MAUI COMMUNITY COLLEGE

ANNUAL INSTRUCTIONAL ASSSESSMENT PROCEDURES AND MEASURES

Associate in Science Electronics and Computer Engineering Technology Degree

College Mission Statement

Program Mission Statement

To provide relevant and rigorous training, internships and job placement for entry-level computer and electronics engineering technology positions in Maui County. To provide training in the fundamentals of information technology required for employment as information technology professionals in Maui County.

PART I. Quantitative Indicators for Program Review

Demand

1. Current and projected positions in the occupation (for CTE programs)
EMSI data from Fall 2007:

EMSI data crosswalk indicates does not show annual new positions.

CURRENT POSITIONS STATE 4,072; 2005-2011 ADDITIONAL 177

The EMSI crosswalk of DOL occupations to the ECET program is still not accurate. As far as I can determine, my recommendations to the UHCC Institutional Research Office in my spring 2007 program review have not been implemented. It is still unclear how the mapping from Department of Labor SOC codes to UHCC programs is decided and implemented. I am not aware of which SOC codes have mapped into the ECET program numbers for the current and projected additional jobs for the state and for Maui.

Examples of appropriate DOL SOC Code Numbers are found in the appendix.

2. Annual new and replacement positions for the County
CURRENT POSITIONS MAUI 302; 2005-2011 ADDITIONAL 37.

It should be noted EMSI data does not disclose tech jobs that are currently being filled with mainland transplants. EMSI data is based on historical trends and does not show emerging industries.

The Arizona Optics – A Targeted Industry Summary Report prepared by the University of Arizona Office of Economic Development states " Obtaining comprehensive information about the contemporary optics industry from secondary sources is for the most part impossible because the sector cannot be discretely identified within the Standard Industrial Classification (SIC) system, an intricate hierarchy used to organize almost all business and industry statistics."

The Department of Business, Economic Development, and Tourism (DBEDT) considers applied optics a strategic industry for the state. This industry has the potential for large economic impact and diversification of the state's economy.

3. Number of majors

There are currently approximately 35 active majors. The Fall 2007 institutional data show 59 registered ECET majors in the fall of 2006

Program	F01	F02	F03	F04	F05	F06
Electronic-Cmptr Enginr Tech	82	57	45	51	58	59

4. Student semester hours for program majors in all program classes

Course Alpha	F01	F02	F03	F04	F05	F06
ETRO	123	119	90	141	173	215

5. Student semester hours for non-program majors in all program classes
   Data not available

6. Student semester hours for all program classes
   Data not available

7. FTE program enrollment
From MAPS

FTE Program Enrolment

Course Alpha	F01	F02	F03	F04	F05	F06
ETRO	8	8	6	9	12	14
ICS	67	63	61	56	55	44

From UHCC

FTE Program Enrollment *(SSH/15)*	Pgm	F04	F05	F06
Elec & Cmptr Eng'g Tech:	ECET	65.00	70.33	63.40

8. Number of classes taught
From MAPS
Number of Classes Taught

Course Alpha	F01	F02	F03	F04	F05	F06
ETRO	3	3	2	3	3	3
ICS	19	15	13	15	12	11

This data gives an incorrect picture of the number of classes taught, as all ICS courses are included while the ECET program does not require all ICS courses in the program.

From UHCC

No. Classes Taught	Pgm	F04	F05	F06
Elec & Cmptr Eng'g Tech: ETRO, ICS	ECET	18	21	20

9. Determination of program's health based on demand.
HEALTHY

10. Average Class Size

From MAPS

Average Class Size

Course Alpha	F01	F02	F03	F04	F05	F06
ETRO	10	10	11	12	16	19
ICS	17	20	23	19	22	20

From UHCC

Average Class Size	Pgm	F04	F05	F06
Elec & Cmptr Eng'g Tech: ETRO, ICS	ECET	14.47	14.13	12.89

11. Class Fill Rate

From Maps 79.9%
From UHCC
2004 = 61.77%
2206 = 45.24%
Fill is determined using all ETRO and ICS classes. Not all ICS classes are required by the program.

