

**University of Hawai'i
Code Request Form**

I. REQUESTOR CONTACT INFORMATION

Name: Louise Pagotto
 Title: Vice-Chancellor for Academic Affairs
 Phone Number: 734-9519
 Email Address: pagotto@hawaii.edu

Action Requested:
 NEW Program Code (new major/concentration, etc.)
 NEW Subject Code
 Change of existing code
 Type (subject, program, etc):
 Old: _____
 New: Advanced Professional Certificate
 OTHER: _____

Campus/Office/Department/Address: Kapi'olani Community College, Curriculum Management,
4303 Diamond Head Road, Honolulu, HI 96816

II. CODE REQUEST

Academic program code preferences for consideration:

NEW Program Code Effective Term (semester/year): fall 2010
 Major: IT Major Description: Information Technology Is this major financial aid eligible? YES NO
 Is the major code being used the same way at other UH campuses? YES NO Comment: _____
 Does the same or similar major code exist in Banner? YES NO If YES, please list code: _____

Concentration (if applicable): _____ Concentration Description: _____
 Is the concentration code being used the same way at other UH campuses? YES NO
 Does the same or similar concentration code exist in Banner? YES NO If YES, please list code: _____
 Attach concentration to program code? YES NO

Level: Undergraduate Graduate First-Professional Other: _____
 Degree/Certificate: Advanced Professional Certificate
 College: Kapi'olani C.C. (PP) Department: Business

If requesting a program name change, will current students be grandfathered in under the old program name? YES NO

If requesting a program name change, will the old code be available for:
 Recruitment? YES NO List the end term of old code: _____
 Admissions? YES NO List the end term of old code: _____
 General Student? YES NO List the end term of old code: _____
 Academic History? YES NO List the end term of old code: _____

NEW Subject Alpha/Code Effective Term (semester/year): _____
 Code: _____ Description: _____
 College: _____ Department: _____
 Does the same or similar subject code exist in Banner? YES NO If YES, please list code: _____
 Is the subject code being used the same way at other UH campuses? YES NO

**University of Hawai'i
Code Request Form**

OTHER: In addition to the AS in Information Technology, Kapi'olani C.C. now has an Advanced Professional Certificate in Information Technology, approved by the UH Board of Regents.

Please briefly describe your request and explain why you are requesting the codes:

III. SUPPORTING DOCUMENTATION

Please attach the required supporting documentation. See *Guide to Academic Program Actions and Approval* at: [http://www.hawaii.edu/vpaa/cms/guide to acad prog 121006.pdf](http://www.hawaii.edu/vpaa/cms/guide%20to%20acad%20prog%20121006.pdf)

- BOR minutes from 16 September 2010 (date) meeting with supporting documentation provided to BOR
- Memo from campus Chancellor
- Signed memo from UH President
- None required according to the Guide to Academic Program Actions and Approval

IV. CAMPUS VERIFICATION

The appropriate parties (faculty, administrators, registrar) have been consulted.

Louise Pagotto

Louise Pagotto

8/29/11

Name of Requestor (print or type)

Signature

Date

Send completed form with supporting documentation to:

Institutional Research Office (Attn: Lynn Inoshita or Christine Shaw) • 1633 Bachman Place • Sinclair Annex 2, Room 4 • Honolulu, HI 96822
Fax: 808-956-9870 Phone: 808-956-7532

For Internal Use Only:

Appropriate Documentation Received: YES NO

Approval Status:

Major code: YES NO
 Concentr. code: YES NO
 Program code: YES NO
 Subject code: YES NO

NOTES:

Entered into SMAPRLE/SOACURR: _____

Entered into STVMAJR: _____

Entered into STVSUBJ: _____

Code processing completion date: _____

Copies sent to: _____

with five articulated programs to UH West O'ahu, health informatics and food science programs, and partnering with UH Mānoa on a culinology degree.

Regent Fukunaga said there's a lot of good work, but the Regents were struck by the cost of \$850 per square foot. Shigekuni said they studied no-structure parking alternatives at three of the sites. No-structure parking, not including the stand-alone parking structure, would cost \$50 million less.

Regent Martinson asked if the cost was a part of trying to accommodate low-profile buildings. With a 25-foot height limit, could you get as much square footage with a higher-density building? Shigekuni said the site has an overall slope of 10%, so they will always be fighting grade. If they were to avoid any kind of excavation or put the building into the ground, you are going to see a large structure or a difficult one to make functional. Items like water and sewer are not going to line up, and that is also expensive. The site is beautiful, but difficult in terms of building structures.

Chair Karr asked what the height limit is, given that KCC is in the Diamond Head scenic district. Shigekuni said it is 25 feet, except for the Diamond Head Crater, which is zero feet. VP Morton said there is no building on campus that is shorter than 25 feet. When they built the campus, KCC went through a permitting process to exceed the height limit. Therefore, most buildings are between 29 and 32 feet in height. The Diamond Head scenic district height limit is about maintaining sight views. Thus, it's possible to build over 25 feet under certain circumstances.

Regent Fukunaga wanted clarification that they are approving the LRDP in principle, which was affirmed. Chair Karr said it's BOR policy that KCC has to come back to the Board with more concrete numbers for further approval. Upon motion by Regent de la Peña, and second by Regent Dahilig, Approval in Principle of the Long Range Development Plan: Kapi'olani 2020, was unanimously given.

Approval of Establishment of an Advanced Professional Certificate in Information Technology

Chancellor Richards said that the Information Technology program would be the sixth program to be articulated to UH West O'ahu. KCC Vice Chancellor for Academic Affairs, Louise Pagotto, said that the certificate was reviewed via campus procedures and endorsed by the Chief Academic Officers of the UH System. The certificate consists of 18 credits, or six courses, at the 300 level. The six courses have been articulated into UH West O'ahu's Bachelor of Applied Science with a concentration in Information Technology. The certificate is also open to students who have participated in similar programs across the System. The certificate is designed for incumbent workers who have experience in professional settings that could be the basis to qualify for entry into the program, and would upgrade the skills of people already in the workforce. Currently, there's a specific need for IT workers with four-year degrees. The program was developed according to standards established by the Association for Computing Machinery, and has been reviewed and endorsed by an advisory committee.

Regent Baxa moved and Regent Gee seconded the motion for the Approval of Establishment of an Advanced Professional Certificate in Information Technology, which was met with unanimous approval.

University of Hawai'i-Maui College

Approval of a New Associate in Science Degree in Natural Science with a Concentration in Biological Science or Physical Science (AS Degree in Natural Sciences)

UH Maui College Vice Chancellor, John McKee, said one component of the recent Pre-Engineering Collaborative grant from the National Science Foundation is to develop engineering courses for smaller and neighbor island campuses to provide an opportunity for its students to complete the pre-engineering track. There are no additional costs or classes. The proposed degree establishes a clear pathway for students who want to pursue a STEM degree at UH Mānoa or UH Hilo.

Regent Gee said the proposal states that the degree will be offered in the Fall 2010, and thus asked if it's already being offered. McKee said the courses are already in place and the instructors are teaching the classes. By approving the proposal, if students completed all the coursework by the end of this semester, they would be able to receive the degree. Regent Rasmussen asked about the articulation to UH Mānoa. McKee said the proposal has already been approved by the Chief Academic Officer's office, and UH Maui College faculty worked with faculty on other campuses on the proposal, including articulation to UH Mānoa.

Regent Baxa moved and Regent Rasmussen seconded the motion for the Approval of a New Associate in Science Degree in Natural Science with a Concentration in Biological Science or Physical Science, which was unanimously approved.

Approval of a New Bachelor of Applied Science in Sustainable Science and Management

Deferred to a future meeting.

IX. ANNOUNCEMENT

Chair Karr announced the next meeting is scheduled for Thursday, October 28, 2010, at the John A. Burns School of Medicine, and a groundbreaking event for the Cancer Research Center is scheduled for that afternoon.

Chair Karr received a draft of the Pacific Bioscience Research Center closure action memo and will be assigning it to Regent Fukunaga, the Chair of the Standing Committee on Academic Affairs. Chair Karr anticipates a recommendation for action by the Committee for the upcoming Board meeting.

A list of Board standing committees and task groups was distributed to the Board. Any questions should be directed to Secretary Amemiya.



UNIVERSITY of HAWAII*
KAPĪOLANI
COMMUNITY COLLEGE

'10 AUG 25 P2:49

BOR APPROVED 9/16/10

**e: J.Itano
S.Furuto
D.Mongold**

UNIVERSITY OF H
BOARD OF REGENTS

August 26, 2010

UNIVERSITY OF HAWAII
PRESIDENT'S OFFICE
MEMORANDUM

10 SEP -7 P3:00

TO: Howard H. Karr
Chairperson, Board of Regents

VIA: MRC Greenwood
President, University of Hawai'i

VIA: John Morton
Vice President for Community Colleges

FROM: Leon Richards
Chancellor

SUBJECT: Establishment of an Advanced Professional Certificate (APC) in
Information Technology at Kapi'olani Community College

SPECIFIC ACTION REQUESTED:

It is requested that the Board of Regents approve the Advanced Professional Certificate in Information Technology at Kapi'olani Community College.

RECOMMENDED EFFECTIVE DATE:

Fall 2010.

ADDITIONAL COST:

Implementation of this proposal for an Advanced Professional Certificate in Information Technology would, in the first year, require funding for .40 FTE faculty (\$18,216), which would be somewhat offset by \$17,952 expected in tuition (a \$264 shortfall, which the College would be able to cover. In subsequent years, the .60 FTE direct instructional costs (\$27,324) would be completely offset by expected tuition revenues (\$29,682).

PURPOSE:

The purpose of this proposal is to request approval to establish an Advanced Professional Certificate in Information Technology (IT) at Kapi'olani Community College. The purpose of the Advanced Professional Certificate in IT is to provide a structured, hands-on curriculum for all students who graduate with two-year associate degrees in IT and incumbent workers so that they may expand their IT skill sets, thereby making them more competitive in the labor force and better meet the State's workforce needs. An additional purpose of the proposed Advanced Certificate in IT is to provide a pathway to a Bachelor's of Applied Science degree at UH West O'ahu.

BACKGROUND:

Pursuant to Board of Regents Policy 5-1, the Board of Regents has the authority to approve new degree programs upon the recommendation of the President. Kapi'olani Community College (KapCC) proposes to develop an Advanced Professional Certificate (APC) in Information Technology (IT).

According to data from the 2nd Decade Project, East and Ewa O'ahu will have the two largest increases in population in the state (projected at 54,315 and 72,721 respectively through 2020). In addition, each area is identified as having either a very high or high need for post secondary education. Furthermore, the University of Hawai'i community colleges provide the state with entry-level workers in the IT field through Associate in Science (AS) degrees in IT and CENT (Computing, Electronics and Networking Technology), and the demand for these workers seems to be met through 2012 (projected vacancies=96/projected annual UH graduates=93). However, there is a serious projected shortfall of graduates in computer-related fields for positions requiring a bachelor's degree (projected vacancies=395/projected annual UH graduates=139).

This APC in IT program will provide 3rd year IT technical training aligned with the guidelines established by the Association for Computing Machinery (ACM) for IT baccalaureate programs and will build on the foundation of Kapi'olani's current Associate in Science degree, with its focus on the major components of IT: programming, networking, and databases. The APC will enhance students' skills and knowledge in programming and networking, establish a focus on Web systems, and integrate elements of human-computer interaction.

Students who complete either Kapi'olani's A.S. in Information Technology degree or a comparable degree at another community college will qualify for entrance to this Advanced Professional Certificate in Information Technology. In addition, industry workers with adequate experience will be able to apply through a process whereby their prior life experiences are assessed for verification of skill attainment for entrance to the APC equivalency (LEAP, Life Experience Assessment Program). Graduates of the program will find employment in business environments requiring web applications, programming with database connectivity, and server installation and network security.

ACTION RECOMMENDED:

It is recommended that the Board of Regents establish the Advanced Professional Certificate in Information Technology at Kapi'olani Community College, to be effective Fall 2010.

Attachment

c: Secretary to the Board of Regents

New Program Proposal

Advanced Professional Certificate in
Information Technology

Kapi'olani Community College

Date of Proposal: Spring 2010

Proposed Date of Program Implementation: Fall 2010

Table of Contents

1. Objectives of the Program	3
2. Relationship of Objectives to Appropriate Functions of the College and University	5
3. Organization of the Program	6
Program Learning Outcomes	7
4. Enrollment Projections	8
5. Resources Required for Program Implementation	10
6. Measures of Program Efficiency	11
7. Measures of Program Effectiveness	13
Appendixes	13
Appendix A: State Data	13
Appendix B: National Data	13
Appendix C: Advisory Board	13
Appendix D: Renovation Sketches	13
Appendix E: Authorization to Plan (ATP)	13
Appendix F: MOA with UHWO (Draft)	13

1. Objectives of the Program

Kapi`olani Community College (KapCC) proposes to develop an Advanced Professional Certificate (APC) in Information Technology (IT) that will articulate to a Bachelor's of Applied Science (BAS) with a Concentration in Information Technology at the University of Hawai'i West O'ahu (UHWO). This program will provide students with career-laddered opportunities in the multifaceted field of Information Technology. Newly acquired IT skill sets will make the IT worker more marketable. At UHWO, students will take selected upper division courses in Business Management to prepare them for further career advancement.

While the University of Hawai'i system provides the state with entry-level workers in the IT field through its many Associate in Science (AS) in IT and Computing, Electronics and Network Technology (CENT) programs, there is a serious shortfall in providing qualified, diversified IT workers with baccalaureate degrees and appropriate hands-on training. By 2012, it is projected the state will need approximately 400 IT workers with baccalaureate degrees while only producing 139 graduates from existing baccalaureate programs (See Section 2 below and Appendix A: State Data).

The proposed APC in IT is based on the completion of a two-year degree in IT and provides 3rd year IT technical training following the guidelines for IT baccalaureate programs established by the Association for Computing Machinery (ACM). The proposed certificate will build on the existing two-year degree's foundation in three major IT pillars (programming, networking, and databases infused with elements of the human-computer interaction pillar) by pushing out programming and networking and establishing a strong Web systems pillar, all infused with elements of the human-computer interaction pillar.

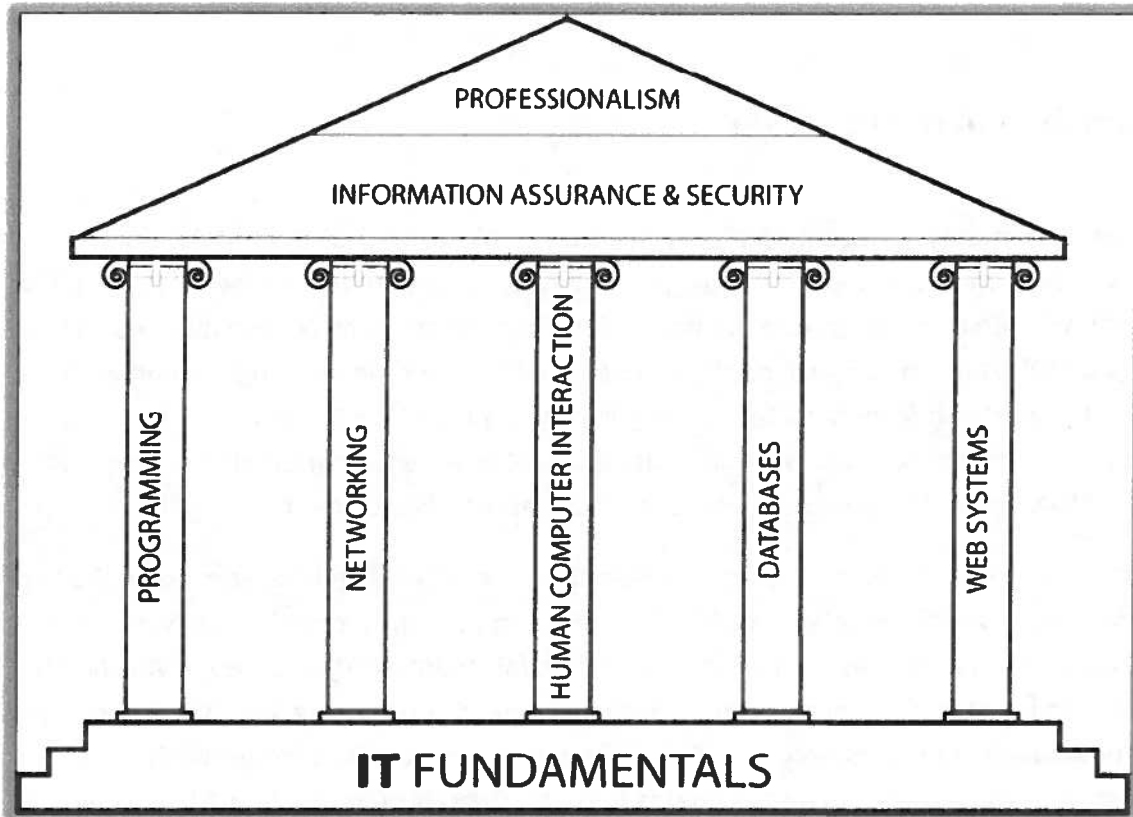


Figure 1—From ACM IT Curriculum 2008
<http://www.acm.org//education/curricula/IT2008%20Curriculum.pdf>

The major objectives of this program are:

- To provide additional diversified technical training for Hawaii’s IT workforce
- To add another rung in an educational/career ladder for IT students
 - Certificate of Completion in Database Administration (in place)
 - Certificate of Completion in Programming (in place)
 - Certificate of Completion in Help Desk Services (in place)
 - Certificate of Achievement in Information Technology (in place)
 - Associate of Science in Information Technology (in place)
 - **Advanced Professional Certificate in Information Technology (proposed)**
 - Bachelors of Applied Science with a Concentration in Information Technology (under negotiation)
- To provide an alternative to current theoretical based computer science and hardware based electronics educational programs

2. Relationship of Objectives to Appropriate Functions of the College and University

The proposed APC is consistent with the following campus mission statements: Kapi'olani Community College

- *prepares students to meet rigorous employment and career standards by offering 21st century career programs.*
- *uses human, physical, technological and financial resources effectively and efficiently to achieve ambitious educational goals.*
- *builds partnerships within the University and with other educational, governmental, business, and non-profit organizations to support improved learning from preschool through college and lifelong.*

Furthermore, this APC is consistent with statements in the College's Strategic Plan that describe both the current and future directions of the College relevant to the IT program. From the "Functional Statement" on page 2 (emphasis added):

The College offers 21st century career programs in business and information technology, culinary arts, hospitality, legal education, nursing and health sciences, including emergency medical services. The college is developing emerging technology programs in new media arts, exercise and sports science, biotechnology, eBusiness and information technology. New synergies bridging P-12 and college, including educational assisting, teacher preparation, Teaching English as a Second Language, and Service-Learning also hold promise for training tomorrow's teachers, locally, nationally, and internationally.

