IRAO OFFICE USE ONLY	
Received	10/12/15
In Banner	
MTVCOMP/Codeset	
Master Curriculum	
CIP Code	
Program Code	CO-ECET-CYBR
Program Description	

University of Hawai'i
Code Request Form for Academic Programs for

NEW OR MODIFY
PROGRAM CODE

Reset Form

☑ New Program Code   ☐ **Modify Program Code**   Date: 8/19/15

REQUESTOR CONTACT INFORMATION

Name **Debie Amby**

Title **Banner/Curriculum Specialist**

Office/Dept **Academic Affairs**

Campus **UH Maui College**

Email **debie@hawaii.edu**

Phone **808-984-3378**

NEW PROGRAM CODE TO CREATE

Institution **MAU - UH Maui College**   Campus **MAU - UH Maui College**

Level **UG - Undergraduate**   Effective Term **Fall 2015**

	Code (Max. Characters)	Description	Check if requesting new code:
College	(2) IN	Instructional	☐ See Banner form STVCOLL
Department	(4) ECET	Electronic &Comp Engineer Tech	☐ See Banner form STVDEPT
Degree/Certificate	(6) CO	Certificate of Competence	☐ See Banner form STVDEGC
Major	(4) ECET	Electronic &Comp Engineer Tech	☐ See Banner form STVMAJR
Concentration	(4) CYBR	Cybersecurity	☑ See Banner form STVMAJR
Minor	(4)		☐ See Banner form STVMAJR

If a similar major/concentration code exists in Banner, please list the code:

Justification to warrant a new major/concentration code similar to an existing major/concentration code:

UH Maui College would like to request a code for the Certificate of Competence in Cybersecurity approved last fall.

Is this major/concentration code being used the same way at the other UH campuses?   ☐ Yes   ☑ No

Should this program be available for applicants to select as their planned course of study on the online application? *If yes, student may select the code as their only program of study.*   ☐ Yes   ☑ No

RULES PERTAINING TO FINANCIAL AID AND 150% DIRECT SUBSIDIZED LOAN LIMIT LEGISLATION

Is 50% or greater of the classes in this program offered at a location other than the Home Campus?   ☐ Yes   ☑ No

Is this program/major/certificate financial aid eligible?   ☐ Yes   ☑ No

Does this certificate qualify as a Gainful Employment Program (Title IV-eligible certificate program)?   ☐ Yes   ☑ No
See http://www.ifap.ed.gov/GainfulEmploymentInfo/index.html

Program Length
In academic years; decimals are acceptable. The length of the program should match what is published by the campus in any online and/or written publication.   **1.5 year**

Special Program Designations
See Special Program Designations Code Definitions on IRAO Program Code Request webpage
☐ A   ☐ B   ☑ N   ☐ P   ☐ T   ☐ U

Required Terms of Enrollment: ☑ Fall   ☑ Spring   ☐ Summer   ☐ Extended

ADDITIONAL COMMENTS

ATTACHMENTS

BOR Approved: Associate, Bachelor and Graduate Degrees, and sole credential certificates

☐ BOR Meeting Minutes & Supporting Documents   ☐ Curriculum

Chancellor Approved: Certificates related to authorized BOR program & Associate in Technical Studies (ATS) Degree
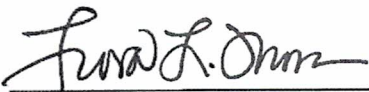
☑ Memo from Chancellor to notify VPAA about new program   ☑ Curriculum

> For new certificates approved by the Chancellor, the related BOR authorized academic program is:
> Electronic & Computer Engineering Technology (ECET)

VERIFICATIONS

By signing below, I verify that I have reviewed and confirm the above information that is pertinent to my position.

Registrar:

Flora L. Mora	*(signature)*	9/15/15
Print Name	Signature	Date

Financial Aid Officer:

Cathy Bio	*(signature)*	9/15/15
Print Name	Signature	Date

For Community Colleges, verification of consultation with OVPCC Academic Affairs:

Suzette Robinson	*(signature)*	9/25/15
Print Name	Signature	Date

10/27/15 pending ~~prog~~ concentration   Page 2 of 2
code verification
10/23/15 missing supp docs

UNIVERSITY of HAWAI'I
MAUI COLLEGE

September 11, 2015

MEMORANDUM

TO: Dr. Risa Dickson
        Executive Vice President for Academic Affairs

FROM: Dr. Lui Hokoana
        Chancellor, UH Maui College

SUBJECT: Program Action at UH Maui College

I have approved the following program actions so that the necessary program codes can be established in Banner.