12. FTE of BOR appointed faculty
One, Mark Hoffman

13. Student/Faculty Ratio
12.89 to 1

14. Major per FTE faculty
2004 = 54
2006 = 59

15. Program Budget Allocation
Data not Available

16. Cost per SSH
Data not Available

17. Number of classes less that ten students
2004 = 4 , 2006 =7

18. Program Health based on efficiency
    HEALTHY

19. Persistence of majors fall to spring
    2004 = 77.78%
    2006 74.56%

20. Number of degrees and certificates earned

No. Degrees Earned	Deg	Major	2004	2005	2006	2007
Elec & Cmptr Eng'g Tech	AS	ECET	9	5	3	4

21. Number of students transferred
    Not Applicable

22-28 Perkins core indicators

Program	1P1 Acad Achieve	1P2 Voc Achieve	2P1 Comple-tion	3P1 Place Emp/Ed	3P2 Retn Employ	4P1 Non-Tradl Parti	4P2 Non-Tradl Cmpltn
Electronic-Cmptr Enginr Tech	100.0%	90.9%	0.0%	100.0%	100.0%	23.3%	50.0%

29. Program health based on effectiveness
HEALTHY

PART II. Assessment Results for Program Student Learning Outcomes (SLOs)

Program SLOs are under constant revision in the ECET program. There are two AS degree paths; Electronic Engineering Technology (EET) and Computer Engineering Technology (CET). Both pathways are under revision to better align program SLOs with the immediate requirements for the local Maui high technology industries. The EET pathway requires training in electro-optics and photonics to directly support the Maui space surveillance site (MSSS) at Haleakala and the subcontractors in Kihei and Wailuku. The new PSLOs will support the new 5 acre Institute for Astronomy facilities in Kula and IfA telescopes on Haleakala. The PSLOs will prepare a local resident workforce to support the Advanced Technology Solar Telescope, should this project be funded. Haleakala has been chosen as the preferred site for this $250M project and the National Science Foundation has asked the ECET program to submit a funding request to develop curriculum for these training activities. The proposal was submitted Fall 2006, and bridge funding awarded for October 2007 – September 2008. This new training will be developed in cooperation with Hawaii and Kauai Community Colleges and is planned to be delivered as distance education to the three campuses. Expected enrollments will be approximately 10 per class initially. This program is seen as of strategic importance for the university and state. This program will be designed as a 2+2, such that students will have a pathway to a BAS without leaving Maui.

The Computer Engineering Technology AS also requires some modifications to meet the needs for entry-level employment as IT professionals in Maui’s high technology industries such as Akimeka, Pacific Disaster Center and the Maui High Performance Computing Center. This is the only degree on campus that strives to provide students with the program learner outcomes required for a role as an IT professional on Maui. CISCO Certified Network Associate (CCNA) industry certified training has been successfully implemented from PCATT and OCET into the ECET program. Courses in COMPTIA A+ certification were developed for ECET. These courses have not been taught as we do not have trained faculty nor lecturers. As a result there is a lack of training in the professional installation and support of windows networking servers, database servers, and workstations. Students can take the ABIT office PC repair course, but this course is not designed with the rigor and relevance required for an IT professional. The ECET program can provide professional level training in Unix/Linux. This is a requirement from our local high technology companies located at Haleakala and Kihei Tech Park. But there still is a need for the ECET program to provide professional level window training that is not met by the ECET program or any other program on campus. The ECET PLOs are being aligned with other similar programs throughout the university via the program coordination council (PCC). The IT/ECET/CENT PCC has determined that training for IT professionals is required throughout the system. We are working with the PCC towards a 2+2 BAS degree with Honolulu CC and West Oahu that is articulated with ECET and provide the rigor and relevance for employment on Maui as an IT professional. There is some need for database skills. These will be addressed through a modification of the Unix/Linux courses. The ECET program and ICS faculty are working to try and align ECET lower division IT professional training with the IT training for business professional that is in the upper division of ABIT. We hope to provide students with a 2+2 pathway that will lead to a BS degree with the program learner outcomes required for the role of an IT professional employed in Maui's high technology industry.

PART III. Curriculum Revision

Courses reviewed/revised for currency, accuracy, integrity
Math 107
Physics 105
ETRO 101, 105, 201, 205, 298
ICS 111, 211, 251, 252, 175, 258, 298

PART III. Analysis Data

1. Alignment with mission
   The program is aligned with it's mission

2. Strengths and weaknesses based on analysis of data
   The strengths are in the partnerships with local industry and federal funding sources. The weakness is in the training for IT professionals. The data indicates under enrolled courses. However the ECET program should not be measured against the norm for all liberal arts courses. The program is of strategic importance and has a good match between number of students, cost and number of local jobs available.