The proposed program also aligns with Goal 3 and two specific objectives in the College's 2007-2015 Strategic Plan:

Goal 3 To Build A Learning, Partnering, and Service Network for Workforce and Economic Development

Relevant Objectives

3. *Develop new degree programs (Associate, 3 year, and Baccalaureate) to meet the changing educational needs of our communities.*
4. *Partner with other UH campuses to plan and develop four-year degree programs, with initial emphasis on the health sciences and technology.*

From the Action Strategies of Goal 3 detailed further in the document (page 18ff):

Action Strategy for Objective 3:

- *Develop new degrees based on relevant, exemplary models at other institutions.*

Action Strategy for Objective 4:

- *Identify demand for four-year programs in health and technology.*
- *Establish a working relationship with UHM, UHWO, and UH Hilo to explore 2+2 degree partnerships.*

Kapi'olani's APC in IT is also in alignment with the University's strategic outcomes to grow the educational capital of the state. The APC provides a pathway for students in Kapi'olani's and other institutions' IT programs to expand their IT skill sets, thereby making them more competitive in the labor force, as well as provide a pathway to a Bachelor's of Applied Science degree at UH West O'ahu. According to data presented in the 2nd Decade Project, East and Ewa O'ahu will have the two largest increases in population in the state, projected at 54,315 and 72,721 respectively through 2020. In addition, each area is identified as having either a very high or high need for post secondary education. Offering the propose APC will address both of these needs. Furthermore, the University of Hawai'i community colleges provide the state with entry-level workers in the IT field through Associate in Science (AS) degrees in IT and CENT (Computing, Electronics and Networking Technology), and the demand for these workers seems to be met through 2012 (projected vacancies=96/projected annual UH graduates=93). However, there is a serious projected shortfall of graduates in computer-related positions requiring a bachelor's degree (projected vacancies=395/projected annual UH graduates=139) (Appendix A: State Data). Additionally, the APC and BAS will support the State's workforce needs as noted by research documents from the University of Hawai'i System (VP for Planning Office) as well as US Bureau of Labor, and Hawai'i Workforce Informer (HIWI). See Section 4 below.

3. Organization of the Program

Students who complete either Kapi'olani's A.S. in Information Technology degree or a comparable degree at another community college (e.g., CENT at Honolulu CC; ETRO at Kaua'i CC; ECET at UH Maui; IT at Hawai'i CC) can qualify for entrance to this Advanced Professional Certificate in Information Technology. In addition, industry workers with adequate experience in IT-related fields (e.g., Web Development, Help Desk Support, Programming, and Database Administration) will be able to apply through a process whereby their prior learning is assessed

for verification of skill attainment for entrance to the APC (LEAP, Life Experience Assessment Program).

The Advanced Professional Certificate curriculum consists of six three-credit courses covering topics that relate to advanced skills and expertise in networking, web development and server administration:

First Semester	Credits
ITS 324 PC & Network Security and Safeguards	3
ITS 327 Dynamic Hyper Text Markup Language (DHTML)	3
ITS 328 Advanced Database Programming with VB.Net	3
Semester Credits	9
Second Semester	
ITS 344 Small Business Windows Server Administration	3
ITS 347 Active Server Pages--Web Development	3
ITS 381 (alpha) Topics in Information Technology	3
Semester Credits	9
Total Credits	18

Program Learning Outcomes

The APC program learning outcomes were developed in collaboration with the IT advisory board (See Appendix C) and as a result of an examination of the IT Curriculum Guidelines put forth by the ACM (Association of Computing Machinery). Graduates of the proposed program will be able to:

- Design and implement an application in VB.Net that connects to and draws from a contemporary database.
- Design, implement, and schedule reasonable personal computer and network security measures.
- Setup and administer Windows Computer Server to provide business support services as needed.
- Code Web pages that are interactive, responsive to user input and environmental variables, and provide information and services in an attractive and timely manner.
- Code Web pages whose content and design are determined by database data.

4. Enrollment Projections

The Information Technology field is always changing. New technology after new technology is developed, pushing both the economy and the field of study forward. Unfortunately, most of what is newly developed does not simply supplant that which was. Instead, it adds to it. The new technologies developed are based on older technologies.

Given the existing total credits required for an Associate in Science degree (approximately 60 credits), the options for increasing the skill sets of students are either to add additional credits to the existing AS degree or to create a pathway for further study in the field that would lead to other credentialing (e.g., APC, 3+1, BAS). Option 2 is the more beneficial option for students. By setting their academic goal to a BAS, students not only acquire valuable additional IT skill sets, they also develop an enhanced understanding of the business environment. Kapi'olani's decision to develop this pathway was informed by the recommendation of the IT advisory Board for additional skills and enhanced business background. While UHWO is prepared to provide students with the necessary curriculum to enhance their business background, UHWO has no human or physical resources to provide the IT training this APC at KapCC will provide.

According to the US Bureau of Labor Statistics (See Appendix B: National Data), computer systems analysts, database and network administrators, as well as computer programmers, are occupations that 1) require a Bachelor's degree, 2) have a very high median annual earning, and 3) are expected to grow between 8,000 to 63,000 positions between 2006 and 2016. This growth portends well for the IT industry as a whole. Further data from the USBL guide to Software Publishing suggest upwards to a 41% growth in these positions (See Appendix B: National Data).

Statistics from Hawai'i's own Department of Labor and Industrial Relations (2007) suggest a similar, though less robust, trend here; computer systems analysts and network and data system analysts are both listed as requiring a bachelor's degree, having high pay (\$62K+), and having a strong percentage growth (2–5%). When ranked by growth rate, these positions rank at the very top of careers requiring at least a bachelor's degree (See Appendix A: State Data). Network systems and data analysts are in fact listed in Hawai'i's Hot 50 Demand Occupations (See Appendix A: State Data). The Hawai'i Workforce Informer (HI-WI) lists each of these positions as needing a bachelor's degree and having both very strong growth (8%–46%) and high pay (\$53K–\$79K).

The APC thus supports the UH community colleges' goals of graduating more students for high demand, high wage employment. It provides advanced skill sets that workers can immediately employ, as well as additional value when combined with the management courses in the UHWO BAS.

As noted above, both the Second Decade and government studies have shown the workforce need for IT workers with baccalaureate degrees. The University of Hawai'i system is already addressing the need for entry-level IT workers with AS degrees. At this time, UH offers a number of four-year degree options for Hawai'i's students. Honolulu Community College's CENT program has created a pathway to a baccalaureate at UHWO for its students. However, Honolulu CC's CENT program emphasizes hardware/network more than does KapCC's program. A second option is provided by Maui College, with its ABIT (Applied Business and Information Technology) Program; however, this program is primarily a business program with a minor emphasis in IT. KapCC's IT APC differs from both these existing options. The proposed APC emphasizes software, offering six IT courses of additional advanced content in web applications, programming with database connectivity, and server installation and network security in a business environment. Kapi'olani's APC curriculum differs also from a third option, offered by UH Manoa. As is the case with all Kapi'olani IT courses, the APC IT courses are practical, hands-on education coupled with industry standards, making the knowledge, skills and attitudes acquired more immediately usable in the workforce than either the Management and Information Systems or Information and Computer Sciences programs at the University of Hawai'i at Manoa, which are more theoretical in nature. Federal workforce studies (See Appendix B: National Data) confirm that IT workers with a broader skill set, including programming, web and database development and administration, and system integration in a business environment will better meet current and future IT workforce needs. In addition, Kapi'olani's APC in IT will be an excellent fit for UHWO's BAS program. Prof. Pai at UHWO is so convinced of this alignment that he has suggested the creation of a third option for IT students seeking a BAS: a hybrid of the HCC and KCC BAS programs, allowing students to take IT classes at either community college to fulfill a third curriculum BAS option.

KapCC's IT advisory board has been very supportive (See Appendix C: Advisory Board) and student interest in this BAS pathway is very high. Both current and former students are eager to continue their studies in IT. The pathway alignment of the APC and UHWO's BAS optimizes degree completion. UHWO's BAS degree will accept all IT credits towards the bachelor's degree, accelerating the timeline to graduation. In addition, because the UHWO four-year degree is a BAS rather than a BA or BS, students completing this program will have more applied experience. This shortened time to the completion of a baccalaureate degree is a great incentive for IT students. The proposed APC, and pathway to UHWO's BAS, will save students

both time and money in their efforts to further their professional development in information technology.

In a survey of over 700 students that Business Education serviced in 2007, 59 identified themselves as IT majors; 24 of the 59 (41%) stated that their academic goal was to receive a bachelor's degree. In addition, in a more recent survey of 99 current and recent IT graduates this August 2009, when asked if they would be interested in pursuing a bachelor's degree in IT, 76/99 responded affirmatively (58—definitely, 28—possibly). In addition, 91/99 liked the 2+1+1 format proposed (50—definitely, 41—possibly). Students, however, expressed some concerns:

The classes would have to be in the afternoon or on the internet. If the classes are offered during these times then I would enroll in the program.

It would be a great way to continue in the UH system for my 4 year degree. I am somewhat concerned that UHWO is so far from KapCC, but I would still be willing to transfer there.

This step would help people not wanting to go in to ICS but want to stay in the computer world while coming out of college with a 4 year degree.

Initially, the 300-level IT courses will be offered in the evenings and weekends, providing a schedule to accommodate already employed IT workers. Later, the College will study the feasibility of offering some of the courses online. While we cannot change the distance students will need to travel to UHWO to take required courses there, we are in discussions with UHWO to assure many of their required courses are offered online, thereby obviating the commuting issue.

Based on need and perceived interest the College proposes an initial enrollment of approximately 20 students per semester. Given the number of students who have expressed interest and could immediately qualify for the program once it starts (70+) and the need as detailed in HI-WI (Hawai'i Workforce Informer) publications (200+), the program is projected to continually reach that enrollment. That, coupled with additional students qualifying over the years and increased need for IT workers in the state (See item #2 above), should sustain the program well into the future.

5. Resources Required for Program Implementation

As this program merely pushes out our existing IT AS program, the additional resources required to implement the program are nominal. The College already has the administrative

personnel to oversee the program; classrooms, lab, hardware, and software resources are available to deliver the courses.

Faculty: Existing faculty are available to teach the courses required for the APC. Because the program emphasizes “hands-on” learning, people currently using the technology will be invited to teach courses whenever possible, convenient, and appropriate. In either case, the minimal additional human resource cost is the same.

Physical Resources: The College has obtained a US Department of Education Title III Renovation grant (\$890,000) starting in October 2010, which will transform the Business Education computer lab into a state-of-the-art Business/Computing Resource Learning Center. This renovated learning space will provide IT, Accounting and Marketing students with improved access to faculty, academic advisors, community partners, and technology resources. In addition, it will create a sense of place for students looking to join the local business community (Some preliminary drawings are included in Appendix D: Renovation Sketches).

The scheduling of six additional IT courses into the College’s existing and projected physical resources will not impact current offerings as the APC courses will be scheduled in late afternoon, evening, and weekends, when classrooms are available. The program courses will also be offered in online modalities to accommodate students already in the workforce. These times and modalities will not interfere with existing Business Education courses.

6. Measures of Program Efficiency

The abbreviated template below details the projected program costs. Appendix G includes the complete template, including the explanation of data elements.

In the first semester, only two of the 300-level courses will be offered to monitor the implementation of the program and to optimize student success. In subsequent semesters, three courses will be offered each semester, thereby allowing students to complete the certificate in one year. Thus **personnel costs** will cover salary for a .40 FTE faculty member in the first year and .60 FTE in the second, drawn from existing Business Education faculty. The standard UHCC **tuition** rate will be applied to APC courses, following Honolulu Community College, which currently charges community college tuition for its APC in CENT. Projections show that enrollments of approximately 20 students are possible, and this number of students paying current and projected UH community college tuition rates will cover the direct costs of instruction. However, community college tuition rates for 300-level courses will be considered in discussions related to the next tuition schedule.

Academic Cost and Revenue Template - New Program)

CAMPUS/Program

Kap CC APC IT

Provisional Years (2 yrs for Certificate)

ENTER ACADEMIC YEAR (i.e., 2004-05)

Year 1	Year 2
2010-2011	2011-2012

Students & SSH

- A. Headcount enrollment (Fall)
- B. Annual SSH

20	20
240	360

Direct and Incremental Program Costs Without Fringe

- C. Instructional Cost *without* Fringe
 - C1. Number (FTE) of FT Faculty/Lecturers
 - C2. Number (FTE) of PT Lecturers
- D. Other Personnel Costs
- E. Unique Program Costs
- F. Total Direct and Incremental Costs

\$ 18,216	\$ 27,324
0.40	0.60
\$ 18,216	\$ 27,324

Revenue

- G. Tuition
 - Tuition rate per credit
- H. Other
- I. Total Revenue

\$ 21,120	\$ 34,920
\$ 88	\$ 97
\$ 21,120	\$ 34,920

J. Net Cost (Revenue)

-2,904	-7,596
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Program Cost per SSH With Fringe

- K. Instructional Cost *with* Fringe/SSH
 - K1. Total Salary FT Faculty/Lecturers
 - K2. Cost Including Fringe of K1
 - K3. Total Salary PT Lecturers
 - K4. Cost Including fringe of K3
- L. Support Cost/SSH
 - Non-Instructional Exp/SSH
 - System-wide Support/SSH
 - Organized Research/SSH
- M. Total Program Cost/SSH
- N. Total Campus Expenditure/SSH

\$ 121	\$ 121
\$ 18,216	\$ 27,324
\$ 24,592	\$ 36,887
\$ 144	\$ 144
\$ 114	\$ 114
\$ 30	\$ 30
\$ 265	\$ 265
\$ 300	\$ 300

Instruction Cost with Fringe per SSH

- K. Instructional Cost/SSH
- O. Comparable Cost/SSH
 - Program used for comparison.

\$ 121	\$ 121
\$ 126	\$ 126
Business Technologies	

7. Measures of Program Effectiveness

All programs at Kapi'olani Community College are subject to annual program reviews, which include an analysis of data on program demand, efficiency, and effectiveness. All programs and certificates also complete three-year comprehensive program reviews, which, in addition to three years of annual program data, also include an assessment of program learning outcomes. Program effectiveness will be measured by data points such as course completion rates, number of certificate completers, the placement of graduates into industry positions, the performance of graduates in related industry positions and the persistence of graduates in related industry positions. In addition, APC program learning outcomes will be assessed on a semester-by-semester rotational basis. That is, selected outcomes will be assessed each semester so that at the conclusion of three years, all program learning outcomes will be assessed as part of the College's established comprehensive program review cycle.

Appendixes

Appendix A: State Data

Appendix B: National Data

Appendix C: Advisory Board

Appendix D: Renovation Sketches

Appendix E: Authorization to Plan (ATP)

Appendix F: MOA with UHWO (Draft)

Appendix G: Cost-Revenue Template

APPENDIX A: STATE DATA

Abolish the Projections

Between 2004 to 2014, the State of Hawaii will create approximately 8,720 jobs annually. Openings will be generated in a multitude of jobs cutting across various education and wage levels. To properly assess occupational demand, to establish training programs that will match occupational opportunities in the state, the Inside tables rank occupations by their average number of job openings. The occupations are grouped according to education and/or training requirements.

