprised of all Aeronautical Sciences Faculty. Additional assessment of information literacy competency will be done in individual courses for the 4th year CAIT students as part of project driven learning.

WSCUC Reviewer Comment: Please provide the information literacy rubric as an attachment to this proposal.

See attachment:
III.A.5 Rubric for Information Literacy

6. Attach three sample syllabi that are representative of the program and appropriate to the degree level. If the program has a capstone/thesis or culminating experience, the syllabus for that course must also be provided. Syllabi must include:

The following three course syllabi are attached:

1. AERS 101 Elementary Private Pilot Ops I
2. AERS 251 Aviation Weather
3. AERS 473 Leadership as a Pilot

7. Describe any internship or residency requirements and monitoring procedures, if an internship or residency is required.

~~No internships or residency programs are required for this degree.~~ The institution is providing an updated statement for this question and follows the reviewer's comment below.

WSCUC Reviewer Comment: The agreement with ATP for the proposed program is analogous to a residency or internship in other types of programs. Please describe how UH-H will monitor the educational experience, student support services, and instructional quality of the student's experience at ATP. Who will assess the PLOs of the learning at ATP? How will the instructors/supervisors of the ATP experience be oriented to the PLOs of the proposed program. How will instructors/supervisors at ATP be involved in the program assessment and discussions regarding program improvement?

Students in the CPPT Concentration will be required to attend flight school at ATP Flight School in Mesa, Arizona in the 4th year of the program. ATP Flight School delivers approved flight training that results in issuance of licenses, ratings, and certifications from the Federal Aviation Administration.

Once students are committed to flight training the UH Hilo program will hold a group orientation conducted by faculty members at UH Hilo. This orientation will prepare the students for the requirements and expectations of the University of Hawaii and ATP flight regarding professional conduct and preparation for flight training, student records maintenance at University of Hawaii Hilo and all official FAA licenses.

UH Hilo will monitor the educational experience for students at ATP Flight School through regularly scheduled virtual meetings with students well as working with the site manager of ATP Flight Schools Mesa, AZ location. The UH Hilo faculty and coordinator will ensure and assess the PLO's of learning at ATP. The UH Hilo program has worked to align its flight PLO's with that of the ATP program so its instructors are already well versed.

Academic student support services for students during their 4th year attending ATP flight school will still be provided by UH Hilo faculty advisors and the Aeronautical Sciences Coordinator. The Aeronautical Sciences coordinator will be on site at the ATP site in Mesa for one week in August each year. During this time they will provide on-site student services, including advising. Once students begin flight training at ATP The Aeronautical Sciences Coordinator will schedule a regular bi-weekly video conference to be conducted via Zoom or other multi user interface with all UH Hilo students attending flight training. This meeting will provide an opportunity for faculty to address student concerns and assess progress. In addition, the Aeronautical Sciences coordinator will be available to schedule one on one meetings with students as needed.

When the Aeronautical Sciences Coordinator is on site in Mesa, they will meet with the ATP site manager and other key instructors to discuss learning outcomes and assessment. The Aeronautical Sciences coordinator will schedule a video conference with ATP's site manager every 2-4 weeks to discuss any pending student progress and learning objective issues. In addition, the UH Hilo program faculty and coordinator will hold an annual conference call with the leadership of ATP Flight School to evaluate and assess areas for improvement in the program.

8. Describe other special requirements for graduation, i.e. comprehensive examination, service learning, etc.

Students in the CPPT concentration will attend flight training with an affiliated flight provider in their 4th year in the program. For students wishing to complete the CPPT concentration, this training is required. A detailed list of the FAA examinations and competencies are found in the attached Certification of Flight Training Form.

Students in the CAIT concentration will be required to pass the FAA Part 107 Remote Pilot Certificate prior to graduation.

See Attachment: III.A.8 Certification of Flight Training Form

WSCUC Reviewer Comment: Please also provide the examinations and competencies required to obtain the FAA Part 107 Remote Pilot Certificate.

See attachments:

III.A.8 UAS Core Competencies

III.A.8 UAS Sample Exam

B. Evaluating Effectiveness (CFRs 1.2, 2.1–2.7, 2.9, 3.2, 3.3, 4.1–4.7)

1. Attach program learning outcomes that articulate what the student will be able to do after he/she completes the program and are appropriate to the level of the degree.

Program Learning Outcomes:

For Both Concentrations:

1. Demonstrate an understanding of the performance and operating characteristics of aircraft. Understand the principles of aerodynamics, aircraft design/construction, and automated control systems.
2. Thorough knowledge and understanding of ground and in-flight support aviation operations and applicable FAA regulations.
3. Ability to create approved written flight plans and other professional and technical written reports including an accurate and detailed flight logbook.
4. Understand principles of navigation, ability to use GPS systems, fluency with aviation maps and VOR systems, ability to navigate an airplane between points.
5. Thorough understanding of the principles and regulations applied to aviation safety. Demonstrated ability to understand the impact of human factors on safety. Ability to perform risk assessment related to aviation safety.
6. Proficiency in communications with ground controllers and other aircraft.
7. Thorough knowledge and the ability of apply the core concepts of meteorology relating to aviation.
8. Thorough knowledge of regulations related to the maintenance of aircraft and associated systems.
9. Explain the integration of airports, airspace, and air traffic control in managing the National Airspace System. Thorough working knowledge of the airspace and support systems.
10. Demonstrate a thorough understanding of national and international aviation law and regulations. Apply knowledge gained from courses by interacting with global and (or) local communities.
11. Become proficient in giving oral presentations.
12. Demonstrate competence in using computers at a level consistent with current professional practice.

Specific for Commercial Professional Pilot Training (CPPT) Concentration:

1. Ability to pilot and command single engine private and commercial aircraft in a variety of visual conditions.
2. Ability to pilot and command multi-engine private and commercial aircraft in a variety of visual conditions.
3. Ability to pilot and command multi-engine private and commercial aircraft in a variety of visual and instrument conditions as required for FAA licensure and certification.

Specific for Commercial Aerial Information Technology (CAIT) Concentration:

1. Ability to pilot and command various types of unmanned aircraft in a variety of visual conditions as required by current and future FAA regulations.
2. Identify and use the proper sensor technology as required to gather mission dependent data.
3. Proficiency in basic maintenance of both unmanned aircraft and corresponding sensor technology.

4. Ability to use data analysis techniques, remote sensing, and geographic information systems.
5. Capability to translate complex data to end user products.

2. Attach a curriculum map articulating the alignment between program learning outcomes and course learning outcomes and demonstrating the progression of levels of achievement from introductory to advanced levels.