3. Evidence of quality
   Financial support from National Science Foundation.
   Financial support from the UH Office of Research Services
   Financial support from the Office of the VP for Community College
   Support of intent from the Board of Regents
   Support of intent from partners at Kauai, Hawaii, and Honolulu CCs

4. Evidence of student learning
   Students receive internships and job offers from local companies. Students are successful when transferring as juniors to other university engineering programs. Students are employed by local industry.

5. Resource sufficiency
   There is not enough support from MCC General fund or MCC RTRF accounts. The program would not be where it is today without continued extramural funding sources.

6. Recommendations for improving outcomes

   It is recommended that campus wide focus is placed on the mission of ECET to provide students with the training required for the roles of entry-level Electronics Engineering Technology professional, Computer Engineering Technology Professional and Information Technology Professional. The core curriculum is in good shape and with some modification and cooperation within the campus these goals can be met.

PART IV. Action Plan

General Action Plan

The Action Plan for ECET is to return to the original program structure with two AS degrees. This will be accomplished by removing the High Performance Computing Specialty as a separate degree track. The program map will be modified such that the two degrees will return to Electronics Engineering Technology (EET) and Computer Engineering Technology (CET). Each of these degrees has an action plan that will provide rigorous and relevant training directly related to technology job opportunities on Maui. The program map will include preparatory courses as is done at Kauai Community College and here at MCC for our Allied Health program. The Program map will include technical electives to allow for maximum flexibility in course scheduling, to insure maximized class enrollments, and to relieve overloaded faculty.

Electronics Engineering Technology (EET) Action Plan:

Maui Community College Electronics Engineering Technology (EET) AS Degree program is working with the EET programs at Hawaii Community College and Kauai Community College to improve these programs by providing training directly related to local industry opportunities. The Department of Business, Economic Development, and Tourism and the Maui, Hawaii, and Kauai Economic Development Boards identify these strategic industries. These industries provide high-technology career opportunities and high wages for employees. Working through the program coordination council (PCC) the three EET programs have formed the Hawaii Photonics Alliance. The goals of this alliance are to provide training at the AS degree level in Optics, Photonics, and related technologies.

1. The Hawaii Photonics Alliance will add technical electives in Photnics, Fiber Optics, and Laser Safety. These courses will fulfill MCC’s EET AS degree technical elective requirements.

2. Maui Community College ECET program will work with the UH Institute for Astronomy in Kula and local Industry to provide additional lab experiences and curriculum as a third year certificate offering for EET AS degree graduates and industry employees. This certificate will be pursued as an “Advanced Professional Certificate”. This model has been successfully implemented at Honolulu Community College’s CENT program. CENT is also a member of the Program Coordination Council. These 300 level courses will require a substantive change request to WASC.
3. Maui Community College ECET program will work with the UH Institute for Astronomy (IfA), and The UH College of Engineering to provide a baccalaureate degree offering for EET AS graduates. Students will use IfA facilities and be taught be a combination of MCC and IfA faculty. Coordination with UH College of Engineering will allow for maximum articulation to the Electrical Engineering Degree program at Manoa.
4. Maui Community College ECET program will work with Kauai and Hawaii to offer courses via distance education. We will align our program offerings and have comparably equipped labs at the three campuses. This will allow for the maximum number of students and faculty to participate in the program improvement project and provide for a larger pool of potential certificate and baccalaureate seeking students.
5. Maui Community College ECET program will work with local industry to continue our highly successful Akamai Internship Program. This program has

been funded since 2002 by the Center for Adaptive Optics (CfAO). CfAO funding will expire in 2009 and without other funding sources the program will cease.

The Hawaii Photonics Alliance – Project Description April 26, 2007

The state of Hawaii is has geography that demands collaboration between the remote rural outer islands of Hawaii, Maui, and Kauai. Maui Community College is uniquely positioned to lead this collaboration. Maui has scientific and national defense assets and activities that tie it to each of the other outer islands. Each of these islands has Electronic Engineering Technology Degree programs at the local community colleges. Many students on these islands cannot leave their homes to study engineering on the island of Oahu, where the main Manoa campus of the University of Hawaii is located. On Maui there are scientific astronomy observatories located at the summit of Haleakala. The University of Hawaii's Institute for Astronomy manages these observatories. The two main research areas are solar physics and full sky surveys for "killer" asteroids. Also located on Haleakala is the Air Force Advanced Electro-Optical System (AEOS) telescope. This is the largest telescope in the Department of Defense. There are a number of smaller telescopes at the summit that operate missions for our National Defense, such as the GEODDS telescope that are tracking "space junk". On the island of Hawaii there are the some of the world's most advanced telescopes for scientific research. The largest telescope in the world, the twin Keck observatories, is located at the summit of Mauna Kea on the island of Hawaii. The Air Force has operations on the island of Hawaii at the