Note: Only those occupations with 400 or more employment in 2004 are included in these tables.



Department of Labor and Industrial Relations

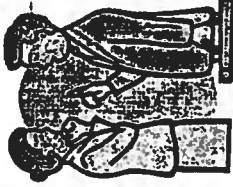
Research and Statistics Office
Labor Market Research
830 Punchbowl Street, Room 304
Honolulu, Hawaii 96813

Phone: 808-586-9025
Fax: 808-586-9022
Email: dli.rs.hawaii@hawaii.gov



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Are you **J_OBSOLETE?**
Are you **JOB READY?**



Best Job Opportunities in 2014 State of Hawaii (Ranked by Number of Openings)



Research and Statistics Office
Department of Labor and Industrial Relations
December 2007

HAWAII JOBS with the HIGHEST NUMBER OF OPENINGS

Job Title	2004-2014 Annual Job Openings	Annual Growth Rate	2008 Mean Annual Wages
Maintenance & Repair Workers, General	280	1.89%	\$35,920
Customer Service Representatives	250	2.27%	\$31,430
Bookkeeping, Accounting, & Auditing Clerks	230	0.55%	\$32,100
Sales Representatives, Wholesale/Mfg. Excl. Technical/Scientific Products	200	1.62%	\$43,870
Construction Laborers	190	2.03%	\$42,280
Secretaries, Except Legal, Medical, & Executive	150	-0.49%	\$32,200
Painters, Construction & Maintenance	120	1.95%	\$48,710
Executive Secretaries & Administrative Assistants	120	1.16%	\$41,790
Social & Human Service Assistants	100	2.36%	\$28,490
Medical Assistants	80	2.83%	\$29,330

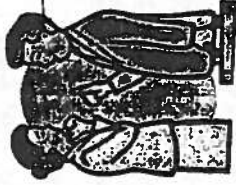
Job Title	2004-2014 Annual Job Openings	Annual Growth Rate	2008 Mean Annual Wages
Elementary School Teachers, Except Special Education	300	1.42%	\$43,260
Secondary School Teachers, Except Special & Vocational Education	270	1.17%	\$51,390
General & Operations Managers	240	1.80%	\$94,810
Accountants & Auditors	210	1.63%	\$50,230
Middle School Teachers, Except Special & Vocational Education	130	0.92%	\$48,890
Property, Real Estate, & Community Association Managers	110	0.70%	\$50,770
Network Systems & Data Communications Analysts	100	5.40%	\$62,780
Sales Managers	70	2.36%	\$82,210
Computer Systems Analysts	60	2.02%	\$88,360
Construction Managers	70	1.67%	\$103,590

Job Title	2004-2014 Annual Job Openings	Annual Growth Rate	2008 Mean Annual Wages
Registered Nurses	400	2.59%	\$68,680
Cooks, Restaurant	270	1.17%	\$25,650
Carpenters	210	2.18%	\$55,310
Nursing Aides, Orderlies, & Attendants	180	2.56%	\$26,080
Automotive Service Technicians & Mechanics	120	1.26%	\$35,840
Plumbers, Pipefitters, & Steamfitters	110	1.95%	\$47,270
Electricians	100	1.86%	\$55,880
Police & Sheriff's Patrol Officers	80	0.91%	\$45,980
Fire Fighters	60	1.30%	\$43,310
Captains, Mates, & Pilots of Water Vessels	70	6.69%	\$44,120

About the Projections

Between 2004 to 2014, the state of Hawaii will create approximately 8720 jobs annually. Openings will be generated in a multitude of jobs, cutting across various education and wage levels. To properly assess occupational demand to establish training programs that will match occupational opportunities in the state, the inside tables rank occupations by their growth rates. The occupations are grouped according to education and/or training requirements.

Note: Only those occupations with 400 or more employment in 2004 are included in these tables.



Are you **J_OBSOLETE?**
Are you **JOB READY?**



Best Job Opportunities in 2014 State of Hawaii (Ranked by Growth Rate)



Department of Labor and Industrial Relations

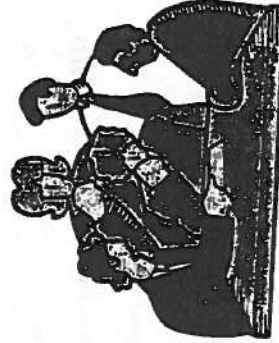
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Labor Market Research
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Research and Statistics Office
Department of Labor and Industrial Relations
December 2007

HAWAII'S FASTEST GROWING JOBS

(From the Hawaii Employment Outlook, 2008-2014)

	2004-2014 Annual Job Openings	Annual Growth Rate	2008 Mean Annual Wages
Medical Assistants	90	2.83%	\$29,330
Drywall & Ceiling Tile Installers	40	2.74%	\$50,830
Cement Masons & Concrete Finishers	40	2.59%	\$55,700
Roofers	40	2.50%	\$48,930
Pharmacy Technicians	40	2.46%	\$29,320
Team Assemblers	50	2.39%	\$27,680
Social & Human Service Assistants	100	2.36%	\$28,490
Customer Service Representatives	250	2.27%	\$31,430
Construction Laborers	190	2.03%	\$42,280
Payroll & Timekeeping Clerks	40	1.96%	\$35,360

(All but one month of training, starting in 2008)

	2004-2014 Annual Job Openings	Annual Growth Rate	2008 Mean Annual Wages
Bailors & Marine Oilers	70	12.01%	\$31,130
Home Health Aides	90	4.43%	\$24,530
Helpers--Carpenters	30	2.95%	\$32,040
Transportation Attendants, Except Flight Attendants & Baggage Porters	30	2.60%	\$23,290
Taxi Drivers & Chauffeurs	60	2.35%	\$21,870
Industrial Truck & Tractor Operators	60	2.26%	\$32,500
Amusement & Recreation Attendants	80	2.12%	\$21,190
Teacher Assistants	130	2.00%	\$22,560
Court, Municipal, & License Clerks	30	1.94%	\$38,290
Retail Salespersons	1,370	1.93%	\$22,660

(All but one month of training, starting in 2008)

	2004-2014 Annual Job Openings	Annual Growth Rate	2008 Mean Annual Wages
Network Systems & Data Communications Analysts	70	15.40%	\$62,780
Computer Software Engineers, Applications Network & Computer Systems Administrators	20	12.09%	\$72,730
Computer Software Engineers, Systems Software	50	13.89%	\$58,130
Biological Science Teachers, Postsecondary	40	13.72%	\$79,470
English Language & Literature Teachers, Postsecondary	30	2.98%	\$91,580
Vocational Education Teachers, Postsecondary	30	2.98%	\$61,290
Personal Financial Advisors	50	2.71%	\$48,550
Instructional Coordinators	20	2.51%	\$94,090
Computer & Information Systems Managers	30	2.50%	\$47,040
	-40	2.40%	\$99,870

(All but one month of training, starting in 2008)

	2004-2014 Annual Job Openings	Annual Growth Rate	2008 Mean Annual Wages
Captains, Mates, & Pilots of Water Vessels	70	6.69%	\$44,120
Welders, Cutters, Solderers, & Brazers	70	3.68%	\$47,530
Tile & Marble Setters	20	3.53%	\$51,190
Cost Estimators	30	2.75%	\$62,740
Registered Nurses	400	2.59%	\$68,680
Nursing Aides, Orderlies, & Attendants	180	2.59%	\$28,080
Computer Support Specialists	60	2.50%	\$39,500
Brickmasons & Blockmasons	20	2.39%	\$58,700
Transportation, Storage, & Distribution Managers	20	2.32%	\$75,050
Preschool Teachers, Except Special Education	60	2.30%	\$28,300

DEMAND OCCUPATIONS

Occupation	Key Skills	Education/Training	Annual Salary	Annual Openings
Secondary School Teachers	Instructing, Learning Strategies, Monitoring, Speaking, Time Management	Bachelor's Degree or Higher Education/Training Education & Training, English, Psychology, Sociology & Anthropology, Clerical	\$52,330	260
Elementary School Teachers	Instructing, Reading Comprehension, Speaking, Learning Strategies	Bachelor's degree English, Education & Training, Mathematics, Psychology, Geography	\$45,420	240
General/Operations Managers	Active Listening, Management of Personnel & Time, Judgment & Decision Making, Thinking, Monitoring	Bachelor's or higher work Administration & Management, Customer & Personal Service, English, Law & Government	\$94,850	210
Accountants/Auditors	Mathematics, Active Listening, Critical Thinking, Monitoring	Bachelor's degree Mathematics, Economic & Accounting, Customer & Personal Service, English	\$51,800	160
Middle School Teachers	Instructing, Spelling, Learning Strategies, Active Listening, Reading Comprehension	Bachelor's degree Education & Training, English, Psychology, Computers & Electronics, Mathematics	\$48,660	90
Property/Real Estate/Community Assoc. Managers	Active Listening, Critical Thinking, Time Management, Reading Comprehension, Speaking	Bachelor's degree Customer & Personal Service, Administration & Management, Sales & Marketing, Clerical	\$50,510	70
Lawyers	Reading Comprehension, Judgment & Decision Making, Writing, Critical Thinking	Professional degree Law & Government, English, Customer & Personal Service	\$94,120	70
Construction Managers	Reading Comprehension, Critical Thinking, Coordination, Instructing, Mathematics	Bachelor's degree Building & Construction, Design, Mathematics, English, Public Safety & Security	\$102,020	70
Civil Engineers	Mathematics, Critical Thinking, Science, Active Listening, Reading Comprehension	Bachelor's degree Engineering & Technology, Design, Mathematics, Building & Construction, English	\$71,710	70
Network Systems/Data Communications Analysts	Equipment Selection, Troubleshooting, Complex Problem Solving	Bachelor's degree Computers & Electronics, Customer & Personal Service, Telecommunications	\$68,450	70
Registered Nurses	Active Listening, Reading Comprehension, Critical Thinking, Instructing, Speaking	A month or more of training and/or up to an Associate's Degree Medicine & Dentistry, Psychology, Customer & Personal Service, English, Biology	\$74,220	320
Customer Service Representatives	Active Listening, Reading Comprehension, Monitoring, Speaking	Associate's degree Customer & Personal Service, English, Biology	\$30,820	320
Bookkeeping/Account/Audit Clerks	Mathematics, Reading Comprehension, Time Management, Active Listening	Moderate-term on-the-job training Clerical, Mathematics	\$33,480	230
Cooks, Restaurant	Active Listening & Learning, Reading Comprehension, Spelling, Instructing	Moderate-term on-the-job training Accounting, Customer & Personal Service	\$27,590	230
Carpenters	Mathematics, Time Management, Active Listening, Critical Thinking	Long-term on-the-job training Food Production, Customer & Personal Service, Production & Processing	\$57,350	200
Sales Reps	Active Listening, Speaking, Time Management, Reading Comprehension, Persuasion	Long-term on-the-job training Building & Construction, Mathematics, Design, Production & Processing	\$46,310	170
Exc. Technical	Reading Comprehension, Persuasion	Moderate-term on-the-job training Sales & Marketing, Customer & Personal Service, Mathematics		

Occupation	Abilities	Knowledge	Training/Experience Requirements	Annual Wage	Job Description	Annual Openings
Nursing Aides/Orderlies/Attendants	Active Listening, Instructing, Speaking, Coordination, Time Management	Customer & Personal Services, English, Education & Training, Medicine & Dentistry	Postsecondary vocational training	\$28,070	Provide patient care under direction of nursing staff such as feed, bathe, dress, groom, or move patients or change linens	130
Secretaries Etc. Legal, Medical & Executive	Active Listening, Reading Comprehension, Time Management, Speaking, Writing	Clerical, Customer & Personal Services, English, Computer & Electronics, Administration & Mgmt	Moderate-term on-the-job training	\$33,100	Perform routine clerical & administrative functions such as drafting correspondence, scheduling appointments	120
Executive Secretaries/Administrative Assistants	Active Listening, Reading Comprehension, Time Management, Speaking, Writing	Clerical, English, Customer & Personal Services, Computer & Electronics, Administration & Mgmt	Moderate-term on-the-job training	\$42,510	Provide high-level administrative support by researching, preparing reports, handling information requests, clerical functions	120
Truck Drivers, Heavy/Tractor-Trailer	Equipment Maintenance, Active Listening, Time Management, Coordination	Transportation, Public Safety & Security, English, Law & Government, Mathematics	Moderate-term on-the-job training	\$39,710	Drive truck with capacity of more than 3 tons to transport materials to specified destinations	120
Construction Laborers	Active Listening, Coordination, Equipment Selection, Speaking, Instructing	Building & Construction, Design, Mathematics, Mechanical, Public Safety & Security	Moderate-term on-the-job training	\$44,270	Perform tasks involving physical labor. May operate hand and power tools, clean & prepare sites, assist other craft workers	110
Tour Guides/Escorts	Speaking, Active Listening, Reading Comprehension, Active Learning	Customer & Personal Services, History & Archaeology, English, Public Safety & Security	Associate's degree	\$23,890	Escort individuals or groups on sightseeing tours or through places of interest	110
Painters	Active Listening, Time Management, Coordination, Equipment Selection, Monitoring	Customer & Personal Services, English, Clerical, Public Safety & Security, Transportation	Moderate-term on-the-job training	\$46,330	Paint structural surfaces using brushes, rollers, & spray guns. May remove paint and mix colors.	100
Automotive Service Technicians/Mechanics	Troubleshooting, Repairing, Equipment Selection, Active Learning	Mechanical, Computer & Electronics, Customer & Personal Services, Education & Training	Postsecondary vocational training	\$35,970	Diagnose, adjust, repair, or overhaul automotive vehicles.	100
Police/Sheriff's Patrol Officers	Judgment & Decision Making, Active Listening, Critical Thinking	Law & Government, Public Safety & Security, English	Long-term on-the-job training	\$48,590	Maintain order, enforce laws & ordinances, & protect life & property in a patrol district	100
Retail Salespersons	Active Listening, Mathematics, Speaking, Social Perceptiveness, Critical Thinking	Customer & Personal Services, Sales & Marketing, Administration & Management	Short-term on-the-job training	\$24,440	Sell merchandise, such as furniture, motor vehicles, appliances, or apparel in retail establishments	1,190
Waiters/Waitresses	Speaking, Active Listening, Service Orientation, Social Perceptiveness	Customer & Personal Services, English, Sales & Marketing, Food Production	Short-term on-the-job training	\$25,100	Take orders and serve food and beverages to patrons at tables in dining establishment	1,010
Cashiers	Active Listening, Mathematics, Speaking, Instructing, Social Perceptiveness	Customer & Personal Services, Mathematics, English, Education & Training	Short-term on-the-job training	\$20,950	Receive and disburse money in establishments other than financial institutions, use electronic scanners & cash registers	530
Office Clerks, General	Active Listening, Reading Comprehension, Speaking, Writing, Social Perceptiveness	Customer & Personal Services, Clerical, English, Mathematics, Economics & Accounting	Short-term on-the-job training	\$26,180	Clerical duties may be assigned in accordance with the office procedures of an establishment	410
Food Counter Attendants	Speaking, Instructing, Active Listening, Reading Comprehension	Customer & Personal Services, Food Production, Mathematics	Short-term on-the-job training	\$19,370	Serve food to diners at counter or from a steam table	410
Janitors/Cleaners	Reading Comprehension, Active Listening, Speaking, Coordination	No specific knowledge	Short-term on-the-job training	\$23,760	Keep buildings in clean & orderly condition, perform heavy cleaning duties	350
Fast Food Preparers & Servers	Active Listening, Speaking, Instructing, Mathematics, Service Orientation	Customer & Personal Services, Food Production, Sales & Marketing, Mathematics	Short-term on-the-job training	\$18,910	Perform duties which combine both food preparation and food service	340
Food Preparation Workers	Active Listening, Reading Comprehension, Instructing, Speaking, Learning Strategies	Customer & Personal Services, Food Production, Mathematics, English	Short-term on-the-job training	\$21,360	Perform a variety of food preparation duties other than cooking	340
Maids/Housekeeping Cleaners	Reading Comprehension	No specific knowledge	Short-term on-the-job training	\$27,390	Perform light cleaning duties to maintain private households or commercial establishments	320
Security Guards	Active Listening, Reading Comprehension, Social Perceptiveness, Monitoring	Public Safety & Security, Customer & Personal Services, English, Law & Government	Short-term on-the-job training	\$25,410	Guard, patrol, or monitor premises to prevent theft, violence, or infractions of rules	280
Laborers & Hand Freight/Stock/Overseers	Active Listening, Reading Comprehension, Instructing, Coordination	English, Public Safety & Security	Short-term on-the-job training	\$28,710	Manually move freight, stock, or other materials or perform other unskilled general labor	250