Please see attached: III.B.2, III.C.6 Curriculum Map + Teaching Assignments (Both Concentrations)

3. Describe the process by which syllabi are reviewed and approved to determine that 1) course learning outcomes are described and are linked to program learning outcomes; 2) materials are current; 3) pedagogy is appropriate for the modality of the course.

- 1) All components of the syllabi and learning outcomes are reviewed by the College of Agriculture, Forestry and Natural Resource Management (CAFNRM) curriculum committee at the least every 5 years as part of the program review process. The committee ensures that course learning outcomes are described and linked to program learning outcomes. A map of these learning outcomes can be viewed in Attachment: PLO to CLO Chart
- 2) The CAFNRM Dean's office collects and maintains a current set of all syllabi for courses taught in the college.
- 3) The CAFNRM Dean's office and the CAFNRM curriculum committee also consults with the appropriate faculty members with expertise to ensure that pedagogy is appropriate for the modality of the course.

4. Describe the assessment plan for the program at various stages including achievement of student learning outcomes using direct and indirect measures. How will findings from the review be used to improve the program? Attach the assessment plan. (The assessment plan template linked below is provided as a model, but is not required. Feel free to modify the template as appropriate).

Students in the program will be assessed in an ongoing manner to ensure the course learning objectives meet the defined program learning outcomes. The course learning objectives to program learning outcomes chart details in which courses students are expected to be introduced to (I), proficient at (p), or show mastery of (m).

See attachment: III.B.3 PLO to CLO Chart

In addition, the program will participate in the campus-wide annual assessment of core competencies in written communication and critical thinking, oral communication, quantitative reasoning and information literacy. Information on and rubrics used in this assessment process can be found online:

<https://hilo.hawaii.edu/blog/accreditation/core-competency-programmatic-assessment-indicators/>

WSCUC Reviewer Comment: Please provide the Institutional Learning Outcomes as an attachment to this proposal.

See attachment:

III.B.4 UHH Institutional Learning Outcomes

In the lower division courses of the program such as Aviation Weather and Safety, students are introduced to content that will be the foundation for content area courses that they will take in the upper division. The upper division courses have been setup in a way that they build upon foundational knowledge presented in the lower division courses.

Lower division courses will be assessed in the following ways in years 1 and 2 of the program:

- Review of student work in each course to determine whether the published course learning outcomes are being achieved and(or) competency demonstrated in Federal Aviation Administration standards for licensure, ratings and certificates where required.
- Student evaluations of each course using the UH online course evaluation system
- Faculty will conduct a review of the course learning objectives to ensure they are measurable at the beginning of each semester the course is taught.
- Faculty will also conduct a review of how their course learning objectives map to the program learning outcomes at the beginning of each semester the course is taught.

Using information from these measures, the entire faculty will work together to identify where course learning objectives, pedagogy, and(or) course materials need to be modified to improve the outcomes.

In addition to the above students will be assessed in the following ways in years 3 and 4 of the program:

- Evaluations of selected assignments from upper division courses will be shared with the university-wide Assessment Support Committee as part the ongoing core competency assessment.
- Industry professionals, many of whom will be Affiliate Faculty members will assist in delivery of advanced simulation labs will provide evaluations of students in simulation activities.
- Students complete a program evaluation assessment administered via Google Forms at the end of the third year.
- AERS 472 Professional Pilot development students will be expected to compile a portfolio from prior and new work consisting of at a minimum a well-researched professional flight plan, a weather analysis, a comprehensive flight management plan, and a professional analysis paper. The portfolios will be assessed by a committee comprised of all Aeronautical Sciences Faculty.

Please see attachment: III.B.4 Matrix for Assessment for Program Learning Outcomes

In addition, post-graduation student employment data will be obtained in two ways. This data will also be used to guide program improvement.

- Alumni survey completed by recent graduates
- Performance surveys completed by local employers who have hired program graduates which will include assessment of practical and interpersonal skills.

In addition, the program will undergo a comprehensive program review, which includes a self-study and an external review by a faculty from a comparable program upon completion of its first full cohort. This program review will also be presented to the CCAO and UH Board of Regents who determine if the program is granted Established status.

Following the granting of established status, the program will fall within the UH Hilo program review guidelines for established programs and undergo a review every 5 years which also includes a self-study and an external review. The UH Hilo guidelines on program review can be viewed at: <https://hilo.hawaii.edu/uhh/vcaa/ProgramReview.php>

5. Describe the plan for data collection, analysis, and the incorporation of findings into the existing program review process.

The UH Hilo Institutional Research Office (IRO) compiles program data primarily using UH system institutional databases and analyzes these findings and presents the findings in viewable format in the UH Hilo Program Review dashboard which is updated annually. Types of data collected include: Enrollment, Student Semester Hours (SSH) and Full Time Equivalent, Average class size and ratio.

UH Hilo Program Review Dashboard:
<https://hilo.hawaii.edu/uhh/iro/UHHiloProgramReview.php>

This data is housed at the UH Hilo Institutional Research Office.

Programs are required to reference this data as a part of the self-study in the program review process.

WSCUC Reviewer Comment: Please describe how Program Learning Outcomes are assessed including WHO assesses student artifacts, how/where Learning Outcome findings are recorded, who analyzes the findings, how data is aggregated and disaggregated for analysis, how/when findings from PLO data analysis are reported to faculty for discussion regarding program improvement.

The Program Learning Objectives for the Aeronautical Sciences B.S. degree can be broadly characterized into 4 major groups that represent clusters of similar Student Learning Objectives taught across the curriculum (see PLO-SLO map). The program is designed to have a mixture of

normal courses where ideas are introduced and discussed in a classroom supplemented by a set of 6 simulator lab courses (AERS 101, 102, 220, 221, 340, 370) where ideas are applied and practiced by all students during the first 3 years. The Aeronautical Sciences B.S. degree program is a pathway to professional licensure by the Federal Aviation Administration, which administers both written and practical examinations that must be passed to receive licenses, ratings, and certificates to operate specific aircraft under a variety of conditions national and international airspace. The PLO groups can be evaluated generally in the following ways:

1) Knowledge directly related to flight including aerodynamics, aircraft design, navigation, meteorology, and management of airspace (Joint PLOs 1, 3, 4, 7, and 9)

- a) Factual knowledge will be tested using multiple choice tests and by oral practical examinations during flight simulator courses in years 1 and 2. In years 2 and 3 students will be required to analyze complex scenarios requiring in depth knowledge of specific aircraft, locales, and weather to evaluate best practices and outcomes in short papers, flight log book entries, and essay tests.
- b) Individual faculty will score exams and essays. A sample of the papers and essay tests will be reviewed by the entire program faculty to assure uniformity of assessment. A test and assignment pass rate of 80% is targeted, as this is the cutoff applied by the FAA on their examinations. At the end of the 3rd year, all students will be expected to pass the FAA Private Pilot Written Exam which is a multiple choice test covering a wide variety of the topics within this set of PLOs.
- c) The entire Aeronautical Sciences faculty will review tests results and also look at a sample of written essay assignments. Faculty will use the data to either refine or redesign curriculum. Faculty will identify students in need of assistance and provide additional training and retesting.
- d) The expectation of the program is that 90% of the students should be able to pass the FAA Private Pilot multiple choice exam (administered by the FAA) which requires a score of 80% or higher. Faculty will continue to work with students to develop more effective pedagogical models and potential curriculum redesign.