If you have any questions or concerns, please let me know. Thank you for your assistance.

NEW CERTFICATE OF COMPETENCE
Certificate of Competence- Electronic Computer Engineering Technology - Cybersecurity

Effective Term: Fall 2015

c: **Pearl Iboshi, Director of IRAO**
       Suzette Robinson, UHCC Director of Academic Programs

CCSSE

2002-2003
MetLife Foundation
Best-Practice College
Award Recipient

2008 Community College
FUTURES
Assembly

2008
Bellwether
Award Recipient

2009
President's
Higher
Education
Community
Service
Honor Roll

310 W. Ka'ahumanu Avenue
Kahului, HI 96732-1617
Telephone: 808 984-3655
Fax: 808 984-3546
Website: www.maui.hawaii.edu

An Equal Opportunity/Affirmative
Action Institution

Curriculum Proposal Number _2014.06_

Curriculum Proposal Cover Sheet – Program/Degree/Certificate
Routing procedure – Official Signatures on Signature Page

Program Name: __ECET - CO in Cybersecurity__
or
Course Alpha & Number: _____

Author: __Debasis Bhattacharya & Mark Hoffman__

Proposal Type:
✓ Addition
☐ Modification
☐ Deletion

Date of Activity:

_____ Author Signature

_9/12/2014 10/5_ Curriculum Representative Signature

_9/12/2014_ Department Chair Signature

_11/19/14_ Curriculum Chair Signature

_____ Proposals Posted in Website for General Review

_12/19/14_ Academic Senate Chair Signature

_____ Chief Academic Officer Signature

_____ Chancellor Signature

_____ NEW DEGREES ONLY! Chief Academic Officers Approval

_____ NEW DEGREES ONLY! Board of Regents Approval

_____ Signature Sheet Returned to Curriculum Chair

Distribution, Posting and Follow-Up:

_____ Notify Proposers of Approval

_____ Banner & IRO Input

_____ Catalog Input Complete

_____ Articulation Forms Forwarded to Articulation Coordinator

_____ Five-Year Review Database Updated

_____ Originals Filed in Chief Academic Officer's Office

_____ Registrar & Counseling Notified

University of Hawaii Maui College
Curriculum Action Request (CAR) Form
Program/Degree/Certificate

For Banner use:	
Req:	*Rcv:*
___ *Alpha*	___
___ *Program/name*	___
___ *Program Code*	___
___ *Concentration*	___
___ *Major Code*	___

1. Author(s): Debasis Bhattacharya and Mark Hoffman

2. Department: STEM   Program: ECET

3. Date submitted to Curriculum Committee:

4. Program proposal
   ☐ New program *(attach program proposal and program map)*   ☐ Change of name to existing program

   Existing program   *Title:* Electronic and Computer Engineering Technology (ECET)
   Proposed program   *Title:*

5. Credential (degree or certificate) proposal
   ☒ New credential added to existing program   ☐ Modification to existing credential

   Type of credential
   Degree: ☐ AA   ☐ AS   ☐ AAS   Certificate: ☐ CA ☐ CC ☒ CO ☐ ASC
   ☐ Other, specify:

   Existing credential: *Title:*   *Credits:*
   Proposed credential: *Title:* Certificate of Comptence (CO) in Cybersecurity   *Credits:* 18

   If modification, describe change:
   ☐ Change in credential name
   ☐ Change in course requirement(s); specify:
   ☐ Change in prerequisite(s) for credential; specify:
   ☐ Other; specify:

   ☒ Program map must be attached. *(For modifications, write changes on copy of current catalog map.)*

6. Reason for this curriculum action:
   Include new specialization in cybersecurity for ECET and other technical students. Cybersecurity is an evolving practical field and requires knowledge already learned in the ECET program. This certicificate models similar certificates in cybersecurity that exists at LCC and HonCC. This certificates also shares courses with LCC.