Pohakuloa Training Area where live fire exercises are being replaced with the Joint Threat Emitter, a laser system. On the island of Kauai at Barking Sands is the Pacific Missile Range Facility (PMRF). This facility recently completed two successful missile interceptions that were tracked by a variety of optical and remote sensors, both land and sea based. These facilities on Maui, Hawaii, and Kauai require a trained workforce with the specific knowledge of electronics, optics, photonics, and remote sensing. The scientific observatories and the defense contractors on the advisory boards of the community colleges have reported a strong desire to hire a local workforce. They currently are importing workers from the continental United States. These workers typically do not stay long in Hawaii due to the cost of living and other limiting factors. At the same time there are many talented local students that yearn for an opportunity to work in high technology and stay on their home islands, where they have family roots and cultural ties. Photonics is the enabling technology of the 21st century as electronics was for the 20th. Start up costs and geographic isolation necessitates a coordinated development effort as long-term goals include articulation with a baccalaureate engineering technology program at the University of Hawaii. A needs survey published by the Center for Occupational Research and Development (CORD) indicates that 1800 photonics technicians are needed per year in the United States, while currently there are only 110 graduates per year. Hawaii’s demand for these technicians comes from the observatories at Mauna Kea and Haleakala, and the Pacific Missile Range Facility. Additionally, the telecom industries on the islands of Maui, Hawaii, and Kauai have a technician workforce that is nearing retirement age at the same time the infrastructure is being upgraded from copper to fiber optics. It is this background that drives this Hawaii Photonics Alliance proposal.

The Hawaii Photonics Alliance is a project that improves the electronics engineering technology programs on the remote isolated rural outer islands of Hawaii, Maui, and Kauai. The proposed activities will enhance the curriculum of these programs by meeting the workforce requirements of the observatories and defense contractors for electronics technicians with specialized skills in optics, photonics, and electro-optics. These technicians will support the design engineers and astronomers at locations sited above.

Program improvement will take place by researching, adapting, and implementing national skill standards from a variety of sources. Some of these have been identified in preliminary investigations funded by the University of Hawaii's Office of Research Services. Examples of standards are the National Skill Set from Op-Tec. Op-Tec is the National Science Foundation's National Center for Optics and Photonics Education. The electronics engineering program chair from each of the islands has attended the first and second workshops from Op-Tec and is prepared to start the implementation process. Another standard is the ANSI Z136.1 American National Standard for the Safe Use of Lasers. IEEE standards for fiber optic communication will be included in the program improvement. Skill requirements will also be gathered from the local advisory boards and included in the curriculum as well. One example is that the electro-optic technicians employed at the telescopes require workplace competency in cryogenic systems that cool the astronomical instrumentation.

The Hawaii Photonics Alliance intends to use materials developed under the National Science Foundation project PHOTON2. PHOTON2 is currently developing “project based learning” that should be very effective for teaching content and process skills to the community college electronics engineering students. There are other materials already developed for an introductory astronomy lab course and a color and light inquiry that could be adapted for this project. The project will research, adapt and implement materials developed elsewhere that use innovative techniques and new technologies to address the competencies required for the unique workplaces on the three islands.

Scientific experts from the University of Hawaii’s Institute for Astronomy (IfA) will participate in the project, bringing world-class research experience into the program improvement project. Researchers from the IfA will help design and facilitate lab experiences. The IfA will provide access to their laboratories and observatories on Maui. Industry experts will participate by holding workshops in the technologies specific to their workplace. Industry expert have successfully piloted a four-week module on Matlab at Maui Community College. At Kauai Community College industry experts have taught fiber optics. The University of Hawaii’s College of engineering at Manoa on Oahu will also participate by providing guidance and video training so that the program will complement the design-engineering curriculum at the Manoa research institution and help to articulate the program with Manoa’s baccalaureate engineering degree programs.