Occupation	Skills	Physical Demands	Education	Training/Education Requirements	Annual Wage	Annual Openings
Landscaping/ Grounds-keeping Workers	Equipment Maintenance, Active Listening, Speaking, Reading Comprehension	Arm-Hand Steadiness, Limb Coordination, Control Precision, Manual Dexterity, Near Vision	Mechanical	Short-term on-the-job training	\$28,350	220
Personal & Home Care Aides	Active Listening, Social Perceptiveness, Coordination, Service Orientation, Monitoring	Oral Comprehension & Expression, Problem Sensitivity, Speech Clarity & Recognition, Deductive Reasoning	Customer & Personal Service, English	Short-term on-the-job training	\$19,770	220
Dishwashers	Learning Strategies, Speaking, Active Listening, Equipment Maintenance	Manual & Finger Dexterity, Arm-Hand Steadiness, Trunk Strength, Multitask Coordination	No specific knowledge	Short-term on-the-job training	\$20,510	210
Dining/Cafeteria Attendants	Speaking, Active Listening, Learning Strategies, Social Perceptiveness	Manual & Finger Dexterity, Arm-Hand Steadiness, Trunk Strength, Multitask Coordination	Customer & Personal Service	Short-term on-the-job training	\$22,790	190
Stock Clerks/Order Fillers	Active Listening, Speaking, Reading Comprehension, Coordination	Oral Expression & Comprehension, Speech Clarity, Trunk Strength, Category Flexibility	Customer & Personal Service, Mathematics, English, Clerical	Short-term on-the-job training	\$24,200	170
Child Care Workers	Active Listening, Learning Strategies, Social Perceptiveness, Instruction	Problem Sensitivity, Oral Comprehension & Expression, Speech Clarity, Fluency of Ideas	Customer & Personal Service, Psychology, English	Short-term on-the-job training	\$18,310	170
Hosts/Hostesses, Restaurant	Active Listening, Speaking, Service Orientation, Social Perceptiveness	Oral Comprehension & Expression, Speech Clarity & Recognition, Problem Sensitivity, Trunk Strength	Customer & Personal Service	Short-term on-the-job training	\$21,820	170
Truck Drivers, Light/Delivery Services	Active Listening, Time management, Equipment Maintenance	Multitask Coordination, Far Vision, Problem Sensitivity, Spatial Orientation, Static Strength	No specific knowledge	Short-term on-the-job training	\$28,330	150
Receptionist/Information Clerks	Active Listening, Speaking, Reading Comprehension, Writing, Service Orientation	Oral Comprehension & Expression, Speech Recognition & Clarity, Information Ordering, Near Vision	Customer & Personal Service, Clerical, English	Short-term on-the-job training	\$25,270	140
Barenders	Active Listening, Speaking, Social Perceptiveness, Mathematics	Oral Comprehension & Expression, Problem Sensitivity, Speech Recognition & Clarity, Near Vision	Customer & Personal Service, Psychology, Mathematics	Short-term on-the-job training	\$30,420	140
Counter/Rental Clerks	Active Listening, Reading Comprehension, Speaking, Mathematics	Oral Comprehension & Expression, Speech Clarity & Recognition, Near Vision, Information Ordering	English, Customer & Personal Service, Administration & Management, Mathematics	Short-term on-the-job training	\$22,320	140
Cooks, Fast Food	Active Listening, Speaking, Reading Comprehension, Instruction	Oral Comprehension & Expression, Speech Recognition, Trunk Strength, Information Ordering	Customer & Personal Service, Food Production, Production & Processing	Short-term on-the-job training	\$18,440	130
Tellers	Mathematics, Active Listening, Service Orientation, Social Perceptiveness	Oral Comprehension & Expression, Information Ordering, Problem Sensitivity, Number Facility	Customer & Personal Service, English, Mathematics	Short-term on-the-job training	\$23,820	120
Teacher Assistants	Active Listening, Instruction, Reading Comprehension, Learning Strategies	Oral Expression & Comprehension, Speech Clarity & Recognition, Problem Sensitivity	English, Psychology, Education & Training, Mathematics	Short-term on-the-job training	\$22,540	110

Note:

The table reflects Hawaii's top 50 occupations with the largest number of average annual openings based on training levels determined by the U.S. Department of Labor's Bureau of Labor Statistics. The training groups are subject to change pending further review. Within each group, the jobs are ranked by average annual openings.

May 2007 Wages, 2006-2016 Average Annual Openings

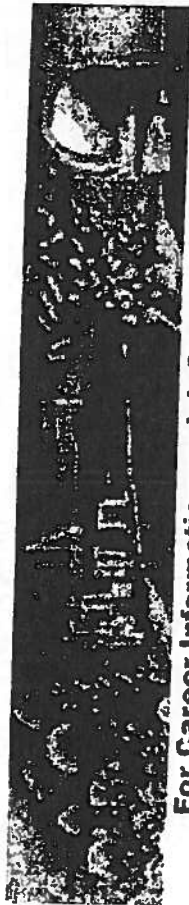
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 Page 4

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Address: Research & Statistics Office
 Department of Labor & Industrial Relations
 830 Punchbowl St., Room 304
 Honolulu, Hawaii 96813



**For Career Information or Job Search Help, Visit
Hawaii's One-Stop Career Centers**

OAHU COUNTY

Oahu WorkLinks
Website: www.oahuworklinks.com
Dillingham Shopping Plaza
1505 Dillingham Boulevard Room 110
Telephone: 843-0733 ext. 225
Waiānana Neighborhood Center
65-670 Farmington Highway Room 6
Telephone: 698-7087

Waipahu Civic Center
94-275 Mokuola Street Room 300
Telephone: 675-0010

Mekapepe Community Center
99-102 Malieoa Street 2nd Floor
Telephone: 498-5830

Princess Ruth Keelikouani Building
830 Punchbowl Street Room 112
Telephone: 586-6700

Keopole Civic Center (limited services)
601 Kamehaha Boulevard Room 588
Telephone: 692-7630

Weissus Sugar Mill (limited services)
67-106 Kealahou St.
Telephone: 837-6508

Kaneohe
48-005 Kawa St., Suite 205
Telephone: 233-3700

HAWAII COUNTY

Big Island Workplace Connection
Website: www.1etop4youth.com

Hilo

1990 Knodle Street Suite 102
Telephone: 981-2080

Kona (limited services)
74-5565 Luhia Street Building C Bay 4
Telephone: 327-4770

MAUI COUNTY

WorkSource Maui
Website: www.worksourcemaui.com

Waialeale

2084 Wells Street Suite 108
Telephone: 984-2091

Molokai (limited services)
55 Makaeia Place Room 4
Telephone: 553-1755

Lanai

Telephone: (808)984-2091

KAUAI COUNTY

Kauai "WorkWise"
Website: www.WorkWiseKauai.com

Lihue

3100 Kuniu Highway Suite C-9
Telephone: 274-3060

Workforce Development Council

James Haraway, Executive Director
Gregg Yamanaka, Chair

Phone: 808-586-9025

Fax: 808-596-9022

Email: dflr.rs.hiwi@hawaii.gov

Web sites: www.hiwi.org

www.hawaii.gov/labor

Contact us for questions and comments:

Workforce Development Division

Elaine N. Young, Administrator

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Naomi Harada, Research and Statistics Officer

Research and Statistics Office

Department of Labor and Industrial Relations
830 Punchbowl St., Room 304
Honolulu, Hawaii 96813



Hawaii's HOT 50



State of Hawaii

LINDA LINGGIE, Governor

Department of Labor and Industrial Relations

Darwin I.D. Chung, Director



December 2008

Long-Term Occupational Projections, Honolulu County, 2004-2014

SOC Code	Occupation Title	Employment		# Chg.	% Chg.	Average Annual Openings	
		2004	2014			Growth	Separations
13-2021	Appraisers and Assessors of Real Estate	190	210	20	10.5%	0	10
13-2031	Budget Analysts	460	500	40	8.7%	0	10
13-2041	Credit Analysts	170	170	0	0.0%	0	0
13-2051	Financial Analysts	360	430	70	19.4%	10	10
13-2052	Personal Financial Advisors	340	430	90	26.5%	10	10
13-2053	Insurance Underwriters	400	410	10	2.5%	0	10
13-2072	Loan Officers	820	880	60	7.3%	10	10
13-2099	Financial Specialists, All Other	310	340	30	9.7%	0	10
15-0000	Computer and Mathematical Occupations	8,260	10,460	2,200	26.7%	220	330
15-1000	Computer Specialists	7,880	10,040	2,160	27.4%	220	320
15-1011	Computer and Information Scientists, Research	80	90	10	12.5%	0	0
15-1021	Computer Programmers	1,080	1,070	10	0.9%	0	30
15-1031	Computer Software Engineers, Applications	350	500	150	42.9%	20	0
15-1032	Computer Software Engineers, Systems Software	790	1,090	300	38.0%	30	10
15-1041	Computer Support Specialists	1,370	1,730	360	26.3%	40	20
15-1051	Computer Systems Analysts	2,140	2,560	420	19.6%	40	20
15-1061	Database Administrators	140	190	50	35.7%	10	10
15-1071	Network and Computer Systems Administrators	820	1,130	310	37.8%	30	10
15-1081	Network Systems and Data Communications Analysts	980	1,510	530	54.1%	50	10
15-1099	Computer Specialists, All Other	140	170	30	21.4%	0	10
15-2000	Mathematical Scientists	380	410	30	7.9%	0	10
15-2031	Operations Research Analysts	200	210	10	5.0%	0	10
15-2041	Statisticians	140	160	20	14.3%	0	10
17-0000	Architecture and Engineering Occupations	8,130	8,810	680	8.4%	70	160
17-1000	Architects, Surveyors, and Cartographers	1,210	1,250	40	3.3%	0	20
17-1011	Architects, Except Landscape and Naval Engineers	940	960	20	2.1%	0	10
17-2000	Civil Engineers	4,780	5,350	570	11.9%	60	100
17-2051	Electrical Engineers	1,750	1,980	230	13.1%	20	30
17-2071	Electronics Engineers, Except Computer	420	460	40	9.5%	0	10
17-2072	Environmental Engineers	580	660	80	13.8%	10	10
17-2081	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	190	200	10	5.3%	0	0
17-2111	Industrial Engineers	100	120	20	20.0%	0	0
17-2112	Marine Engineers and Naval Architects	80	80	0	0.0%	0	0
17-2121	Mechanical Engineers	70	130	60	85.7%	10	0
17-2141	Engineers, All Other	580	620	40	6.9%	0	20
17-3000	Drafters, Engineering, and Mapping Technicians	440	460	20	4.5%	0	10
17-3011	Architectural and Civil Drafters	2,140	2,220	80	3.7%	10	10
17-3013	Mechanical Drafters	340	330	-10	-2.9%	0	40
17-3022	Civil Engineering Technicians	100	100	0	0.0%	0	0
17-3023	Electrical and Electronic Engineering Technicians	170	170	0	0.0%	0	0
17-3028	Industrial Engineering Technicians	420	460	40	9.5%	0	10
17-3031	Surveying and Mapping Technicians	60	70	10	16.7%	0	0
19-0000	Life, Physical, and Social Science Occupations	210	210	0	0.0%	0	0
19-1000	Life Scientists	5,260	5,890	630	12.0%	60	120
19-2000	Physical Scientists	950	1,100	150	15.8%	20	20
19-2031	Chemists	1,180	1,340	160	13.6%	20	30
		160	160	0	0.0%	0	10

SOC Code	Occupational Title	Employment ⁽¹⁾	Mean			Median
			Relative Std Error ⁽²⁾	Hourly	Annual ⁽³⁾	
13-0000	Business and Financial Operations Occupations	23,670	2.3%	\$26.72	\$55,570	\$24.71
13-1000	Business Operations Specialists	15,040	2.5%	\$26.27	\$54,645	\$24.98
13-1011	Agents and Business Managers of Artists, Performers, and Athletes	(8)	(8)	\$36.58	\$76,089	\$34.56
13-1021	Purchasing Agents and Buyers, Farm Products	70	24.5%	\$20.27	\$42,155	\$21.39
13-1022	Wholesale and Retail Buyers, Except Farm Products	1,000	9.9%	\$20.40	\$42,422	\$19.04
13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	950	8.5%	\$28.00	\$58,239	\$26.66
13-1031	Claims Adjusters, Examiners, and Investigators	720	6.6%	\$28.93	\$60,166	\$28.58
13-1032	Insurance Appraisers, Auto Damage	90	16.7%	\$25.84	\$53,738	\$26.07
13-1041	Compliance Officers, Except Agriculture, Construction, Health and Safety, and Transportation Cost Estimators	2,350	1.7%	\$21.12	\$43,931	\$18.60
13-1051	Employment, Recruitment, and Placement Specialists	850	6.8%	\$30.89	\$64,249	\$29.16
13-1071	Compensation, Benefits, and Job Analysis Specialists	720	5.7%	\$24.01	\$49,946	\$22.56
13-1072	Training and Development Specialists	280	13.9%	\$22.65	\$47,118	\$21.58
13-1073	Human Resources, Training, and Labor Relations Specialists, All Other	540	9.4%	\$23.07	\$47,993	\$21.09
13-1079	Logisticians	550	12.2%	\$27.90	\$58,032	\$27.22
13-1081	Management Analysts	280	3.0%	\$34.56	\$71,878	\$34.52
13-1111	Meeting and Convention Planners	1,350	9.1%	\$33.01	\$68,667	\$32.61
13-1121	Business Operations Specialists, All Other	250	12.1%	\$22.35	\$46,482	\$21.29
13-1199	Financial Specialists	4,920	5.1%	\$26.95	\$56,065	\$25.95
13-2000	Accountants and Auditors	8,630	3.9%	\$27.49	\$57,183	\$24.32
13-2011	Appraisers and Assessors of Real Estate	4,980	4.4%	\$24.90	\$51,802	\$23.16
13-2021	Budget Analysts	220	38.3%	\$25.89	\$53,846	\$26.33
13-2031	Credit Analysts	370	5.0%	\$30.78	\$64,029	\$29.63
13-2041	Financial Analysts	170	40.6%	\$24.12	\$50,160	\$20.37
13-2051	Personal Financial Advisors	380	19.2%	\$35.25	\$73,314	\$32.36
13-2052	Insurance Underwriters	470	28.3%	\$35.03	\$72,852	\$22.73
13-2053	Financial Examiners	260	13.4%	\$24.69	\$51,356	\$24.28
13-2061	Loan Counselors	60	22.8%	\$30.83	\$64,122	\$29.51
13-2071	Loan Officers	80	40.9%	\$17.47	\$36,335	\$15.82
13-2072	Tax Examiners, Collectors, and Revenue Agents	910	13.5%	\$35.53	\$73,909	\$26.78
13-2081	Tax Preparers	120	0.0%	\$32.14	\$66,853	\$32.02
13-2082	Financial Specialists, All Other	150	41.6%	\$22.69	\$47,203	\$21.26
13-2099	Financial Specialists, All Other	460	11.2%	\$28.04	\$58,325	\$26.46
15-0000	Computer and Mathematical Occupations	8,190	4.8%	\$30.11	\$62,627	\$29.32
15-1000	Computer Specialists	7,870	4.8%	\$29.92	\$62,236	\$29.22
15-1021	Computer Programmers	1,460	14.7%	\$28.70	\$59,705	\$28.07
15-1031	Computer Software Engineers, Applications	570	22.1%	\$36.81	\$76,555	\$35.83
15-1032	Computer Software Engineers, Systems Software	370	22.4%	\$41.57	\$86,474	\$40.29