2) Knowledge related to aviation regulations, leadership, crew management, aircraft maintenance, safety, risk assessment, and communications (Joint PLOs 2, 3, 5, 6, 8, 10, 11, and 12)

- a) The first two years of the program will concentrate on communications skills both within the cockpit and over the radio to air traffic controllers and other aircraft, largely within the simulator laboratories. Testing will be both oral and short answer allow students to demonstrate proficiency. During the course of the third year, students will create increasingly complex written flight plans integrating knowledge including crew management, airport logistics, airport regulations and protocols, safety and maintenance checks, passenger manifests, and schedules. Students will also produce research papers covering a variety of subjects that will demonstrate competency in accessing library materials regarding air history, flight theory, aviation engineering, airport construction, applicable national and international laws and regulations governing aviation, along with online resources including FAA Advisory Circulars, FAA Notices of Airworthiness, the NTSB accident database, and related sources. AERS 472 Professional Pilot development students will be expected to compile a portfolio from prior and new work consisting of at

a minimum a well-researched professional flight plan, a weather analysis, a comprehensive flight management plan, and a professional analysis paper.

- b) Individual faculty will score communication oral and written communication exams. Individual faculty will review student flight plans.
- c) Flight plans considered acceptable to the FAA will be collated and reviewed by the entire faculty and an advisory review panel of industry professionals. Students will be required to produce a professionally acceptable flight plan prior the end of the third year of classes. The AERS 472 portfolios will be assessed by a committee comprised of all Aeronautical Sciences faculty
- d) The expectation of the program is that 90% of the students should be able to demonstrate professionally acceptable oral communications skills and written flight plan skills. Faculty will continue to work to develop more effective pedagogical approaches and redesign curriculum if these goals are not met.

3) Skills directly related to flying commercial aircraft in a wide variety of conditions (CPPT PLOs 1, 2, and 3)

- a) The 4th and final year of the CPPT track will require that students demonstrate the necessary aviation knowledge and piloting skills to be awarded the following FAA licenses and ratings in order to complete their degree: FAA Private Pilot License, FAA Instrument Rating, FAA Commercial Single Engine Rating, FAA Multi-Engine Airplane Rating, and FAA Certified Flight Instructor Rating (optional, not required for graduation). These require demonstration of extensive aviation knowledge, comprehensive understanding of and ability to use a variety of aircraft and instruments, and demonstrable flying skills performed under wide variety of conditions.
- b) Qualifying tests and flight checks will be conducted by instructors at the ATP flight school following standardized criteria. Students deemed qualified will then take the FAA administered and graded written examinations for Private Pilot (airmen's exam), Instrument Rating, Commercial Single Engine, Commercial Multi-Engine, and Certified Flight Instructor (optional). Each level also requires passing a check ride (flight) with a certified FAA Examiner who determines if the student has mastered the necessary flight skills at the required level.
- c) Progress will be monitored by instructors at ATP Flight School, who will conference with a FAA Certified Flight Instructor on UH Hilo Faculty every two weeks to make sure that students remain on schedule to make adequate progress toward achieving the necessary licenses and ratings to complete the Aeronautical Sciences B.S. degree. It is important that students remain on schedule as having to repeat training can increase the student costs significantly. UH Hilo faculty will use data collected to continually improve the preparation of students for flight training. The extensive use of flight simulators, taking FAA examinations, and acquisition of aviation knowledge by UH Hilo students prior to attending flight school should greatly improve the success rate of students during flight training.
- d) The expectation of the program is that 90% of the UH Hilo students should be able to earn their required licenses in less than 9 months seems reasonable. About 80% of students entering the ATP Flight Program with no prior preparation generally complete the program within a year. UH Hilo Faculty will continue to meet with both UH Hilo students and ATP instructors via conference and private calls to assure they remain on track.

4) Skills directly related to flying unmanned aircraft, using sensors, data collection, and data interpretation (CAIT PLOs 1,2,3 and 4).

- a) The 4th and final year of the CAIT track will require student demonstrate the necessary knowledge to fly unmanned aircraft to conduct a wide variety of missions and surveys following all applicable rules and regulations. Students
- b) Students will physically demonstrate both flight and maintenance skills with a variety of unmanned aircraft systems in AERS 152 and 354. All CAIT students will be required to take and pass the FAA Part 107 Remote Pilot examination to earn their FAA Remote Pilot Certificate prior to graduation. This multiple-choice tests requires students to assess the breadth of their knowledge about UAS regulation and operations. During their final semester, students will be required to design and implement a UAS based project requiring designing a survey, selecting sensors, data collection, and data interpretation. Projects must include both a data visualization component, such as maps or quantifiable images as well a written report that clearly explains data collection methodology, data handling, data reduction techniques, map or visualization construction, and interpretation of data.
- c) Flight skills will be assessed by the course instructor and shared with other faculty in the program. The final projects will be shared across AERS 352 UAS Mission Plans and Simulation, 452 UAS Flight, and GEOG 480 Geographic Information Systems and Visualization. Projects will be presented to Aeronautical Sciences students and faculty. All Aeronautical Sciences Faculty along with selected members of an advisory board.
- d) The expectation of the program is that 80% of the students should be able to produce professionally acceptable project work. If the submitted work does not meet these standards Aeronautical Sciences faculty will work with an advisory board of outside industry professionals to review and redesign curriculum to meet this goal.

See attachments for examples of FAA license and rating exams:

III.B.4 1-FAA Private Pilot Airplane (Airmen's) Rating Example Exam

III.B.4 2-FAA Instrument Rating Airplane Example Exam

III.B.4 3-FAA Commercial Pilot Airplane Rating Example Exam

6. *Describe the procedures to evaluate teaching effectiveness in the proposed modality.*

Students evaluate teaching effectiveness by completing course evaluations at the end of each semester. The students utilize the UH system online course evaluation to complete these evaluations. Evaluation data is available to the faculty instructor and an aggregate evaluation scores for each department are available to the Dean of the College. The teaching evaluation data are reviewed by departmental faculty committees, department chairs, deans, a university wide faculty committee and the chancellor as part of the tenure and promotion process. Faculty are required to establish high quality teaching using the student evaluations and other metrics such as inviting faculty to review their teaching in specific courses, attending professional development courses, or working with other faculty to improve teaching effectiveness.