7. Proposed term of first offering: <u>Fall</u> semester of <u>2015</u> year.

8. Special fees required: ☒ no ☐ yes, explain:

9. Special resources (personnel, supplies, etc.) required: ☒ no ☐ yes, explain:

10. Special scheduling considerations: ☒ no ☐ yes, explain:

11. Which program SLOs does this certificate support? *(list all that apply and explain, if necessary.)*
    ☒ Program SLO 1: Apply project management techniques to electrical/electronic(s) and computer systems
       Explain:
    ☒ Program SLO 2: Demonstrate engineer's way of thinking, analyzing technology as systems Explain:
    ☒ Program SLO 3: Demonstrate critical engineering technology skills and experiences such as: making existing technology operate, creating/selecting new technology, troubleshooting, calibrating, characterizing, and optimizing Explain:

12. Current UHMC Catalog needs revision on page(s): UHMC General Catalog 2014¬-2015. Modifications needed for 5 pages - Offerings on Page 10, CO Section page 28, ECET program page 45, ICS course descriptions page 126 and 127.

13. Additional Information: This Certicate contains 6 courses. One course was taught at UHMC as a topics course ICS 190v and was successful for the past two years. This topics course will be converted to a new course ICS 169. Other four new ICS rcourses are identical to ones taught at LCC - ICS 171, ICS 184, ICS 281 and ICS 282. The gateway course to the certificate is ICS 101 which is taken by most UHMC students upon entry to the college.

Offerings at UH Maui College

The College provides general education for both transfer and career students. Lower division courses (i.e., with 100-299 numbers) ar offered to meet general education requirements at four-year colleges, although students should meet with a counselor for specifics. The College also provides lower division courses for many arts and science majors, as well as courses to meet pre-professional requiren The Liberal Arts curricula include courses that lead to Academic Subject Certificates (ASC) and degrees in the Associate of Arts (AA).

Career curricula include career-technical, public service, and business programs that lead to Certificate of Professional Development (tificates of Competence (CO), Certificates of Achievement (CA), and degrees in the Associate in Science (AS), Associate in Applied S Associate in Technical Studies (ATS), and Bachelor of Applied Science (BAS). These certificates and degrees are designed to prepare s immediate employment or career advancement. The College also provides instruction for apprentices in the construction trades.

To earn certificates or degrees, the curricular requirements of a given program must be met. *See program specifics to follow.*

Programs	CPD	CO	CA	AAS	AS	ASC	AA	BAS
Accounting			√	√				
Administration of Justice		√	√	√				
Agriculture and Natural Resources		√	√					
Horticulture & Landscape Maintenance		√	√	√				
Turf grass		√						
Nursery Management		√	√					
Sustainable Tropical Crop Management		√	√	√				
Auto Body Repair and Painting		√	√	√				
Automotive Technology	√	√	√	√				
Business Careers	√	√	√	√				
Business Technology		√	√	√				
Information Processing Specialty				√				
Medical Assistant I, II		√		√				
Culinary Arts		√	√	√				
Baking		√		√				
Dental Assisting		√						
Dental Hygiene					√			
Early Childhood Education		√	√		√			
Electronic & Computer Engineering Technology		√	√		√			
Fashion Technology		√	√	√				
Hospitality & Tourism		√	√	√				
Human Services		√	√		√			
Substance Abuse Counseling		√	√		√			
Nursing Career Ladder								
Nurse: Practical			√					
Nurse: Registered					√			
Nurse Aide		√						
Pre-Nurse Certificates	√	√						
Sustainable Construction Technology	√	√	√	√				
Liberal Arts						√	√	
Hawaiian Studies						√	√	
Natural Science					√			
Applied Business & Information Technology								√
Engineering Technology								√
Sustainable Science Management								√
Marine Option Program	√	√				√		

k∧⋆ ⁷

⋆⋆⋆ Cybersecunty   ⋆⋆ √

Career & Technical Certificates

The Career & Technical Education program offers three types of certificates based upon the amount of credit required for completion. These three certificates are described below in order of the longest to the shortest program.

Certificate of Achievement

The Certificate of Achievement (CA) is a credential awarded to students who successfully complete designated CTE credit course sequences that provide entry-level skills or job upgrades.

These course sequences shall be at least 24 credits, but may not exceed 51 credits (unless external employment requirements exceed this number).