Area: State of Hawaii

SOC Code	Occupational Title	Employment ⁽¹⁾	Relative Std Error ⁽²⁾	Mean		Median
				Hourly	Annual ⁽²⁾	
15-1041	Computer Support Specialists	1,250	7.3%	\$20.20	\$42,024	\$19.62
15-1051	Computer Systems Analysts	970	8.9%	\$32.02	\$66,604	\$30.56
15-1061	Database Administrators	290	13.1%	\$28.67	\$59,630	\$27.68
15-1071	Network and Computer Systems Administrators	930	9.2%	\$27.54	\$57,287	\$26.71
15-1081	Network Systems and Data Communications Analysts	910	16.0%	\$31.95	\$66,449	\$31.60
15-1099	Computer Specialists, All Other	1,090	9.3%	\$33.52	\$69,727	\$34.93
15-2000	Mathematical Science Occupations	320	16.3%	\$34.79	\$72,373	\$31.39
15-2011	Actuaries	(8)	(8)	\$42.84	\$89,103	\$39.40
15-2031	Operations Research Analysts	110	34.4%	\$34.56	\$71,882	\$34.16
15-2041	Statisticians	150	12.5%	\$32.89	\$68,409	\$28.18
17-0000	Architecture and Engineering Occupations	8,410	3.5%	\$32.23	\$67,033	\$31.96
17-1000	Architects, Surveyors, and Cartographers	890	13.2%	\$30.04	\$62,488	\$28.96
17-1011	Architects, Except Landscape and Naval	570	14.2%	\$31.88	\$66,305	\$31.32
17-1012	Landscape Architects	100	33.6%	\$29.15	\$60,637	\$28.29
17-1021	Cartographers and Photogrammetrists	60	44.8%	\$22.62	\$47,042	\$22.11
17-1022	Surveyors	160	23.3%	\$26.76	\$55,662	\$23.51
17-2000	Engineers	4,890	4.7%	\$36.91	\$76,768	\$36.76
17-2051	Civil Engineers	2,000	9.8%	\$34.48	\$71,712	\$34.65
17-2061	Computer Hardware Engineers	100	28.4%	\$34.64	\$72,043	\$34.45
17-2071	Electrical Engineers	670	16.8%	\$34.61	\$71,996	\$37.20
17-2072	Electronics Engineers, Except Computer	560	10.2%	\$37.71	\$78,434	\$37.86
17-2081	Environmental Engineers	190	23.5%	\$38.22	\$79,499	\$39.29
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	90	11.0%	\$36.01	\$74,900	\$38.52
17-2112	Industrial Engineers	80	31.4%	\$38.53	\$80,147	\$37.67
17-2121	Marine Engineers and Naval Architects	130	42.5%	\$43.51	\$90,492	\$37.78
17-2141	Mechanical Engineers	320	29.1%	\$43.76	\$91,027	\$38.89
17-2199	Engineers, All Other	490	4.6%	\$39.96	\$83,109	\$41.03
17-3000	Drafters, Engineering, and Mapping Technicians	2,630	6.7%	\$24.24	\$50,428	\$23.25
17-3011	Architectural and Civil Drafters	870	16.4%	\$20.79	\$43,233	\$20.66
17-3012	Electrical and Electronics Drafters	160	28.2%	\$21.08	\$43,850	\$19.54
17-3013	Mechanical Drafters	(8)	(8)	\$21.54	\$44,804	\$25.62
17-3021	Aerospace Engineering and Operations Technicians	(8)	(8)	\$32.72	\$68,058	\$34.08
17-3022	Civil Engineering Technicians	310	22.5%	\$20.90	\$43,475	\$20.84
17-3023	Electrical and Electronic Engineering Technicians	420	13.1%	\$29.66	\$61,686	\$28.55
17-3029	Engineering Technicians, Except Drafters, All Other	420	5.6%	\$33.98	\$70,676	\$34.13
17-3031	Surveying and Mapping Technicians	260	16.4%	\$16.42	\$34,162	\$16.16

COMPUTER & DATA PROCESSING

Businesses depend on information technology to operate more efficiently and often rely on the computer and data processing services industry to keep up with the changing technology. The industry requires a diverse and well-educated workforce to provide a variety of services that include computer programming services and applications and systems software design, data processing, Internet services, development and management of databases, and many more.

Although employment is projected to grow rapidly, annual job openings will be moderate because most of these occupations are small. Word processors and typists are predicted to lose considerable employment over the next decade but will still create the most job openings due to replacement needs. Computer systems analysts are also targeted to be a leader in terms of providing future job opportunities.

Many of these occupations require at least a Bachelor's degree, but a few need only moderate on-the-job training. The average pay rises as the education and training level increases. In terms of educational attainment, all occupations require at least some college.

Educational attainment clusters are designed to reflect the multiple paths leading into an occupation and are not intended to replace the education and training requirements. Clusters are defined on the basis of the distribution of educational attainment across occupations.

For additional information on computer-related occupations, visit www.hiwi.org.

HAWAII

Career Directions

COMPUTER & DATA PROCESSING

A Brief Look at
Jobs ~ Outlook ~ Wages ~ Education



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QUALITY INFORMATION FOR INFORMED DECISIONS

April 2006

APPENDIX B: NATIONAL DATA

Occupational Employment, Training, and Earnings

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Occupational Employment, Training, and Earnings Search Results

Below are the 7 occupations you selected sorted by **Percent change in total employment, 2006-2016**. (Re-sort this report) -->

Detailed information about the quartile rankings is available at [quartile ranking definitions and data ranges](http://www.bls.gov/publications/special.requests/ep/ontldata/). Files containing this data are available for download at [ftp://ftp.bls.gov/pub/special.requests/ep/ontldata/](http://ftp.bls.gov/pub/special.requests/ep/ontldata/)

Occupation	Total employment (000's)		2006-2016 change in total employment		2006 self-employed Percent	2006-2016 average annual job openings (000's)		Percent		2006 Median annual earnings (Dollars)	Median annual earnings quartile ¹	Postsecondary education or training category	Education attainment
	2006	2016	Number (000's)	Percent		Due to growth and total replacement needs	Due to growth and net replacement needs	Part-time workers quartile ²	Unemployed workers quartile ²				
Network systems and data communications analysts	262	402	140	53.4	17.5	35	19	L	L	64,600	VH	Bachelor's degree	
Computer systems analysts	504	650	146	29.0	5.8	63	28	VL	L	69,760	VH	Bachelor's degree	
Database administrators	119	154	34	28.6	1.3	8	5	VL	VL	64,670	VH	Bachelor's degree	
Network and computer systems administrators	309	393	83	27.0	0.4	37	15	VL	L	62,130	VH	Bachelor's degree	
Computer specialists, all other	136	157	21	15.1	6.6	14	6	VL	L	68,570	VH	Associate's degree	
Computer support specialists	552	624	71	12.9	1.3	97	24	L	L	41,470	H	Associate's degree	
Computer programmers	435	417	-18	-4.1	3.9	28	9	VL	L	65,510	VH	Bachelor's degree	

* VH = Very High; H = High; L = Low; VL = Very Low; n.a. = not available

The education clusters are presented in the following categories: HS=High school occupations, HS/SC=High school/Some college occupations, SC=Some college occupations, HS/SC/C=High school/Some college/College occupations, SC/C=Some college/college occupations, and C=College occupations. For information about the methodology, see methodological note at the end of table I-1 in Occupational Projections and Training Data, 2004-05 edition, available at <http://www.bls.gov/emp/ontd/home.htm>

Re-sort this report by: Total employment in 2006

Re-sort

Home | Postsecondary-education or Training Category Search | Occupational Employment, Training, and Earnings Search | About the Numbers | Related Information

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- Databases & Tables
- Maps

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- Inflation
- Location Quotient
- Injury And Illness

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- A to Z Index
- FAQs
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Career Guide to Industries

Software Publishers

- [Nature of the Industry](#)
- [Working Conditions](#)
- [Employment](#)
- [Occupations In The Industry](#)
- [Training and Advancement](#)
- [Outlook](#)
- [Earnings](#)
- [Sources of Additional Information](#)

Significant Points

- Employment is projected to increase by 32 percent between 2006 and 2016.
- Computer specialists account for 52 percent of all workers.
- Job opportunities will be excellent for most workers, but professional workers should enjoy the best prospects, reflecting continuing demand for higher level skills needed to keep up with changes in technology.

Nature of the Industry

Goods and services. All organizations today rely on computer and information technology to conduct business and operate more efficiently. Computer software is needed to run and protect computer systems and networks. Software publishing establishments are involved in all aspects of producing and distributing computer software, such as designing, providing documentation, assisting in installation, and providing support services to customers. The term "publishing" often implies the production and distribution of information in printed form. The software publishing industry also produces and distributes information, but usually it does so by other methods, such as CD-ROMs, the sale of new computers already preloaded with software, or through distribution over the Internet. Establishments in this industry may design, develop, and publish software, or publish only. Establishments that provide access to software for clients from a central host site, design custom software to meet the needs of specific users, or are involved in the mass duplication of software are classified elsewhere. (For more information, see the section on [computer systems design and related services](#) found elsewhere in the *Career Guide*.)

Industry organization. Software is often divided into two main categories—applications software and systems software. Applications software includes individual programs for computer users—such as word processing and spreadsheet packages, games and graphics packages, data storage programs, and Web browsing programs. Systems software, on the other hand, includes operating systems and all of the related programs that enable computers to function. Establishments that design and publish prepackaged software may specialize in one of these areas, or may be involved in both. Some establishments also may install software on a customer's system and provide user support. In 2006, there were approximately 10,000 establishments that were engaged primarily in computer software publishing, or in publishing and reproduction.

Recent developments. The Internet has vastly altered the complexion of the software industry over the last decade. Much of the applications and system software that is now developed is intended for use on the Internet, and for connections to the Internet.

Organizations are constantly seeking to implement technologies that will improve efficiency. Enterprise resource planning (ERP) software is such an example. ERP, which is typically implemented by large organizations with vast computer networks, consists of cross-industry applications that automate a firm's business processes. Common ERP

applications include human resources, manufacturing, and financial management software. Recently developed ERP applications also manage a firm's customer relations and supply-chain.

Electronic business (e-business) is any process that a business organization conducts over a computer network. Electronic commerce (e-commerce) is the part of e-business that involves the buying and selling of goods and services. With the growth of the Internet and the expansion of e-commerce, there is significant demand for e-commerce software that enables businesses to become as efficient as possible.

This widespread use of the Internet and intranets also has led to greater focus on the need for computer security. Security threats range from damaging computer viruses to online credit card fraud. The robust growth of e-commerce increases this concern, as firms use the internet to exchange sensitive information with an increasing number of clients. As a result, organizations and individual computer users are demanding software, such as firewalls and antivirus software, that secures their computer networks or individual computer environments.

Working Conditions

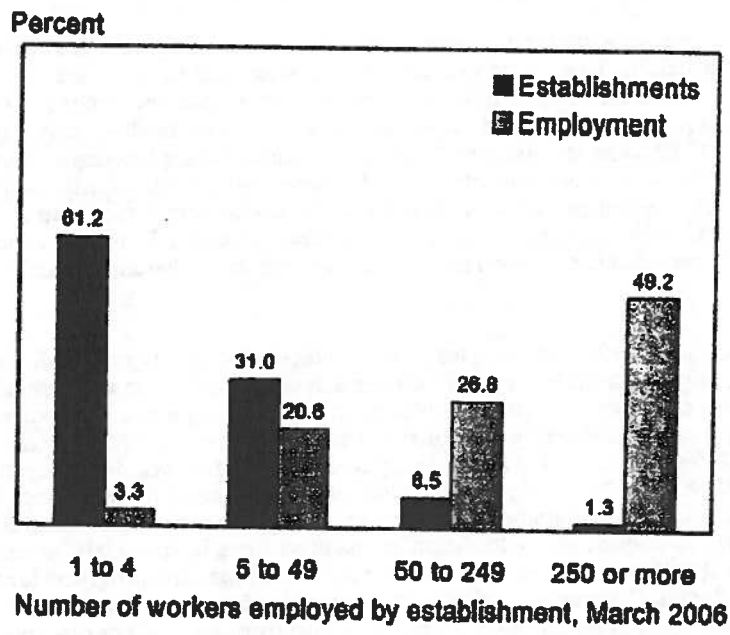
Hours. In 2006, workers in the software publishing industry averaged 37.6 hours per week, compared with 33.9 for all industries combined. Many workers in this industry worked more than the standard 40-hour workweek—about 26 percent worked 50 or more. For some professionals, evening or weekend work may be necessary to meet deadlines or solve problems. Professionals working for large establishments may have less freedom in planning their schedule than do consultants for very small firms, whose work may be more varied. Only about 3 percent of the workers in the software publishing industry worked part time, compared with 15 percent of workers throughout all industries.

Work environment. Most workers in this industry work in clean, quiet offices. Given the technology available today, however, more work can be done from remote locations using fax machines, e-mail, and especially the Internet. Employees who work at video terminals for extended periods may experience musculoskeletal strain, eye problems, stress, or repetitive motion illnesses, such as carpal tunnel syndrome.

Employment

In 2006, there were about 243,000 wage and salary jobs in the software publishing industry. While the industry has both large and small firms, the average establishment in software publishing is relatively small; more than half of the establishments employed fewer than 5 workers. Many of these small establishments are startup firms that hope to capitalize on a market niche. About 76 percent of jobs, however, are found in establishments that employ 50 or more workers (chart 1).

Sixty percent of the establishments in software publishing employ fewer than 5 workers, but a few large establishments employ almost half of all workers.



Relative to the rest of the economy, there are significantly fewer workers 45 years of age and older in software publishing establishments. This industry's workforce remains younger than most, with large proportions of workers in the 25-to-44 age range (table 1). This reflects the industry's explosive growth in employment in the 1980s and 1990s, which afforded opportunities to thousands of young workers who possessed the latest technical skills.

Table 1. Percent distribution of employees by age group, 2006

Age group	Software publishers	All industries
Total	100.0%	100.0%
16-19	0.7	4.3
20-24	4.4	9.6
25-34	28.7	21.5
35-44	36.8	23.9
45-54	19.1	23.6
55-64	8.1	13.4
65 and older	2.2	3.7

Occupations in the Industry

Providing a wide array of information services to clients requires a diverse and well-educated workforce. The majority of workers in the software publishing industry are professional and related workers, such as computer software engineers and computer programmers (table 2). This major occupational group accounts for about 61 percent of the jobs in the industry, reflecting the emphasis on high-level technical skills and creativity. By 2016, the employment share of professional and related occupations is expected to be even greater, while the employment share of office and administrative support jobs, currently accounting for about 11 percent of industry employment, is projected to fall.

Professional and related occupations. Computer specialists make up the vast majority of professional and related occupations among software publishers, and account for about 52 percent of the industry as a whole. Their duties vary substantially, and include such tasks as developing software applications, designing information networks, and assisting computer users.

Programmers write, test, and maintain the detailed instructions, called programs or software, that computers must follow to perform their functions. These programs tell the computer what to do which information to identify and access, how to process it, and what equipment to use. Programmers write these commands by breaking down each operation into a logical sequence of steps, and converting the instructions for those steps into a language that the computer understands. While some still work with traditional programming languages like COBOL, most programmers today work with more sophisticated tools. Object-oriented programming languages, such as C++ and Java, computer-aided software engineering (CASE) tools, and artificial intelligence tools are now widely used to create and maintain programs. These languages and tools allow portions of code to be reused in programs that require similar routines. Many programmers also customize purchased software or create better software to meet a client's specific needs.

Computer software engineers design, develop, test, and evaluate software programs and systems. Although programmers write and support programs in new languages, much of the design and development now is the responsibility of software engineers or software developers. Software engineers must possess strong programming skills, but are more concerned with developing algorithms and analyzing and solving programming problems than with actually writing code. These professionals develop many types of software, including operating systems software, network distribution software, and a variety of applications software. Computer systems software engineers coordinate the construction and maintenance of a company's computer systems, and plan their future growth. They develop software systems for control and automation in manufacturing, business, and other areas. They research, design, and test operating system software, compilers software that converts programs for faster processing and network distribution software. Computer applications software engineers analyze users' needs and design, create, and modify general computer applications software or specialized utility programs. For example, video game programmers are software engineers who plan and write video game software.

Computer support specialists provide technical assistance, support, and advice to customers and users. This group of occupations includes workers with a variety of titles, such as technical support specialists and help-desk technicians. These troubleshooters interpret problems and provide technical support for software and systems. They answer telephone calls, analyze problems using automated diagnostic programs, and resolve difficulties encountered by users. Support specialists may work either within a company or other organization that uses computer software, or directly for a computer software vendor.

Other computer specialists include a wide range of professionals who specialize in operation, analysis, education, application, or design for a particular piece of the system. Many are involved in the design, testing, and evaluation of network systems such as local area networks (LAN), wide area networks (WAN), the Internet, and other data communications systems. Specialty occupations reflect an emphasis on client-server applications and end-user support; however, occupational titles shift rapidly to reflect new developments in technology.

Sales and related occupations. A growing number of marketing and sales workers also are employed in this industry. In order to compete successfully in the online world, the presentation and features of software and other content related to information technology becomes increasingly important. For example, publishers of software that provides connections to the Internet must be able to differentiate their products from those of their competitors. Marketing and sales workers are responsible for promoting and selling the products and services produced by the industry.