This project intends to use a distance education infrastructure that will allow experts from each island to provide training to all three community colleges. This will greatly increase the capacity of each of the colleges and allow the faculty to operate in a cohesive manner as a unit. The project seeks to equip each of the electronics laboratories with similar equipment such that the video courses can also contain the hands-on lab work that is essential for the students to succeed in the workplace.

The Hawaii Photonics Alliance will provide internship experiences for students enrolled in the electronics engineering technology programs. Industry on Maui and Kauai and observatories on Maui and Hawaii are committed to providing internship placements for students. These internships will range from an 8-week full-time summer project to year round part-time positions. The college will provide stipends that will allow the full participation of the students, without the need for additional employment during the internship period.

The Hawaii Photonics Alliance will facilitate joint workshops for high school teachers and high school students from Maui, Kauai, and Hawaii. These workshops will introduce the opportunities for high technology employment, optics and photonics content, and problem solving process skills required in the workplace. These workshops are intended to increase awareness and recruit high school students into the degree programs at the community colleges. This will provide a pipeline of local workforce for the industry and observatory employers.

The Hawaii Photonics Alliance will include major components of program improvement. Industry standards and the unique workplace competency requirements for Hawaii, Kauai, and Maui will be included in AS degree programs at three community colleges. Educational materials from a variety of other sources will be researched, adapted and implemented. Optics, photonics, and electro-optics technical content will be added to existing electronics degree programs and new courses developed. Internships will provide students with workplace experiences. Modern pedagogy such as inquiry and problem-based learning will be used to increase students' knowledge of the specialized content areas. Adaptive Optics is one example of modern instrumentation to be utilized in the project. The University of Hawaii's Institute for Astronomy will provide community college students access to a wide variety of state-of-the art instrumentation. The Hawaii Photonics Alliance will improve electronics engineering technology degree programs by implementing national skill standards, adding rigorous coursework in photonics, and using new and engaging instructional methods. The project will produce a pool of potential workers from the local high schools and provide a degree pathway with internship and job placement assistance. This will greatly benefit the local high technology workplace and raise the standard of living for the local community.

Computer Engineering Technology (EET) Action Plan:

The Computer Engineering Technology Degree program requires efforts in Windows System Administration and Networking Technology training. The goal for this AS degree is to have students ready for employment as Information Technology system administrators for cross platform workstation and server computer systems that include Windows PCs, Unix/Linux, and Mac OS. Software applications such as Microsoft Office, Apache Web Servers, Arc View, My SQL and programming languages PHP, C, and Mat-Lab should be taught. Compute hardware and software courses need to be updated and the equipment used in these courses must be brought up-to-date. The Cisco networking courses are in fine shape due to the outstanding efforts of Stuart Zinner. However the networking courses could be improved by offering CCNP courses in addition to the CCNA course currently offered. Wireless networking and VOIP are technologies that should be included in the curriculum. Our ECET windows hardware and software course have not been offered in several years. We are relying on Business Technology's "Office PC repair and maintenance" course. This course does not have the rigor required for an information technology professional as it is designed for a business professional that may do limited work on computers. This area of information technology education in the ECET program needs to be improved and then should lead to the upper division ICS courses at MCC as an optional BS degree program. The students would then have a path towards a baccalaureate degree that would truly prepare them for employment in Maui's high technology industries as information technology professionals upper division ICS classes would gain enrollment.

PART V. Budget Implications

Several grants are currently under review to support ECET program improvement and development. The UH Office of Research Services and the Chancellor for Community Colleges have indicated a commitment for 4 years to support this effort.

MCC budget implications and recommended actions for administration:

Priority I
Re-assign time for program coordinator. 50%
Hire immediate fill behind for program coordinator. $ 36,000/year
Hire FT faculty replacement for Sandra Swanson $70,000 / year
Hire 2 Full time tenure track faculty positions for program development $140,000/yr
Hire FT administrative assistant, $40,000 / year
Hire FT student lab assistants. $60,000/ year
Professional Development: Faculty – Summer Overload 3-6 credits/summer

Priority II
Student stipends, travel, and housing for Akamai Program. $100,000/ year
Replace computer and lab equipment in high technology areas. 100,000 / year
Funding for software application licenses. 30,000 / year
Professional Development: Faculty Re-assign and Fill-Behind 3-6 credits/semester.
Professional Development: Lecturer Casual Overload 3 credits/semester
Professional Development travel and conference fees: 30,000/year