Specifically for this program, teaching effectiveness can also be measured by the first time FAA airmen's knowledge test pass rate which all students in both concentrations will be required to take during their third year. FAA is the licensing agency for all professional aviation in the United States and this exam provides a measure of basic competency similar to the NCLEX exam for nursing and the PRAXIS exam for education.

WSCUC Reviewer Comment: Please describe any assessment of instruction other than student reports and grades/pass rates.

In the section above, the institution has provided further narrative highlighted in cyan.

C. Schedule/Format (CFRs 1.6–1.8, 2.1–2.3, 2.5, 2.10, 2.12, 3.1, 4.1)

1. *What is the length of time (in months) that the typical student is expected to complete all requirements for the program?*

48 months total time (4 academic years August-May), with 36 months of actual classroom instructional time is required.

2. *Provide the minimum attendance/participation requirements and the provisions made for students to make-up assignments or for students who have to drop out of the program for a short period of time.*

Generally attendance in all courses is required. Students who missed sessions for legitimate reasons can work with the individual instructors to make-up assignments.

Students who have to drop out of the program for a short period of time and have to withdraw from the program for 1 semester are able to re-apply for admission and re-enter the program at the next available term. Because the simulator courses in the first three years are sequenced, students will need to enter into the appropriate course at the next time it is offered.

Students in the 4th year of the CPPT concentration attending flight training with an external provider have 6 training blocks defined in the MOU. Students will have the ability to re-enter the flight training should they not be able to complete on schedule.

3. *Describe the timeframe of courses, i.e. accelerated, weekend, traditional, etc.*

Courses are offered following UH Hilo's 16-week semester (Fall and Spring) format.

3.a. *Attach the institution's Credit Hour Policy, in compliance with [WSCUC's Policy on the Credit Hour](#), adopted in September 2011.*

The UH Hilo Credit Hour Policy is posted online and can be viewed at: <https://hilo.hawaii.edu/policies/documents/policies/UHHCreditHourPolicy6-1.10.13.pdf>

WSCUC Reviewer Comment: Please provide the Credit Hour Policy as an attachment to this proposal.

See attachment:

III.C.3.a UHHCreditHourPolicy6-1.10.13

4. How will the institution define and monitor that timely and appropriate levels of interactions between students and faculty, and among students are maintained?

A faculty advisor specific to the discipline will be assigned to each student and there will be monthly cohort meetings. Additionally, there will be periodic events where all program faculty, students and staff will be gathered for airport field days with participating airport staff.

5. If 50% or more of the program will be offered via distance education, describe the provisions available to faculty to determine that the enrolled student is the student completing the coursework. How will the identity of students participating in the program be verified.

N/A

6. Attach a sample schedule of courses for a full cycle of the program with faculty assignments, if available

Please see Attachment: III.B.2, III.C.6 Curriculum Map + Teaching Assignments (Both Concentrations)

D. Admissions (CFRs 1.1, 1.6, 2.1, 2.2, 2.10, 2.12, 2.14)

1. Describe the admissions requirements and other qualifications expected of students in this program -

Students interested in pursuing this program must meet all admission requirements required of all UH Hilo students. Requirements differ based on a student's status when applying to UH Hilo, eg. High School Student, Transfer, or International Students.

Admission Requirements for All Student Types:
https://hilo.hawaii.edu/admissions/adm_reqts.php

WSCUC Reviewer Comment: Please provide the admission requirements for the proposal program as an attachment to this proposal.

See attachments:

III.D.1 Freshman Application Requirements

III.D.1 Transfer Student Application Requirements

III.D.1 International Student Application Requirements

In addition, students wishing to pursue this program will also be asked to complete the Aeronautical Sciences Pre-Enrollment Acknowledgement form (attachment). This form provides students with the program specific notices and cost information for the CPPT concentration flight training.

Please see Attachment: III.D.1 AERS Pre-Enrollment Acknowledgment Checklist

2. *Identify the type of student targeted (i.e., adult learners, full-time or part-time).*

Full-time students

3. *If 50% or more of the program will be offered via distance education, describe how the student's ability to succeed in the distance education modality will be addressed and linked to admission and recruiting policies and decisions.*

N/A

4. *Describe the [Transfer of Credit policies](#) including the number of credits that students may transfer in.*

Students interested in transferring into this program are able to transfer in general education courses taken at another regionally accredited college or university. Currently, we will not accept transfer coursework for the majority of the AERS courses.

UH Hilo Transfer of Credit Policy:
https://hilo.hawaii.edu/policies/documents/policies/transfer_credits.pdf

WSCUC Reviewer Comment: Please provide the transfer policy as an attachment to this proposal.

See Attachment: III.D.4 Transfer Credit Policy

Students will be identified upon entering an UH community college campus as intending to transfer to UH Hilo and put in contact with UH Hilo aeronautical sciences faculty for advising. Transfer students from within the UH system will enroll in a intensive summer flight institute. During this summer institute, the flight simulator courses from the first two years of the program will be offered giving transfer students a chance to begin the program at the start of their third year with the UH Hilo cohort.

5. *Describe the process for awarding credit for prior learning (applicable only to undergraduate level). See the [Credit for Prior Learning Policy](#).*

Credit for Prior Learning at UH Hilo is accepted for CLEP, AP, and Prior knowledge of a secondary language. Details can be found in the UH Hilo catalog:
<https://hilo.hawaii.edu/catalog/credits-grades-and-examinations>

WSCUC Reviewer Comment: Please attach the prior learning policy as an attachment to this proposal.

See Attachment: III.D.5 Credits, Grades and Examinations- Prior Learning Policies

6. Describe the residency requirements, if applicable.

To be eligible for the UH Hilo degree, students must complete at least 30 credits in residence at UH Hilo.

In order to qualify for Resident tuition, students must be bona fide residents of the State of Hawai'i, more information can be found at:
<https://hilo.hawaii.edu/admissions/residency.php>

7. Provide a copy of the student handbook and/or pertinent catalog copy related to the proposal submitted.

UH Hilo Catalog for 2019-2020: <https://hilo.hawaii.edu/catalog/>

WSCUC Reviewer Comment: Please provide only the catalog copy for the proposed program as an attachment to this proposal.

See attachment:
III.A.3 BS-AERS Catalog Program Fall 2019

8. Please attach a sample brochure or admissions material for this program that will be made available to prospective students. Note that these materials must clearly state "Pending WSCUC approval" prior to Commission ratification.