Table 2. Employment of wage and salary workers in software publishers by occupation, 2006 and projected change, 2006-2016. (Employment in thousands)

Occupation	Employment, 2006		Percent change, 2006-16
	Number	Percent	
All occupations	243	100.0	32.0
Management, business, and financial occupations	45	18.6	28.6

General and operations managers	5	2.1	15.9
Marketing managers	4	1.5	28.8
Sales managers	3	1.3	28.8
Computer and information systems managers	8	3.2	28.8
Financial managers	2	0.8	28.8
Human resources, training, and labor relations specialists	3	1.1	33.9
Management analysts	4	1.7	28.8
Accountants and auditors	4	1.6	28.8
Professional and related occupations	148	60.8	35.2
Computer and information scientists, research	3	1.2	41.6
Computer programmers	19	7.6	30.0
Computer software engineers, applications	37	15.2	41.6
Computer software engineers, systems software	21	8.8	41.6
Computer support specialists	21	8.6	15.9
Computer systems analysts	12	5.0	41.6
Database administrators	2	1.0	41.6
Network and computer systems administrators	5	2.1	41.6
Network systems and data communications analysts	3	1.2	73.8
Engineers	2	0.8	35.1
Market research analysts	5	2.2	28.8
Multi-media artists and animators	2	0.9	45.7
Graphic designers	1	0.5	28.8
Public relations specialists	1	0.5	28.8
Technical writers	3	1.3	28.8
Sales and related occupations	21	8.5	28.4
Sales representatives, services	3	1.2	42.1
Sales representatives, wholesale and manufacturing, technical and scientific products	9	3.7	28.8
Sales representatives, wholesale and manufacturing, except technical and scientific products	4	1.7	28.8
Sales engineers	1	0.4	28.8
Telemarketers	1	0.6	3.0
Office and administrative support occupations	26	10.6	24.2
Bookkeeping, accounting, and auditing clerks	3	1.2	28.8
Customer service representatives	5	1.9	41.6
Executive secretaries and administrative assistants	4	1.6	28.8
Office clerks, general	3	1.3	26.8

Note: Columns may not add to totals due to omission of occupations with small employment

Training and Advancement

Occupations in the software publishing industry require varying levels of education, but in 2006, more than 8 in 10

workers held college degrees. The level of education and type of training required depend on the employer's needs, which often are affected by such things as local demand for workers, project timelines, and changes in technology and business conditions.

Professional and related occupations. Although there are no universal educational requirements for computer programmers, workers in this occupation commonly hold a bachelor's degree. Some hold a degree in computer science, mathematics, or information systems. Others have taken special courses in computer programming to supplement their study in fields such as accounting, inventory control, or other areas of business. Because employers' needs are varied, a 2-year degree or certificate may be sufficient for some positions so long as applicants possess the right technical skills. In addition, some employers seek applicants with technical or professional certification. Certification can be obtained independently through a number of organizations, although many vendors now assist employees in becoming certified.

Entry-level computer programmers usually start working with an experienced programmer to update existing code, generate lines of one portion of a larger program, or write relatively simple programs. They then advance to more difficult programming assignments, and may become project supervisors. With continued experience, they may move into management positions within their organizations. Many programmers who work closely with systems analysts advance to systems analyst positions.

Most computer software engineers have at least a bachelor's degree, in addition to broad knowledge and experience with computer systems and technologies. Common degree concentrations for applications software engineers include computer science and software engineering, and common degree concentrations for systems software engineers include computer science and computer information systems. Graduate degrees are preferred for some of the more complex software engineering jobs. Some employers also are seeking workers with additional knowledge and experience. For example, a computer software engineer interested in developing e-commerce applications should have some expertise in sales or finance. In addition, some employers are seeking applicants with technical or professional certification.

Computer software engineers who show leadership ability can become project managers or advance into management positions, such as manager of information systems or even chief information officer.

Persons interested in becoming a computer support specialist generally need only an associate's degree in a computer-related field, as well as significant hands-on experience with computers. They also must possess strong problem-solving, analytical, and communication skills, because troubleshooting and helping others are their main job functions. As technology continues to improve, computer support specialists must constantly strive to stay up to date and acquire new skills if they wish to remain in the field. One way to achieve this is through technical or professional certification.

Computer support specialists who develop expertise in a particular program or type of software can advance to a position as a programmer or software engineer.

Sales and related occupations. Many marketing and sales workers are able to secure entry-level jobs with little technical experience, and acquire knowledge of their company's products and services through on-the-job training. Computer specialists also have opportunities to move into sales positions as they gain knowledge of specific products and services. Computer programmers who write accounting software, for example, may use their specialized knowledge to sell such products to similar firms. Also, computer support specialists providing technical support for an operating system may eventually market that product, based on their experience and knowledge of the system.

Outlook

Employment in the software publishing industry has more than doubled since 1990. As firms continue to invest heavily in information technology, and as the demand for specialized software rises, employment in software publishing is projected to increase by 32 percent from 2006 to 2016.

Employment change. Wage and salary jobs in software publishing are expected to increase by 32 percent between 2006 and 2016, nearly three times as fast as the 11 percent growth projected for all industries combined. Growth will not be as rapid as it was during the technology boom of the 1990s, however, as the software industry begins to mature

and as routine work is increasingly outsourced to workers in other countries.

Demand for software publishing services will grow as a result of an increasing reliance on information technology, combined with falling prices of computers and related hardware. Individuals and organizations will continue to invest in applications and systems software to maximize the return on their investments in equipment, and to fulfill their growing computing needs. Also, such investments usually continue even during economic downturns, because improved software boosts productivity, increases efficiency, and, in some cases, reduces the need for workers.

The growing reliance on the Internet will be a major driver of job growth. The way the Internet is used is constantly changing, and so is the software required to run the new and emerging computer applications. Electronic commerce, for example, has changed the way companies transact business. E-commerce is automating many steps in the transaction of business between companies, allowing firms to operate more efficiently. Businesses also are moving their supply networks online and developing online marketplaces. The sustained growth of electronic commerce, as well as the growing uses of intranets and extranets, will drive demand for increasingly sophisticated software tools geared towards these technologies. And, as the amount of electronic information stored and accessed continues to grow, new applications and security needs will increase demand for database software.

The proliferation of "mobile" technologies also has created demand for a wide variety of new products and services. For example, the expansion of the wireless Internet, known as WiFi, brings a new aspect of mobility to information technology by allowing people to stay connected to the Internet anywhere, anytime. As businesses and individuals become more dependent on this new technology, there will be an increased need for new software applications in order to maximize the potential of wireless products.

Another significant factor contributing to growth in software is computer security. Organizations invest heavily in software to protect their information and secure their systems from attack. And, as more individuals and organizations are conducting business electronically, the importance of maintaining computer system and network security will increase, leading to greater demand for security software.

Given the increasingly widespread use of information technology and the overall rate of growth expected for the industry, most occupations should grow very rapidly, although some faster than others. The most rapid job growth will occur among computer specialists—especially computer software engineers—as organizations continue to rely on software to maximize the return on their investments in equipment, and as individuals continue to use new and increasing amounts of software applications. Employment of computer programmers should continue to expand, but more slowly than that of other occupations, as more routine programming functions are automated, and as more programming services are outsourced offshore.

Job prospects. Job opportunities in software publishing should be excellent for most workers, given the rate at which the industry is expected to grow, and the increasing integration and application of software in all sectors of the economy. Professional workers should enjoy the best opportunities, reflecting employers' continuing demand for higher level skills to keep up with changes in technology. In addition, as individuals and organizations continue to conduct business electronically, the importance of maintaining system and network security will increase. Employment opportunities should be excellent for individuals involved in the development of security software

Earnings

Industry earnings. Employees in the software publishing industry generally command higher earnings than the national average. All production or nonsupervisory workers in the industry averaged \$1,444 a week in 2006, significantly higher than the average of \$568 for all industries. This reflects the concentration of professionals and specialists who often are highly compensated for their skills or expertise. Given the pace at which technology advances in this industry, earnings can be driven by demand for specific skills or experience. Earnings in the occupations with the largest employment in software publishing appear in table 3.

Occupation	Software publishers	All industries
------------	---------------------	----------------

General and operations managers	\$61.09	\$40.97
Computer and information systems managers	54.26	48.84
Market research analysts	43.08	28.28
Computer software engineers, systems software	42.04	36.36
Computer software engineers, applications	40.66	36.36
Computer programmers	38.11	33.54
Computer systems analysts	35.45	33.54
Sales representatives, wholesale and manufacturing, technical and scientific products	34.39	30.98
Network and computer systems administrators	33.05	29.87
Computer support specialists	22.24	18.94

As one might expect, education and experience influence earnings as well. For example, hourly earnings of computer software engineers, applications ranged from less than \$25.17 for the lowest 10 percent to more than \$59.78 for the highest 10 percent in May 2006. Managers usually earn more because they have been on the job longer and are more experienced than their staffs, but their salaries also can vary by level and experience. For example, hourly earnings of computer and information systems managers ranged from less than \$35.30 for the lowest 10 percent to more than \$70.00 for the highest 10 percent in May 2006. Earnings also may be affected by size, location, and type of establishment, hours and responsibilities of the employee, and level of sales.

Benefits and union membership. Workers generally receive standard benefits, including health insurance, paid vacation and sick leave, and pension plans. Unionization is rare in the software publishing industry. In 2006, virtually no workers were union members or covered by union contracts, compared with 13 percent of workers throughout private industry.

Sources of Additional Information

Disclaimer:

Links to non-BLS Internet sites are provided for your convenience and do not constitute an endorsement.

Further information about computer careers is available from:

- Association for Computing Machinery, 2 Penn Plaza, Suite 701, New York, NY 10121-0701. Internet: <http://www.acm.org>
- National Workforce Center for Emerging Technologies, 3000 Landerholm Circle SE., Bellevue, WA 98007. Internet: <http://www.nwcet.org>

Information on the certified software development professional program can be found at:

- Institute of Electrical and Electronics Engineers Computer Society, Headquarters Office, 1730 Massachusetts Ave. NW., Washington, DC 20036-1992. Internet: <http://www.computer.org/certification>
- University of Washington Computer Science and Engineering Department, AC101 Paul G. Allen Center, Box 352350, 185 Stevens Way, Seattle, WA 98195-2350. Internet: <http://www.cs.washington.edu/WhyCSE/>

Information on the following occupations can be found in the 2008-09 *Occupational Outlook Handbook*:

- [Computer and information systems managers](#)
- [Computer programmers](#)
- [Computer scientists and database administrators](#)
- [Computer software engineers](#)
- [Computer support specialists and systems administrators](#)

- Computer systems analysts

NAICS Codes

5112

Suggested citation: Bureau of Labor Statistics, U.S. Department of Labor, *Career Guide to Industries, 2008-09 Edition*, Software Publishers, on the Internet at <http://www.bls.gov/oco/cg/cgs051.htm> (visited August 15, 2009).

Last Modified Date: March 4, 2008

**U.S. Bureau of Labor Statistics Office of Occupational Statistics and Employment Projections Suite 2135,
2 Massachusetts Avenue, NE Washington, DC 20212-0001**

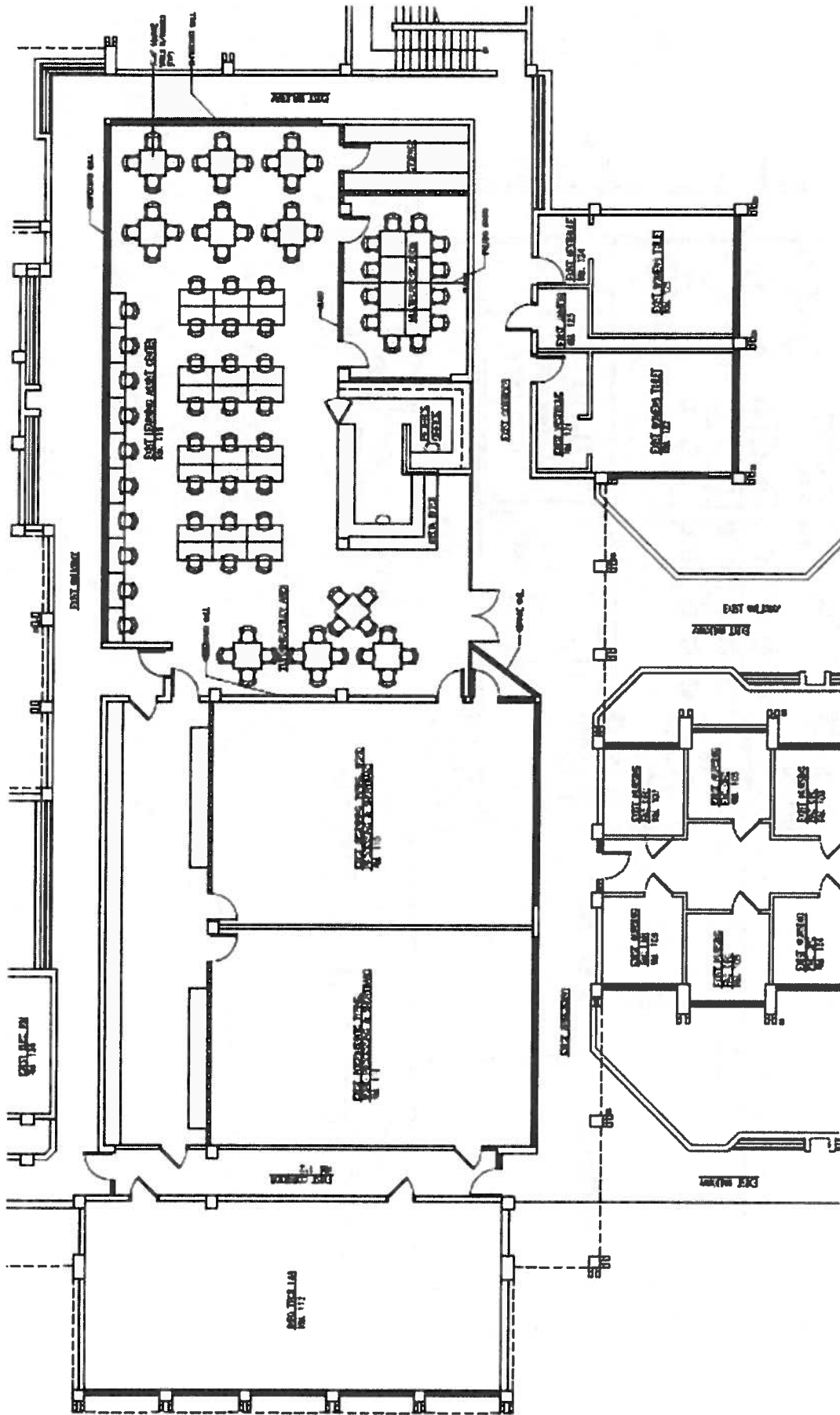
www.bls.gov/oco/cg | Telephone: (202) 691-5700 | Fax: (202) 691-5745 Do you have a question about the *Career Guide to Industries?*

APPENDIX C: ADVISORY BOARD

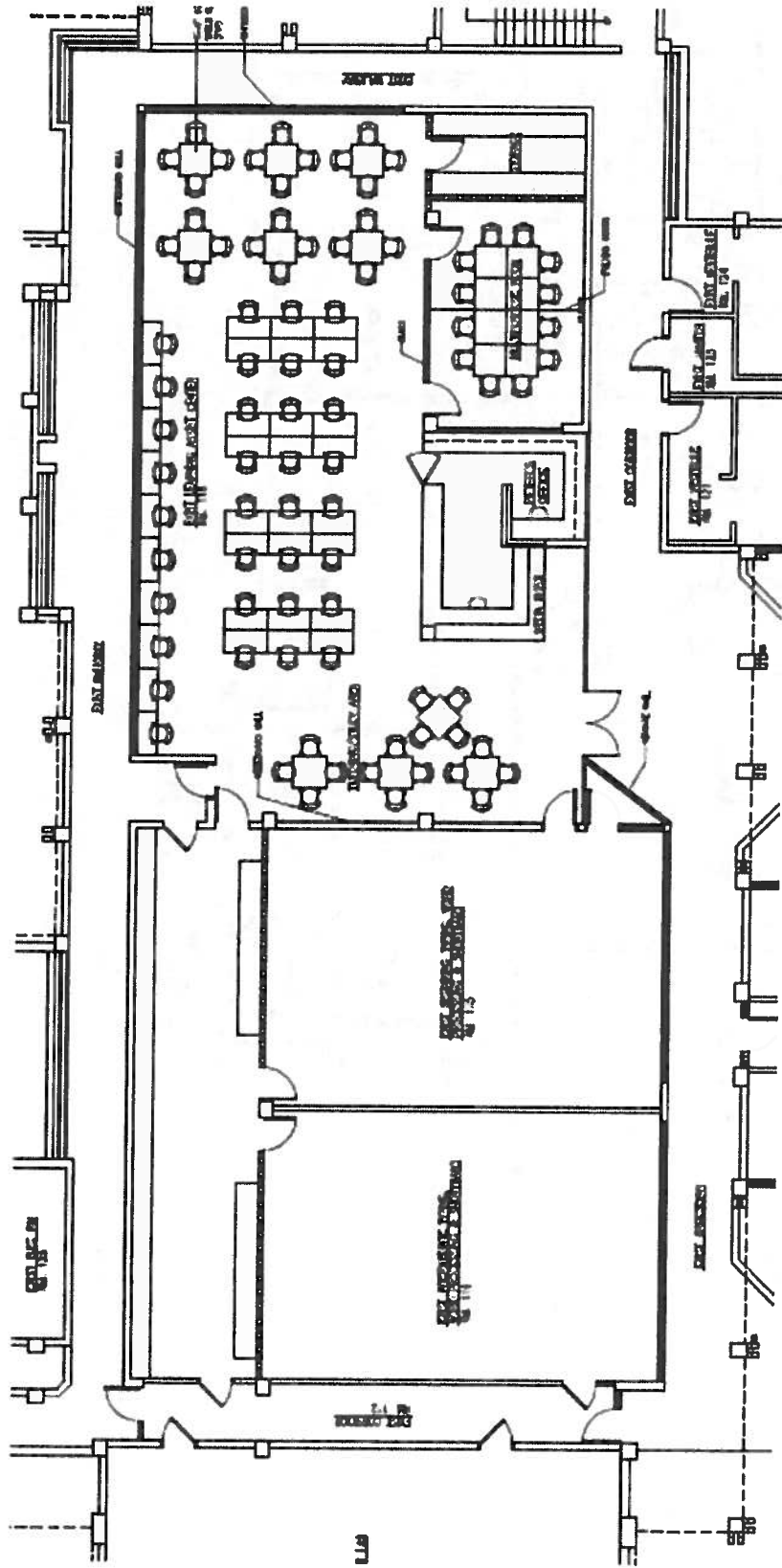
**Information Technology Program at Kapi'olani Community
College
Advisory Board 2010**