Priority III
Return portion of RTRF funds generated from grant indirect costs to the PI.
Professional Development for High school teachers: $20,000/ year
Professional Development: Faculty tuition assistance: $5,000 / year
Increased Internet Bandwidth to Labs: $10,000 / year

APPENDIX – JOB SOC CODES – State Data

Computer and Mathematical Science Occupations top

SOC Code Number	Occupation Title (click on the occupation title to view an occupational profile)	Employment Estimates: Employment (1)	Employment Estimates: Percent of Total	Wage Estimates: Median Hourly	Wage Estimates: Mean Hourly	Wage Estimates: Mean Annual (2)	Wage Estimates: Mean RSE (3)
15-0000	Computer and Mathematical Science Occupations	66,130	4.86%	$33.17	$34.71	$72,190	1.00%
15-1011	Computer and Information Scientists, Research	1,240	0.09%	$43.71	$44.51	$92,580	4.70%
15-1021	Computer Programmers	5,460	0.40%	$29.09	$31.06	$64,600	1.60%
15-1031	Computer Software Engineers, Applications	11,060	0.81%	$39.66	$40.98	$85,250	2.60%
15-1032	Computer Software Engineers, Systems Software	12,310	0.90%	$40.33	$40.95	$85,180	1.30%
15-1041	Computer Support Specialists	7,370	0.54%	$20.49	$21.67	$45,080	1.40%
15-1061	Database Administrators	2,330	0.17%	$30.28	$31.92	$66,380	2.30%
15-1071	Network and Computer Systems Administrators	7,870	0.58%	$29.33	$30.52	$63,490	1.10%
15-1081	Network Systems and Data Communications Analysts	3,820	0.28%	$32.44	$35.54	$73,920	4.80%
15-1099	Computer Specialists, All Other	2,010	0.15%	$32.75	$33.44	$69,560	2.30%
15-2099	Mathematical Science Occupations, All Other	140	0.01%	$24.64	$25.68	$53,410	10.50%

Architecture and Engineering Occupations top

SOC Code Number	Occupation Title (click on the occupation title to view an occupational profile)	Employment Estimates: Employment (1)	Employment Estimates: Percent of Total	Wage Estimates: Median Hourly	Wage Estimates: Mean Hourly	Wage Estimates: Mean Annual (2)	Wage Estimates: Mean RSE (3)
17-2061	Computer Hardware Engineers	4,720	0.35%	$40.84	$43.20	$89,860	6.70%
17-2071	Electrical Engineers	32,220	2.37%	$36.50	$38.65	$80,380	1.40%
17-2072	Electronics Engineers, Except Computer	9,630	0.71%	$39.30	$41.26	$85,820	2.90%
17-2081	Environmental Engineers	15,570	1.14%	$32.95	$34.54	$71,840	0.90%

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17-2112	Industrial Engineers	10,150	0.75%	$34.60	$35.72	$74,310	1.80%
17-2199	Engineers, All Other	20,320	1.49%	$36.95	$37.10	$77,160	2.10%
17-3012	Electrical and Electronics Drafters	8,630	0.63%	$21.22	$22.66	$47,140	1.50%
17-3021	Aerospace Engineering and Operations Technicians	1,420	0.10%	$26.80	$27.64	$57,490	3.20%
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17-3023	Electrical and Electronic Engineering Technicians	15,840	1.16%	$22.85	$23.64	$49,160	1.60%
17-3024	Electro-Mechanical Technicians	1,280	0.09%	$25.04	$24.16	$50,250	5.60%
17-3029	Engineering Technicians, Except Drafters, All Other	7,090	0.52%	$22.04	$22.60	$47,010	2.30%
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Life, Physical, and Social Science Occupations top							
		Employment Estimates		Wage Estimates			
SOC Code Number	Occupation Title (click on the occupation title to view an occupational profile)	Employment (1)	Percent of Total	Median Hourly	Mean Hourly	Mean Annual (2)	Mean RSE (3)
19-0000	Life, Physical, and Social Science Occupations	76,240	5.60%	$22.33	$25.54	$53,120	1.10%
19-2021	Atmospheric and Space Scientists	-8	-8	$37.95	$37.80	$78,630	2.30%
19-2099	Physical Scientists, All Other	970	0.07%	$53.21	$49.01	#####	8.10%