Please see Attachment: III.D.8 AERS Program Promotional Rack Card ADA

Section IV: Resources

A. Faculty (CFRs 2.1, 2.2b, 2.8, 3.1–3.5, 3.7)

1. Provide the number and FTE of faculty

Total FTE at Capacity: 3.67 FTE

Both concentrations of the degree share the first three years of curriculum. Faculty staffing is based on the program hiring plan below which consists of 2 Instructors/Academic Specialists, one of which will also serve as the Program Coordinator and one Professor who will also assume Program Chair duties at capacity. The additional courses for General Education are currently taught by faculty members in existing programs and departments.

WSCUC Reviewer Comment: Please clarify whether 3.67 FTE faculty include gen ed faculty or whether the additional 1 FTE is filled by lecturers.

Year 1: Recruit and hire 1 Instructor/Academic Specialist (1.0 FTE).

Year 2: Recruit and hire Assistant/Associate Professor (1.0 FTE) (Aviation) and an additional Instructor. (1.0 FTE).

Year 3: Assistant/Associate Professor (.67 FTE) (CAIT) This professor will also have a .33 assignment within CAFNRM teaching applied UAS Courseoi.

Year 4: No new permanent hires.

Lecturers will be hired as needed for GIS and Remote Sensing classes and are in addition to the 3.67 FTE. Lecturers will be required to teach one additional section of Geography 201 Interpretation of Geographic Data, Geography 470 Remote Sensing, and Geography 480 Geographic Information Systems and Visualization each year to accommodate the projected 30 student cohort.

A cohort of 30 new aviation students will require the addition of a section of English 100 and Math 140 to accommodate the Aeronautical Sciences students and are reflected in the budget. The additional courses for General Education will be distributed across a large number of departments and are currently taught by faculty members in existing programs and departments. Due to declining enrollments over the past 6 years we currently have sufficient capacity to add students without increasing the number of lecturers.

See attachment:

IV.A.1 Faculty Teaching and Workload Plan for Aeronautical Sciences

WSCUC Reviewer Comment: Please clarify the number of lecturers to be employed in the proposed program.

The program will require 5 lecturer taught courses per year covering general education and geographic information-remote sensing classes.

Staffing will be adjusted in line with program enrollment growth.

The staffing plan was deemed appropriate by the external reviewer for the size of our expected incoming cohort.

See Attachment: III.A.1, IV.A.1 External Evaluation of Aeronautical Sciences Program

2. What will the faculty-to-student ratio be for this program? If the program will be accredited by a specialized accrediting agency, does this ratio meet those requirements?

The faculty-to-student ratio will be ~22:1. There will not be any specialized accreditation for this program at this time.

3. Provide information about the balance of full- and part-time faculty members involved, and how that balance will contribute to quality and consistency in instruction and advising.

The core AERS courses of the program will be staffed by full time faculty members which will provide consistency in the quality of instruction necessary for a professional flight program.

In addition we also have ancillary support from full time faculty members in the Geography and Agriculture departments with interest in certain aspects of aviation and how aviation can be applied to solve problems. These faculty members will also provide resources for career planning and advising.

WSCUC Reviewer Comment: Please describe how UHH faculty will orient the ATS instructors regarding program PLOs and how to assess PLOs in the 4th year portion of the program. Describe how ATS instructors will be monitored by UHH faculty for quality instruction.

UH Hilo conducted one onsite visit and several phone conversations to align the UH Hilo Program Learning Objectives and specific Student Learning Objectives from individual courses with the Learning Objectives from coherent program blocks taught at ATP Flight School. ATP share proprietary lesson plans to facilitate course alignment. Alignment was facilitated by ATP's relationship as the flight training provider for the Arizona State University's Professional Flight B.S. A similar arrangement between a commercial flight school and an accredited university was recently approved by WSCUC for William Jessup University and Advanced International Aviation Academy in Sacramento, California.

Because instruction methods and schedules are subject to change, the UH Hilo Certified Flight Instructor will visit the ATP facility for approximately 1 week at the time each new UH Hilo cohort arrives to begin flight training. During this time, the UH Hilo faculty will assist in orienting UH Hilo students to flight school. The UH Hilo Flight Instructor will also meet with the ATP Flight instructors to discuss alignment of learning objectives.

The UH Hilo flight instructor will remain in touch with the UH Hilo students to monitor their progress and assist with any problems they may encounter. Group meetings will be conducted via video conferencing software every two weeks. Students will also have access to a dedicated forum that will be monitored by the UH Hilo Flight Instructor and can make email or phone contact at their convenience. The UH Hilo Instructor will also video conference with one or more of the ATP Instructors to track benchmark accomplishments and number of flight hours every two weeks. Students will be identified that could benefit from additional simulator time recommending specific exercises and scenarios to facilitate more rapid learning in the air.

The most important way to track the quality of instruction and student progress is time to completion of FAA licenses and ratings. Attachment III.A.8 Certification of Flight Training Form 0510 shows how UH Hilo courses are aligned to FAA examinations, licenses, and ratings in the order earned at ATP Flight School.

UH Hilo Course Equivalent: Flight Training w/applicable FAA Examinations, Licenses ,Ratings:

AERS 201 Private Pilot Pre-Solo (5 Cr) Private Pilot Airplane Examination Passed
Solo Complete

AERS 202 Private Pilot Solo (5 Cr) Private Pilot Checkride Passed
Private Pilot License

AERS 310 Instrument Basic (3 Cr) Instrument Checkride Passed

AERS 311 Instrument Advanced (3 Cr) Instrument Examination Passed
Instrument Rating

AERS 203 Cross Country (5 Credits) Crew Cross-Country Complete

AERS 388 Crew Resource Mngmt (2 Cr)

AERS 421 Commercial Single Engine (2 Cr) Commercial Single-Engine Examination Passed
Commercial Single-Engine Checkride Passed
Commercial Single-Engine Rating

AERS 420 Commercial Multi-Engine (5 Cr) Commercial Multi-Engine Examination Passed

Commercial Multi-Engine Checkride Passed
Commercial Multi-Engine Rating

The ATP instructors use tests and in flight metrics to decide when students are ready for both the written examinations and for their checkride exams with a Certified FAA Examiner. The FAA administers these tests independently and ATP maintains a Facility certified for these examinations at their site. The combination of course preparation taught at UH Hilo prior to arrival at ATP Flight School and close monitoring of student progress will help students successfully attain the licensure and ratings to become commercial multi-engine pilots and complete their degree.

4. Describe the impact that the proposed program or change will have on faculty workload for all involved in the program, including teaching, research, and scholarship. Describe the institution's expectations for faculty scholarship. Who will teach courses no longer being taught by the faculty reassigned to this program? What will be the maximum number of students that each faculty member can advise?