<u>Organization</u>	<u>Member</u>	<u>Position</u>
State of Hawaii	Debra Gange	Admin, Info & Com Svc. Div.
First Insurance Co of HI	Chris Radovich	Network Analyst
Oceanic Time Warner Cable	Todd Par,	Technical Manager IT
Servco Pacific Inc.	Doreen Nozawa	IT Dir, Tech & Info Svc.
Starwood Hotels	Jeff Gionet	Dir of Tech.
Hawaii Health Systems Corp	Earl Bethke	Director of Tech Svc.
Partners in Develop Found	Randolph Batoon	Manager of IT
Computer Assurance, Inc.	Ricky Chow	President
UHCC	Paul Sakamoto	IT Spec/App Dev.
Midori Designs Online	Naomi Stafford	Owner/CEO

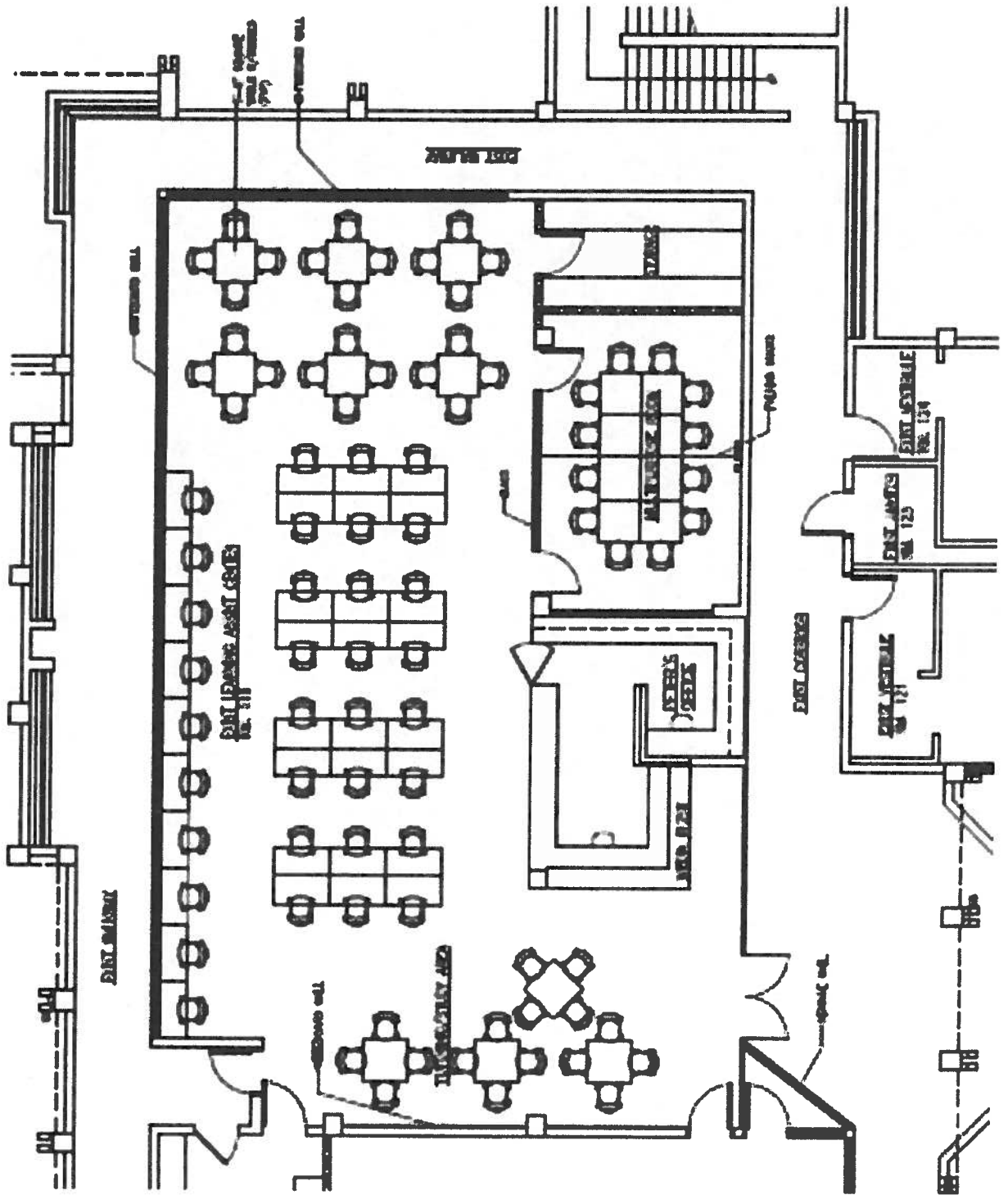
APPENDIX D: RENOVATION SKETCHES



Original drawing sent to Rosie.



Zoomed into original showing Kopiko 101, 102 and 103.



APPENDIX E: AUTHORIZATION TO PLAN (ATP)

AUTHORIZATION TO PLAN (ATP) AN ACADEMIC PROGRAM (Revised 06/12/07)

e complete all sections with an emphasis on items 7, 8, 9 and 10. The ATP is not to exceed 5 pages.

1. School/College and Department/Unit

Kapi`olani Community College/Business Education

2. Chair/Convener of Planning Committee

Dr. Steven A. Singer

3. Program Category: X New ___ Modified ___ Interdisciplinary

4a. Degree or Certificate Proposed:

Advanced Professional Certificate (APC) in Information Technology

4b. List similar degrees or certificates offered in UH System:

HonCC/CENT/APC

5. Planning

a. Planning period (not to exceed one year or reapplication is necessary)

Sept 2009—Sept 2010

b. Activities to be undertaken during the planning phase

Negotiations with University of Hawaii at West Oahu (UHWO) on an articulation agreement for Kapi`olani Community College (KapCC) Information Technology (IT) students to acquire a Bachelors of Applied Science (BAS) with a concentration in Information Technology. Curriculum proposals at KapCC for APC in IT. Revision of AS in IT degree. Creation of IT courses at 300 level for APC.

c. Submission date of program proposal

September 2009 for new APC, modified AS, and 300 level course proposals.

d. Workload/budget implications during planning period

None.

6. Program Description (Objectives and relationship to campus mission and strategic plan)

This Advanced Professional Certificate (APC) provides a pathway for students in our IT program to expand their IT skill sets, thereby making them more competitive in the labor force, as well as provide a pathway to a Bachelor's of Applied Science degree at UH West Oahu. Additionally, the APC and BAS would support the State's workforce need as noted by research documents from the University of Hawaii System (VP for Planning Office) as well as US Bureau of Labor, and Hawaii Workforce Informer (HIWI). See item 8 below.

According to the 2nd Decade Project headed by Linda K. Johnsrud Vice President for Academic Planning & Policy, East and Ewa Oahu will have the two largest increases in population in the state (projected 54,315 and 72,721 respectively through 2020). In addition, each area is identified as having either a very high or high need for post secondary education. In particular, while the need for computer related jobs that need an A.S. degree would seem to be almost met through 2012 (projected vacancies=96/projected annual UH graduates=93) by our current computer and IT programs, there is a serious projected shortfall of bachelor degree graduates in computer related fields for positions requiring a bachelor's degree (projected vacancies=395/projected annual UH graduates=139) (Slide #48).

This APC is consistent with the following campus mission statements:

- prepares students to meet rigorous employment and career standards by offering 21st century career programs.

- uses human, physical, technological and financial resources effectively and efficiently to achieve ambitious educational goals.
- builds partnerships within the University and with other educational, governmental, business, and non-profit organizations to support improved learning from preschool through college and lifelong.

Furthermore, this APC is consistent with statements in the College's Strategic Plan that both describe where the IT program currently is and places where the College would like to move into. From the "Functional Statement" on page 2 (emphasis by author):

The College offers 21st century career programs in business and information technology, culinary arts, hospitality, legal education, nursing and health sciences, including emergency medical services. The college is developing emerging technology programs in new media arts, exercise and sports science, biotechnology, eBusiness and information technology. New synergies bridging P-12 and college, including educational assisting, teacher preparation, Teaching English as a Second Language, and Service-Learning also hold promise for training tomorrow's teachers, locally, nationally, and internationally.

Goal 3 and selected Objectives (3 and 4) of the Strategic Plan: Goal 3 To Build A Learning, Partnering, and Service Network for Workforce and Economic Development

3. Develop new degree programs (Associate, 3 year, and Baccalaureate) to meet the changing educational needs of our communities, with initial emphasis on a four year degree in Culinary and Hospitality Education.
4. Partner with other UH campuses to plan and develop four year degree programs, with initial emphasis on the health sciences and technology.

From the Action Strategies of Goal 3 detailed further in the document (page 18 onwards):

Objective 3:

- Develop new degrees based on relevant, exemplary models at other institutions.

Objective 4:

- Identify demand for four-year programs in health and technology.
- Establish a working relationship with UHM, UHWO, and UH Hilo to explore 2+2 degree partnerships.

7. Program Justification (Needs and Rationale. Include, as appropriate, internal and external factors driving need for this program; description of needs assessment; number of interested student per year; need for such a program in relation to workforce development, graduate studies, etc.)

The Information Technology field is always changing. New technology after new technology is developed, pushing both the economy and field of study forward. Unfortunately, most of what is newly developed does not simply supplant that which was. Instead, it adds on to it. The new technologies developed are based on older technologies.

Given the limits of a reasonable Associates in Science degree (approximately 60 credits), the only alternatives to increase the skill sets of students are: 1) make the degree unreasonable (e.g., 90+ credits) or 2) create a pathway for further study in the field that would lead to other credentialing (e.g., APC, 3+1, BAS). Clearly option 2 would be most beneficial for our students.

As noted in item 6 above, both Johnsrud and government studies have shown the workforce need for IT workers with baccalaureate degrees. The state is already doing a fairly good job of providing IT workers with AS degrees. This is why HCC's CENT program has already created such a pathway to UHWO for its students. However, HCC's CENT program is more hardware/network centric than KapCC's program. KapCC's IT APC will be more software centric offering six IT courses

of additional advanced content in: web applications, programming with database connectivity, and server installation and network security. These courses, as all other KapCC IT courses are practical, hands-on training coupled with industry standards, making them more immediately usable in the workforce than either the MIS or ICS programs at UHM, which are more theoretical in nature. Both UHWO and government workforce studies concur that IT workers with a broader skill set, including programming, web and database development and administration, and system integration in a business environment would be an excellent fit for UHWO's BAS program and the State's current and future IT workforce needs. Prof. Pai at UHWO is so convinced of this need he has suggested the creation of a third option for IT students seeking a BAS: a hybrid of the HCC and KCC BAS programs, allowing students to take IT classes at either community college to fulfill a third curriculum BAS option.

According to the US Bureau of Labor Statistics (See attached), Computer Systems Analysts, Database and Network Administrators, as well as Computer Programmers are occupations that: 1) require a Bachelor's degree, 2) have a Very High Median Annual Earning, and 3) are expected to grow between 8,000 to 63,000 positions between 2006 and 2016. This portends well for the IT industry as a whole. Further data from the USBL guide to Software Publishing suggests upwards to a 41% growth in these positions (see attached).

Statistics from Hawaii's own Department of Labor and Industrial Relations (2007) suggest a similar, though smaller, pattern here; Computer Systems Analysts and Network and Data System Analysts are both listed as requiring a bachelor's degree, having high pay (\$62K+), and having a strong percentage growth (2—5%). When ranked by growth rate, these positions rank at the very top of careers requiring at least a bachelor's degree (see attached). Network Systems and Data Analysts are even listed in Hawaii's Hot 50 Demand Occupations (see attached). The Hawaii Workforce Informer (HI-WI) lists each of these positions as needing a bachelor's degree and having both very strong growth (8%--46%) and high pay (\$53K--\$79K).

KapCC IT advisory board and student interest in this BAS pathway has been very supportive. Both current and former students are eager to continue their studies in IT. While other BS and BA alternatives (UHM's ICS and ITM programs) accept very few of our students' credits toward completion of the bachelor's degree, UHWO's BAS degree would accept everything in completion of their bachelor's degree. In addition, because this a BAS rather than a BA or BS, students completing this program will have more applied experience. This is a great incentive for our students, who have little interest in having to take more courses than they need to. This proposal would save students both time and money in their efforts to further their professional development in information technology.

In a survey of over 700 students that Business Education serviced in 2007, 59 identified themselves as IT majors; 24 of the 59 (41%) stated that their academic goal was to receive a bachelor's degree. In addition, in a more recent survey of 99 current and recent graduates this August 2009, when asked if they would be interested in pursuing a bachelor's degree in IT, 76/99 responded affirmatively (58—definitely, 28—possibly). In addition, 91/99 liked the 2+1+1 format proposed (50—definitely, 41—possibly). There were, however, some "reasonable" concerns:

The classes would have to be in the afternoon or on the internet. If the classes are offered during these times then I would enroll in the program.

It would be a great way to continue in the UH system for my 4 year degree. I am somewhat concerned that UHWO is so far from KapCC, but I would still be willing to transfer there.

This step would help people not wanting to go in to ICS but want to stay in the computer world while coming out of college with a 4 year degree.

8. Description of resources required

a. Faculty (existing and new FTEs)

Current human resources will be able to deliver the program as IT courses will be rolled out 1-2 per semester. These can easily be incorporated into the schedules of current faculty. Adjunct faculty will

be hired to fill behind current faculty assigned to teach new 300 courses, or, if qualified, may teach some 300 level courses.

b. Library resources (including an evaluation of current resources and an estimate of the cost of additional resources required)

No additional library resources will be required.

c. Physical resources (space, equipment, etc.)

Students in the APC will be using the same classrooms, equipment, and labs as students in our AS program. There are sufficient time slots available in our most used computer classrooms (Kopiko 102, 103 and 104) to accommodate the 1-2 additional classes per semester. To accommodate students who are already in the workforce, classes will be offered in times and modalities that allow them to continue their studies. Accessing resources in the computer lab should be easy after our renovations, scheduled to take place Summer and Fall 2010, finishing by Spring 2011.

d. Other resources required (staff, graduate assistantships, etc.)

(None)

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

a. Annual costs to implement the program

The only real costs to implement the program are the course costs. Initially, we estimate offering 3 courses per year at a human resource cost of \$13,662 (9 credits X \$1518 (Average--Lec Step B)). Each year we will increase course offerings until we are able to offer all the necessary ITS courses for the APC by the end of the five year plan. In addition, all general education support courses are already available within the Arts and Sciences scheduled offerings.

b. Projected enrollment and estimated tuition revenue

Given interest and trends, we believe we can have 15--20 students in these 300 level courses. To fund the courses, we are proposing charging the standard UHCC tuition of \$88/credit (starting Fall 2010) or \$264/3 credit course. Given an average enrollment of 17 students, this would generate \$4488 per class or \$13,464 for the total 3 courses offered the first year, essentially covering the \$13,662 cost for faculty.

This parallels the already demonstrated interest in a similar program at Honolulu Community College, which also charges regular UHCC tuition rates and has enrollments of between 15—20 students in their 300 level CENT courses.

[Special Approval: Instructor Approval]					
20214	CENT 310	0	Network Security	4	A Tanaka 19
Prerequisite: CENT 270, CENT 253, and CENT 227.					
20215	CENT 370	0	Integrated Network Application	4	S Duman 15
Prerequisites: CENT 140, CENT 253, and CENT 227.					

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While HCC students have a clear pathway to continue their professional development through their 3+1 articulation agreement with UHWO, KapCC students currently have no easy pathway. Our current AS students could not qualify for HCC's 300 level courses without taking several other prerequisite courses; thus, having no available pathway to the BAS at UHWO. Our proposal would provide that pathway for both current and past KapCC IT AS students.

c. How will the program be funded?

Tuition revenues from classes of 17 students or more will pay for average fill behind adjunct faculty. If there is a shortfall in enrollment, the department will reallocate lecturer funds from existing allocations.

d. Does the current or proposed budget (Department/College/Campus) include funds or a request for funds for the proposed program? Please provide details. No.

e. Given a "flat budget" situation, how will the proposed program be funded?

Tuition revenues.

f. Mini Cost Revenue Template (Excel; top of next page)

ENTER VALUES IN HIGHLIGHTED CELLS ONLY					
YEAR	FY2010-11	FY2011-12	FY2012-13	FY2013-14	FY2014-15
PROGRAM COSTS					
Faculty w/o fringe	13,662 0.3 FTE	13,662 0.3 FTE	18,216 0.4 FTE	22,770 0.5 FTE	27,324 0.6 FTE
Other personnel costs w/o fringe	0	0	0	0	0
Library	0	0	0	0	0
Equipment/Supplies	0	0	0	0	0
Other	0	0	0	0	0
TOTAL Expenses	13,662	13,662	18,216	22,770	27,324
REVENUES					
Projected Enrollment	17	17	17	17	17
No. of Courses	3	3	4	5	6
No. of Credits	9	9	12	15	18
SSH	153	153	204	255	306
Tuition Rate/Credit	88/cr	97/cr	97/cr	97/cr	97/cr
Total Revenue from Tuition	13,464	14,841	19,788	24,735	29,682
Other Sources of Income	0				
TOTAL Revenues	13,464	14,841	19,788	24,735	29,682

10. Impact on current courses or programs.

The availability of the APC and subsequent BAS with a concentration in IT will give current students in the IT program an incentive to do well, perhaps even increase enrollments in the A.S. program as the community recognizes the value of this professional development pathway to progress up the career ladder.

11. If this program is multidisciplinary, provide evidence of commitment for support from the colleges, departments, programs, and/or individuals expected to participate. N/A

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

Campus Chief Academic Officer:

Comments and Recommendations:

LOUISE PAGOTTO

Louise Pagotto

9/8/09

Print Name

Signature

Date

Council of Chief Academic Officers (Systemwide Consultation):

Comments/Recommendations:

LINDA JOHNSRUJ

Linda Johnsruj

9.9.09

Print Name

Signature

Date

Chancellor: Approved ___ Disapproved

LEON RICHARDS

Leon Richards 10/17/09

Print Name

Signature

Date

(Final signed copy is provided to the Vice President of Academic Planning and Policy for Program Action Report)

6/12/07

APPENDIX F: MOA WITH UHWO (DRAFT)



**UNIVERSITY OF HAWAI'I
MEMORANDUM OF AGREEMENT**

**KAPI'OLANI COMMUNITY COLLEGE
UNIVERSITY OF HAWAI'I-WEST O'AHU**

**BACHELOR OF APPLIED SCIENCE
CONCENTRATION IN INFORMATION TECHNOLOGY**

The purpose of this degree pathway is to facilitate a smooth transition for students entering Kapi'olani Community College or the University of Hawai'i - West O'ahu as they work towards obtaining the Bachelor of Applied Science (BAS) degree with a concentration in Information Technology (IT). This pathway is designed to produce multiple entry and exit points to flexibly serve student career and educational objectives. In particular, this Agreement will facilitate the transfer of students in the Associate in Science (AS) in Information Technology (IT) Program or the Advanced Professional Certificate in IT at Kapi'olani Community College (KAP) to the Bachelor of Applied Science with a concentration in IT at the University of Hawai'i - West O'ahu (UHWO).

As part of the Mananawai agreement between KAP and UHWO, and under the terms of this Agreement, the University of Hawai'i-West O'ahu agrees to:

- Identify a Student Services Advisor(s) at UHWO who will partner with KAP's advisor(s) to ensure timely and accurate advising information on pre-admission, admission, degree requirements, and other related advising information. [Initially Kelly Ching and Margy Ledward]
- Identify a UHWO faculty member who will serve as the faculty advisor to students in the IT concentration. [initially David Pai]
- Meet with KAP faculty and/or administration every two years, or as needed, to discuss potential and planned curricular changes.

Under the terms of this Agreement, Kapi'olani Community College agrees to:

- Identify a program counselor at KAP who will partner with UHWO advisor(s) to ensure timely and accurate advising information on pre-admission, admission, degree requirements, and other relevant advising information.[initially Lori Sakaguchi]
- Identify a KAP faculty member who will serve as the faculty advisor to students in the IT concentration and consult with UHWO's admissions personnel on an as needed basis. [initially Steve Singer]
- Meet with UHWO faculty and/or administration every two years, or as needed, to discuss potential and planned curricular changes,

- Cooperate with UHWO on dual enrollment processes to benefit the matriculation and transfer processes for IT students

This Agreement will be reviewed every two years or as necessary, in order to support the transfer, matriculation and graduation of IT students from both UH - West O'ahu and Kapi'olani Community College.

Gene I. Awakuni, Chancellor

Leon Richards, Chancellor

Linda Randall, Vice-Chancellor
for Academic Affairs

Louise Pagotto, Vice-Chancellor
for Academic Affairs

Frank Haas, Dean of Business,
Legal, Culinary and Hospitality

David Pai, Assistant Professor
Business Administration

Steve Singer, Associate Professor
Information Technology

Lynn Hodgson, Professor
Chair, Math and Natural Science

Rosie Harrington, Professor
Chair, Business Education

Date of Agreement: _____

Attachment I

Bachelor of Applied Science with a Concentration in Information Technology**Lower-division IT courses at KAP: 60 credits:**

(Kapi'olani CC's AS degree in IT [course alpha ITS], with selected electives for the GE or BAS required at UHWO)

First Semester:

- 3 ICS 101: Digital Tools for the Information World or equivalent (e.g. ICS 100)
- 3 ITS 124: Small Business Networking
- 3 ITS 128: Introduction to Problem Solving
- 3 ITS 129: Introduction to Databases
- 3 BUS 120: Principles of Business

Second Semester:

- 3 ACC 201: Introduction to Financial Accounting
- 3 ITS 144: Business PC System Maintenance/Support and OS Installation
- 3 ITS 148: Visual Basic I
- 3 ITS 149AD: Database Administration I
- 3 ENG 100: Composition I or ESL100: Expository Writing* [UHWO FW]

Third Semester

- 3 Math 103: Fundamentals of College Algebra, or higher level math (including BUS 250, but not Math 100 or Phil 110) * [UHWO FS]
- 3 ITS 224: Help Desk Support Practices
- 3 ITS 228: Visual Basic II
- 3 ITS 229 AD: Database Administration II
- 3 ITS 227: Web Site Development

Fourth Semester

- 3 ECON 120: Introduction to Economics, or Econ 130 or 131 *
- 3 ITS 293: Information Technology Program Internship
- 3 Natural Science Elective*
- 3 HWST 107* [UHWO DH and HAP focus]
- 3 eBUS 101: Teamwork Fundamentals
or SP 151: Public Speaking
or SP 251 Principles of Effective Public Speaking
[Note: public speaking courses satisfy UHWO DA + some may satisfy O-focus]*

60

* These 6 courses (18 credits) will satisfy a General Education or other Requirement at UHWO. HWST 107 meets both DH and HAP focus requirements.

Upper- division courses for the IT Advanced Professional Certificate at KAP: 18 credits

- 3 ITS 324: PC & Network Security and Safeguards
- 3 ITS 327: Dynamic Hyper Text Markup Language (DHTML)
- 3 ITS 328: Advanced Database Programming with VB.Net
- 3 ITS 344: Small Business Server Administration
- 3 ITS 347: Active Server pages -- Web Development
- 3 ITS 381: Topics in Information Technology

18

Bachelor of Applied Science core coursework 15 credits:

- 3 200-level composition course, such as Eng 200, ENG 210 or 215 *
- 3 an upper division ethics course, such as PUBA/BUSA 481 Ethics and Administration * [UHWO E-focus]
- 3 200-level or above statistics course, such as SSCI 210, BUSA 320, PUBA 341 [Note: Intermediate algebra or higher pre-requisites]
- 3 300-level research methods course, such as SSCI 301: Methods and Techniques in Social Science Research [UHWO DS]
- 3 APSC 486 or 490 Senior Project or Senior Practicum * [UHWO WI]

15

* 9 of these 15 credits are also part of UHWO General Education or graduation requirements. (The BAS requirement BUSA/PUBA 330 Computer Skills for Administrators is waived for IT students.)

Upper-division courses at UHWO: 18 credits

Required:

- 3 ITS 410 Project Management (WI)

15 credits from the following list of restricted electives: It is recommended that the student take at least 3 courses [9 credits] within one area of focus, depending on the student's career plans. It is possible that a few other courses will be approved within these focus areas in the future. Areas of focus include:

Management Information Systems: BUSA 332 Contemporary Business Issues; BUSA 345 Management Information Systems; BUSA 324: Business Law [BLAW 200 at KCC would not be upper division, but will be acceptable for this elective requirement.]

Business: BUSA 300: Principles of Marketing, BUSA 318: Intermediate Managerial Accounting; BUSA 321 Business Finance; BUSA 324 Business Law. [Note BUSA 318 and 321 require both ACC 201 and 202 as pre-requisites.]

Management and/or Health Care Administration: BUSA 435 Strategic Planning; BUSA 462 Disaster Recovery & Business Continuity; PUBA 301 Health Care Administration; PUBA 302 Health Policy, Politics and Law; PUBA 306 Principles of Public Administration; BUSA/PUBA 480 Organizational Behavior [Psych 100 pre-requisite]

Other Residency and Upper-division requirements at UHWO:

Students must complete at least **30** credits from UHWO to meet the residency requirement, and at least **45** credits of upper division work (300 and 400 level courses), in order to graduate with the BAS from UHWO.

These credits must include all General Education, Bachelor of Applied Sciences core, IT and UHWO graduation requirements.

Summary of UHWO General Education and Graduation requirements:

[Foundations (12), Diversification (19), Focus (9), ENG 215 (3), and Writing Intensive (9). Nine of these credits are also BAS core requirements. The 18 credits of Focus and Writing Intensive courses may be selected from courses which also meet other requirements. Thus, with judicious course selection, students can complete GE and UHWO Graduation requirements in as little as 43 credits.]

Foundations

FW	3	ENG 100 Composition I [or ESL100]
FS	3	MATH 103: College Algebra or higher math
FG	<u>6</u>	HIST 151 & 152 or ANTH 151 & 152, or other FG options
	12	

Diversification

DB	3	any course designated Diversification Biological *
DP	3	any course designated Diversification Physical
DY	1	One science course must include a lab
DS	6	any coursework designated Diversification Social Sciences (total 6 credits required for DS: 3 credits for SSCI 301 Methods & Techniques of Social Science Research already accounted for as part of BAS core and General Education DS)
DH, DA, or DL	6	any coursework designated Diversification Humanities, Arts, or Language. The following 2 courses also meet focus requirements: HWST 107 Hawai'i: Center of the Pacific * SP 151 Personal and Public Speech* or SP 251 Principles of Effective Speaking *
	<u>19</u>	

Focus

Oral	3
Ethics	3
Hawaiian, Asian, Pacific	<u>3</u>
	9

*Focus courses are approved by instructor, so not all sections of a given course may fulfill the same focus requirements.

Focus courses may fulfill other requirements, such as DH, DA, DL

[6 courses, 18 credits listed above under "IT lower division at KAP" fulfill GE requirements]

Other Graduation Requirements:

ENG 215 or equivalent	3	(also part of BAS core)
Writing Intensive	<u>9</u>	(including required ITS 410 and APSC 486 or 490 (6))
	12	

Notes: Foundations Multi-cultural global perspectives (FG) may be completed with any 6 credits from two different groups designated FGA, FGB, FGC. Diversification Humanities, Arts, or Literature may be completed with any course designated DH, DA, or DL, with two different groups represented. Students should consult with academic advisors for course selections regarding E, O and H focus.

Summary of BAS-IT requirements:

Lower-division IT requirements at KAP [18 of which satisfy UHWO GE requirements)	60
Upper-division IT requirements at KAP	18
Bach Applied Sciences core at UHWO	15
Upper-division IT & and restricted elective courses at UHWO:	18
Other General Education & Graduation at UHWO (31; assumes 21 credits meeting two requirements and 18 taken at KAP at lower division]	10

Total = 121

If students make efficient course selections, the program will require 121 total credits.

Attachment II

Summary of Coursework above which is utilized for Graduation, General Education and/or Focus Requirements

General Education Summary 31 credits: **Recommended courses**

Foundations:

Written Communication (FW): ENG 100 Composition I
 [Note: ENG 200* or equivalent is a graduation requirement for UHWO]
 Symbolic Reasoning (FS): MATH 103 College Algebra; or
 higher level math
 Global & Multi-cultural Perspectives: HIST 151 and 152 World Civilizations I and II
 (cr from 2 groups: FGA, FGB, FGC) or ANTH 151,152, Geog 102

Diversification:

Humanities, Arts, or Literature:
 (DH, DA, or DL) HWST 107 Hawai'i: Center of the Pacific;
 SP 151 Personal and Public Speaking or
 SP 251 Principles of Effective Speaking
 Social Sciences (DS): SSCI 301 Methods and Techniques in Social Science
 Research + 3 credits of any DS designated course
 Biological Sciences (DB): any course designated DB by catalog description
 Physical Sciences (DP) and any course designated DP by catalog description
 Science Lab (DY): any course designated DY by catalog description

Focus Requirements:

Oral Communication (O): approved sections of SP 151 Personal and Public
 Speaking or SP 251 Principle of Effective Speaking
 Ethics (E): PUBA/BUSA 481 Ethics and Administration
 Hawaiian, Asian, Pacific (H): HWST 107 Hawai'i: Center of the Pacific
 Writing-Intensive (WI): Nine credits at the upper-division level,
 with no more than three credits from capstone
 (APSC 486/490).

*Note: ENG 200 or 215 should be taken at UHWO in order to help the student meet the UHWO minimum 30 credit requirement. If ENG 200 or equivalent is taken at KAP, an additional course must be taken at UHWO.

Attachment III

Graduation Requirement: 45 credits of upper-division coursework

Course	Title	Credits
SSCI 301	Methods and Techniques in Social Science Research	3
Statistics	PUBA 341 or BUSA 320	3
[Note SSCI 210 Applied Statistics I is a statistics option for BAS students, but students using that option may need an additional 3 credits upper division work]		
ITS courses at 300 level from KAP		18
PUBA/BUSA 481	Ethics and Administration	3
ITS 410	Project Management (WI)	3
APSC 486/490	Senior Project/Administrative Practicum	3
12 (of 15 required) credits of restricted UHWO electives		<u>12</u>
		45

Upper-division credits: 45**Residency Requirement: UHWO 30 credits**

Course	Title	Credits
SSCI 301	Methods and Techniques in Social Science Research	3
Statistics	PUBA 341 Statistics for Decision-Making in Public Administration; or BUSA 320 Statistics for Decision-Making; or SSCI 210 Applied Statistics I	3
PUBA/BUSA 481	Ethics and Administration	3
APSC 486/490	Senior Project/Administrative Practicum	3
ITS 410	Project Management	3
UHWO Restricted electives at the upper-division level		<u>15</u>
		30

Attachment	crs	Total
BAS-IT		
Lower Div I	60	
ICS 101	3	
ITS 124	3	
ITS 128	3	
ITS 129	3	
Bus 120	3	
ACC 201	3	
ITS 144	3	
ITS 148	3	
ITS 149AD	3	
Eng 100	3 UHWO GE requirement (FW)	
Math 103 or other FS	3 UHWO GE req (FS)	
ITS 224	3	
ITS 228	3	
ITS 229 AD	3	
ITS 227	3	
Econ 120, 130, or 133	3 UHWO GE req (DS)	
ITS 293	3	
Nat Sci Elective	3 UHWO GE req(DB or DP)	
Arts/Hum Elective	3 UHWO GE req	
eBUS 101 or SP 151	3 SP 151,251 = UHWO GE	
		60
Upper div for APC in IT at KAP	18	
ITS 324	3	
ITS 327	3	
ITS 328	3	
ITS 344	3	
ITS 347	3	
ITS 381	3	
		18
BAS Core at UHWO	15	
Eng 210 or 215	3 UHWO Graduation req	
E-focus	3 UHWO GE req	
200+ statistics	3	

11859 KapCC Advanced Professional
 Certificate in Information Technology

300+ research methods APSC 486 or 490	3 UHWO GE req (DS) 3 UHWO Grad req., and WI	15
GE & Graduation requirements		
Foundations (FW,FS, 2 FG)	12 FW, FS taken at KAP = 6 left	
Diversification (DB,DP,DY,2 DS)	13 DB or DP, DS at KAP DS filled by SSCI 301	
Focus (O, E, HAP)	9 fulfilled as part of other reqs	
Eng 215	3 in BAS Core	
WI	9 fulfilled as part of other reqs	10
Upper Div for IT at UHWO		
ITS 410	3	
APSC 486 or 490	3 in BAS core	
restricted electives	15	18
Other Requirements		
Residency taken at UHWO	30 at least 30 credits	
Upper division work	45 at least 45 credits	
	minimum credits needed =	121