Faculty (Professors and Instructors) in this program will be new hires, no faculty will be reassigned. The two Instructor positions will also be given release time equivalent to one course to professionally advise students within the program. Each Instructor will carry 30-40 assigned students. Additional academic and discipline specific advising will be provided by the Professors in the program.

Expectations for Assistant/Associate Professors will be the same as any other tenure track faculty at UH Hilo with a 75% teaching, 25% research load (18 credit hours teaching, 6 credit hours research per year). They will be expected to teach and demonstrate scholarship/research related to their field.

Faculty hired as Instructors or Academic Specialists will be expected to teach courses and advise students. The one-on-one nature of the 1 credit hour simulator labs will require these faculty to have approximately 20 contact hours per week, which is a workload

equivalent to 50% of their time. One instructor will be an 11-month appointment to teach the summer flight school courses. All other faculty will be 9-month appointments.

The 11-month Instructor has an additional 3 credit hour release to advise and track students attending flight training during their fourth year.

See Attachment: IV.A.4 V.A.1.a Faculty Teaching and Workloads

5. Provide an overview of the key credentials and experience of faculty with leadership roles in the program. Include abbreviated vitae (3-5 pages) that demonstrate the most current activities in relationship to the program (scholarship, teaching, etc.).

Currently we have a FAA certified flight instructor with over 15 years of experience hired in a temporary position. For program development we have used several outside experts in aviation, see section III. A. 1.

We are advertising for a full-time instructor or academic specialist to begin on August 1, 2019. An additional Instructor/Specialist and an Assistant/Associate Professor will be hired by August 1, 2020. The final Assistant/Associate Professor will be hired by August 1, 2021.

Minimum Qualifications will include:

Instructor: Certified Flight Instructor credential and greater than 5 years of experience in aeronautical flight training and instruction. Complete knowledge of all FAA regulations governing flight training.

Professor: Ph.D. in Aeronautical Sciences or related field and at least 5 years of teaching in aeronautical sciences in an accredited institution of higher learning. And demonstrated record of scholarly activities.

6. Describe how off-campus, international, or distance education faculty will be oriented to the particular needs of the program and the ethos of the institution (if applicable).

N/A All faculty will be located on the UH Hilo campus.

7. If 50% or more of the program will be offered via distance education, describe the preparedness of faculty to support the modality of instruction. What faculty development opportunities are available? Include any faculty guidelines for online instruction and/or web links to online training resources.

N/A

B. Student Support Services-

(CFRs 2.3, 2.11–2.14, 3.1, 3.5, 3.7, 4.7)

1. Describe the available student support services provided, appropriate to the modality of the program, including, but not limited to:

a. Ongoing academic advising and academic support

Students in the program will have a professional advisor in our Academic and Career Advising center assigned to them for their first year in the program. Additionally the program faculty also share advising duties for all students in the program until they graduate.

b. Financial aid advising

At any point in their academic career students may contact the UH Hilo Financial Aid office to speak with one of our 6 financial aid counselors.

UH Hilo Financial Aid Website: <https://hilo.hawaii.edu/financialaid/>

c. Career services

Career advising at UH Hilo is done both on a campus wide level at the Academic and Career Advising Center which employs a career counselor. For this program in particular, career advising will be provided by the faculty advisors in the program who have prior experience working in the Aviation industry.

C. Library and Information Resources -

(CFRs 2.3, 2.13, 3.4, 3.5)

1. Describe the access to library resources including library systems (local, national, or global), electronic services, Internet, information utilities, service providers, and book and document delivery services that will be available for both faculty and students, on-site and remotely, as applicable. Include a web link to the library's home page.

Available to students are 220,000 bound volumes and 1,100 current periodicals from Hawai'i, the U.S. mainland, Asia and Europe. In addition, the library is a partial depository for United States and Hawai'i State documents. The Hawaiian Collection is the largest circulating collection of Hawaiiiana in the State. To ensure student proficiency in use of these collections, the staff offers a comprehensive program of library instruction using a networked electronic library classroom.

The UH Hilo library provides other services and facilities that further the academic mission of the University. Library facilities include ample audio visual playback equipment and microcomputers with web access, as well as word processing and other applications. Students may also confer in the library's group study rooms located throughout the building.

Computer technology is increasingly used to meet the information needs of the University community and facilitate access to library services for distance learners. The Library's catalog is now available on Hawai'i Voyager, a Web-based library management system. The Library's reference service is enhanced with subscriptions to full-text databases. Interlibrary loan services assist students and faculty in obtaining research materials from off-campus sources

UH Hilo Edwin Mookini Library: <http://guides.library.uhh.hawaii.edu/home>

2. Describe the library staff available to support students and faculty in this program, including hours of availability, on-site and remotely, as applicable.

Mookini Library currently has a staff of 6 full time Librarians that serve as subject liaisons to University of Hawai'i at Hilo academic departments. In addition to developing and maintaining resources in subject areas, subject liaisons also provide individual research assistance, conduct library instruction sessions, and welcome suggestions to improve collections and library services.

During the semester, the library is regularly open on Sundays from 2:30-10:30 PM and Monday-Thursday from 8:00 AM- 10:30 PM and on Fridays from 8:00 AM- 6:00 PM.

3. How does the library staff support the development and assessment of information literacy competencies, such as providing instruction on how to use the library, conducting research, and gaining access to required information for students in this program?

Librarians at Mookini Library provide individual research assistance and conduct library instruction sessions for students. Additionally the library offers an online self paced Library Skills Module that covers information literacy concepts for students. This module is required for students who take English 100 at UH Hilo but is open to all active students.

4. If additional library and information resources are deemed necessary, specify what these resources are and detail the institution's long-term financial commitment to acquire them.

The majority of industry specific journals and relevant FAA materials are available to the public online. Resources covering remote sensing and GIS as well as sensor information are already available in the library to support these courses being offered in a number of the STEM-related fields. At this time it has been determined that the resources specific to this program and library support is sufficient.

D. Technology-

(CFRs 2.1, 2.13, 3.1, 3.3-3.5, 4.7)

1. Describe the institution's technological capacity to support teaching and learning in the proposed program.

UH Hilo has sufficient technological capacity to support teaching and learning in this program.

We are in process of purchasing two professional simulators and 6 desktop simulators for use by students in simulator courses. We are also buying a number of small and large UAVs for use in teaching and doing survey work. The Hawaii State Legislature provide \$321,000 for equipment in this years session.

2. Describe the institution's information technology support for students and faculty in the proposed program, including help desk hours.

One of the Instructors/Specialists hired for the program also will serve as the Program Coordinator, this position will provide technical support for all simulators. In addition, UH Hilo has an Office of Campus Technology support group located on campus. There is a help desk available for students and faculty that is available M-F 7:45 AM-4:30 PM.

3. Describe the institution's provisions for students in the proposed program to gain full access to course materials.

The UH Hilo bookstore coordinates the ordering and purchasing of all mandatory textbooks and supplies for the program. In addition, copies of all required materials will also be available for students to use on Reserve at the UH Hilo Library.

4. If 50% or more of the program will be offered via distance education, provide a detailed description of the type of distance education modality being proposed and the format (asynchronous, synchronous, online, teleconference, video on demand, etc.).

N/A

5. Describe how students will receive training on how to utilize program required technology.

As a part of the Simulator courses in the first year of the program (AERS 101 and 102) students will be provided training on how to use the various simulators available.

6. Describe how the institution will plan for business continuity during system failures (major or minor) or scheduled service interruptions.

The program will have a total of 8 simulators with redundant capabilities and would still be able to have normal operations in the event of a equipment failure or a service interruption.

E. Physical Resources

(CFRs 3.4, 3.5)

1. If the proposed program will require physical resources not currently available on campus, please describe.

The physical resources needed for this program are all currently available on the UH Hilo campus.

2. For off-campus or international programs: Describe the physical resources provided to support the proposed program(s)/site. This includes, but is not limited to the physical learning environment, such as classrooms, study spaces, student support areas.

WSCUC Reviewer Comment: Please describe the facilities, technology, and equipment for Year 4 at ATP and demonstrate sufficiency and quality of those facilities for all needs of the program. Also describe how student support services will be provided at ATP.

A team from UH Hilo visited the ATP site in Mesa, Arizona during July 2018. The ATP facility at Mesa consists of a large, modern building that contains the flight operations, simulator training, several large classrooms, and numerous smaller conference and exam rooms. The operations center was well run with daily schedules of flights, training, and exams posted on electronic boards in the facility. The area was spacious and easily accommodated the numerous students, faculty, and staff that were present. The simulator facility contained several two seat simulators that could be configured as either single or twin engine aircraft. On the tarmac, ATP had somewhere between 30 and 40 aircraft. Single engine Cessna 172 and Piper PA-28 aircraft some with traditional analog instruments and others with new "glass" instrument panels made up about 80-90% of the fleet. Twin engine Piper PA-44 aircraft make up the rest of the aircraft available for student training.

The ATP facility also has two large hangar repair facilities that each could handle 2-3 aircraft at a time. The hangars were extremely clean and well organized and contained a large spare parts warehouse. There were also 5-10 mechanics and maintenance staff on duty who explained how they use computers to track all of their aircraft mandatory maintenance and also incidental repair requests.

We left very impressed with how well run the facility was and that it had more than sufficient staff, equipment, and planes to train large numbers of students.

In addition to the resources above ATP also has on-site academic and financial advisors available to students. Additionally, students can have many questions answered using the ATP managed: <https://www.airlinepilot.life> online forum. The forum allows ATP staff and students to interact and answer many questions regarding academics, housing, financing and career advice. This forum also allows students and prospective students the ability to connect with ATP certified pilot mentors.

Section V: Financial Resources

A. Financial Resources (CFRs 3.4, 3.5, 4.2, 4.3 4.6, 4.7)

1. Provide an assessment of the financial viability and sustainability of the program including

a. Narrative describing all start-up costs for the institution and how the costs will be covered, including direct program cost and institutional indirect cost. Explain how the institution effectively plans such that the impact of additional services and support for a new program will be adequately supported as the program grows (i.e., are indirect costs charged on a program basis). Costs for licensing, hardware, software, technical support, training for faculty and students, and instructional design should be included.

The initial startup costs for the program included adding 3.67 faculty over a three year period, purchase of both Flight Simulators and UAVs for teaching and research, information and library services, and professional development costs for faculty. The faculty for this program are very specialized and will likely come at a premium since there is currently a high demand for aviation instructional faculty. The estimated faculty salaries are 10-20% higher than those typically offered to UH Hilo faculty. The total estimated faculty cost in the 3rd year (when all faculty are scheduled to be hired) is approximately \$300,000 without fringe costs and \$485,000 with fringe costs included. We are working with our local legislators to ask for 4 permanent position numbers plus salary from the State of Hawaii during the next legislative session. If positions and salary are granted, the program will be producing much more revenue than it expends. Currently none of the financial models rely on salary funding from the state, but if position numbers are granted without salary the fringe costs for faculty will be paid by the state at no cost to the UH Hilo budget. There will also be a need to hire lecturers to teach the additional sections of GIS and Remote Sensing courses (Geog 201, 470, and 480) that will be needed for this program. Lecturer costs are \$6600 per 3 credit course without fringe and approximately \$8500 with fringe included. We have used the higher cost in our model.

Faculty will also be brought on roughly 1 year in advance with little or no teaching obligation to give them ample time to complete course development, design, and content creation necessary. Course design support available via the Office of Technology and Distance Learning and there will be \$10,000 per year devoted to professional development for faculty. Additional support is available through the Chancellor's Professional Development Fund and the UH Hilo Research Council Seed Grant program. UH Hilo has also recently developed a faculty mentoring program to assist new faculty with teaching pedagogy and keys to being a successful faculty member at UH Hilo.

Equipment costs for the program are significant and are estimated at \$240,000 for flight simulators and \$80,000 for UAV equipment for a total cost of \$320,000. During the 2018-19 legislative session, UH Hilo was awarded \$321,000 in capital funds to purchase the needed equipment, greatly reducing our start up costs. In addition, the private company Aerovironment has donated two large research capable UAVs including spare parts to the program with a value of \$40,000 adding significantly to our existing teaching equipment

(we have been running a UAV certificate for several years and already have 3 teaching UAVs).

See attachment:

V.1.c. HB1259 CD1 Funding for Aeronautical Sciences Item 203 (see item 203 on page 50 of the attachment, total funding 321 C, where C stands for thousands)

Administrative costs, staff support costs, student services costs, and library staffing costs are considered to be zero for the purpose of the program budget. UH Hilo has been declining in enrollment since 2012, losing approximately 120 students per year. Currently, UH Hilo has sufficient capacity to provide the necessary faculty and student support. Once the Aeronautical Sciences program gets established, it should have approximately 70-80 students enrolled at any given time (based on the 25 and 30 student cohorts). Based on these numbers the program will be generating \$100,000 to \$400,000 more than operational costs, funds that can be used to cover additional support costs as needed if the program expands.

Support costs for the program include \$10,000 per year each for maintaining the flight simulators and UAV equipment. Additional software such as ENVI for remote sensing and ARC GIS for geographical information systems are currently supported in our Spatial Data Analysis Lab as part of our ongoing budget. Licensing is based on seat and there is sufficient available time in the lab to teach extra sessions of the needed courses.

See attachments:

II.A.4, V.A.1 Budget Models for UH Hilo Aeronautical Sciences BS

IV.A.4, V.A.1.a Faculty Teaching and Workloads

b. Total cost of the program to students, including tuition and any special fees.

The total cost for 4 year degree completion for the CPPT concentration is estimated to be \$163,000 for the CPPT concentration and \$87,000 for the CAIT concentration. A detailed list of all costs by year is given on the Aeronautical Sciences webpage:

<https://hilo.hawaii.edu/depts/aeronautics/estimated-cost-of-attendance.php>

See Attachment:

V.A.1b AERS Estimated Cost of Attendance

WSCUC Reviewer Comment: Please provide program costs within the narrative or as an attachment to this proposal.

The Institution is providing further clarification below the original narrative.

Financial aid is available for the first 3 years of the CPPT concentration and for all 4 years of the CAIT concentration. Private loans to cover the cost of flight school and expenses can be arranged through the flight provider. ATP has loans available with deferred

payments after graduation for students that accept employment with them as Certified Flight Instructors allowing them to accumulate the additional post-graduation flight hours necessary to qualify for the FAA Airline Transport Pilot license.

c. Financial impact of the change on the institution including evidence that the institution has the capacity and commitment to absorb start-up costs. If the institution has incurred a deficit in the past three years, supplemental information describing the financial capacity of the institution to start and sustain the new program(s) is required.

The large equipment start up costs of \$321,000 have been covered by an appropriation from the Hawaii State Legislature that will be available in the 2019-2020 academic year. Instructional costs will during the initial year will be paid for using tuition. Currently we have 12 students enrolled in AERS 101 that have expressed interest in being majors as soon as the program is available. The uncovered instructional costs would be \$55,000 including fringe that would have to be reallocated from other projects, which the Vice Chancellor of Academic Affairs and the Chancellor have agreed to support. Our original proposal approved by the University of Hawaii Board of Regents also includes the option to request access from the BOR to the UH Hilo reserve funds for supplemental funding if necessary (see page 13, 2nd paragraph about initial funding). This is supported by both the Chancellor and the Vice Chancellor for Academic Affairs.

See attachments:

V.1.c. HB1259 CD1 Funding for Aeronautical Sciences Item 203 (see item 203 on page 50 of the attachment, total funding 321 C, where C stands for thousands)

V.A.1.c UH Hilo Reserves for AY 2019-2020.pdf

II.B.1 AERS UH BOR Proposal Full

WSCUC Reviewer Comment: Please provide documentation of the appropriation from the Hawaii State Legislature as well as the uncovered instructional costs from the VCAA and Chancellor.

See attachment:

V.1.c UH Hilo Reserves for AY 2019-2020.pdf

d. Statement of the minimum number of students per year necessary to make the program financially viable. The budget should reflect anticipated attrition and should include plans to respond to low enrollment.

The program was approved by the University of Hawaii Board of Regents with the understanding that a minimum of 17 incoming students per year would be necessary to make this program sustainable. This information was based upon our financial models (see Attachment below) that indicated after 4 years the program would still not be financially

stable if UH Hilo was required to pay the fringe costs on faculty. In contrast, the program would be bringing in more tuition dollars than expended in the third year if the legislature provides permanent position numbers that shift the fringe cost to the state. Either way, the stipulation by the BOR was that if enrollment of at least 17 students per year could not be reached, the program would be discontinued and taught out.

e. Budget forecast, for at least the first three years of the proposed program, based on the projected enrollment data, including attrition, anticipated faculty hires, additional library resources, and other projected revenues and expenditures. The enrollment data should match the market analysis provided earlier in the proposal. The budget should include all budgetary assumptions. (The linked budget template is provided as a model of the level of detail the Committee expects, but use of this template is not required. The template may be modified as appropriate.)

We have produced financial models for 3 different scenarios of 17, 25, and 30 student cohorts. These models also consider persistence, mix of resident and non-resident tuition, transfer of students from community colleges, and the cost of faculty salaries with or without fringe. We did not model the very low program costs that would be incurred if the legislature grants UH Hilo 3.67 positions with salary included next year. We do think that we have a very good chance of being granted at least the permanent position numbers next year, which would eliminate fringe payments by UH Hilo.

Each of the models begins with Fall 2019, even though Fall 2020 is the first year that the program will be fully accredited giving us the ability to recruit more successfully. The Fall 2019 provisional start for offering AERS courses is expected to reflect relatively low enrollment as the program was approved by BOR late in the recruiting season and legislative support was not finalized until late April of 2019. We anticipated this. We have used 12 as the number of students in the first provisional cohort based upon current enrollment of students in AERS 101 for Fall 2019 and who have expressed the desire to enroll in the program as soon as it is approved.

Administrative costs, staff support costs, student services costs, and library staffing costs are considered to be zero for the purpose of the program budget. UH Hilo has been declining over the last five years, losing about 100 students per year. Currently, UH Hilo has sufficient capacity to provide the necessary faculty and student support.

Each of the models include the \$321,000 appropriated for equipment for the program in April 2019.

Almost all of the models show the program reaching financial stability (income>costs) by the 3rd year and continuing to the 4th year. The only model that does not show income>costs in the 3rd year is the 17 student cohort where faculty cost includes fringe benefits. We are very optimistic that we will have long term enrollments of 25 or more with a high probability that the Hawaii State Legislature will provide permanent position numbers to the program, which will remove fringe costs from the program budget.

Section VI: Teach Out

A. Teach-Out (CFRs 1.6–1.8)

CFR 1.6 and [WSCUC's Teach-Out Plans and Agreements Policy](#) require that institutions provide a teach-out plan or program discontinuation policy detailing how students who begin a program will be able to finish if the institution determines that the program is to be discontinued.

1. Please attach the institution's teach-out or program discontinuation policy.

The University of Hawai'i Executive Policy EP.202 Review of Established Programs requires that programs are put in Stop-Out status prior to termination. Stop-Out status means that students are not admitted to a program because the program is being reevaluated. Once a program in Stop-Out status that identified for termination, all students currently enrolled in the program are allowed to complete prior to the program being terminated.

The Aeronautical Sciences B.S. degree program was approved by the University of Hawaii Board of Regents contingent on being able to enroll at least 17 students a year by the 4th year of the program. If this condition is not met, the program would cease enrolling new students at that time and would begin a 4 year teach out of the program.

See Attachment:

VI.A.1 UH- EP 5.202 Review of Established Programs

WSCUC Reviewer Comment: Please describe where the policy is published for access by students and faculty.

The University of Hawaii systemwide policies are published publicly online in the UH Systemwide Policies and Procedures Information System (PPIS). The link to the University of Hawaii systemwide policies are published publicly online on the UH Hilo Academic Policies webpage.