CA Requirements

1. **Satisfactory Completion of a Career & Technical Education Major:** *Program Maps cite specific program requirements.*
2. **General Education: 6 credits**
   3 credits in English 19 or higher, and 3 credits in Quantitative Reasoning.
3. **Grade Point Average:**
   2.0 (C) or better.
4. **Residency Requirement:**
   At least 12 credits toward the CA must be taken at UH Maui College.
5. **Application for Graduation:**
   To be awarded a CA, students must complete an *Application for Graduation* form obtained from Student Services. *See Academic Calendar for deadline.*

At a Glance
Certificates of Achievement (CA)

Accounting
Administration of Justice
Agriculture & Natural Resources
  Floriculture Management
  Horticultural & Landscape Maint
  Nursery Management
  Sustainable Tropical Crop Mgt
Auto Body Repair & Painting
Automotive Technology
Business Careers
Business Technology
Culinary Arts
Early Childhood Education
Electronic & Computer Engineering Technology
Fashion Technology
Hospitality & Tourism
Human Services
  General Human Services
  Substance Abuse Counseling
Nursing Career Ladder
  Practical Nurse
Sustainable Construction Technology

Certificate of Competence

A Certificate of Competence (CO) is a credential awarded for successfully completing designated short-term credit or non-credit courses that provide job upgrading or entry-level skills. Credit course sequences shall be 4 to 23 credits.

The issuance of a CO requires that students' work has been evaluated and determined to be satisfactory.

Students must earn a GPA of 2.0 or better for all credit courses required in the CO.

** Insert--
Cyborsecurity

At a Glance
Certificates of Competence (CO)

Administration of Justice
  Corrections I, II
  Law Enforcement I, II
  Private Security I, II
Agriculture and Natural Resources
  Agricultural Science
  GIS in Ecosystem Management
  Landscape Maintenance
  Nursery Production
  Pest Management
  Sustainable Tropical Crop Production
  Turfgrass Maintenance
Autobody Repair & Painting
  Auto Body Refinishing
  Corrosion
Automotive Technology
  Brakes
Business Careers
  e-Marketing
  Entrepreneurship II
  Leadership Training
  Supervision II
Business Technology
  Basic Office Skills – Pre-Business Tech
  Business Technology
  Medical Assistant I
  Virtual Office Assistant
Culinary Arts
  Baker's Helper
  Pastry Cook
Dental Assisting
Early Childhood Education
  Early Childhood Education
  Early Childhood Option
  Preschool Child Development Associate
Electronic & Computer Engineering Tech
Fashion Technology
  Dressmaker
  Fashion-Fabric Salesperson
  Seamstress
Hospitality & Tourism
Human Services
  Aging
  Case Management
  Dynamics of Family Violence
  Health Navigator/Cmty Health Worker
  Substance Abuse Counseling I, II, III
  Youth Development Practitioner
Marine Option Program
  Marine Naturalist I, II
Nursing Career Ladder
  Nurse Aide Training
  Pharmacy Technician
  Therapeutic Activity Aide I, II
Sustainable Construction Technology
  Basic Carpentry Skills
  Basic Drafting Skills
  Electrical Maintenance
  Energy Production
  Maintenance Painting
  Maintenance Plumbing
  Rough and Finish Carpentry
  Small Equipment Repair
  Sustainable Construction Technology

The Electronic & Computer Engineering Technology (ECET) program leading to an Associate in Science degree provides students with the skills and knowledge required for entry level employment within the high-technology industry as electronic /electro-optic technicians, renewable energy technicians, telecom technicians, and network system administrators. Students learn fundamental engineering concepts, computer programming, mathematics, and physics relevant to a wide variety of industries on Maui. Training, equipment, and supplies are provided for 3-D printing and circuit board fabrication. Software applications for circuit simulation, CAD, finite element analysis, and microprocessor control are utilized. The program requires written and verbal proficiencies and emphasizes laboratory competencies. Internship and job placement opportunities in a variety of engineering technology positions are provided. The ECET program also includes a certificate of competence in foundry cybersecurity.

The ECET program offers different levels of educational opportunity:

* Certificate of competence for coursework in electronics and computer fundamentals.
* Certificate of Competence in Cybersecurity.
* Certificate of Achievement with electronics, math, physics, and computer basics.
* Associate in Science degree in Electronic and Computer Engineering Technology, including electro-optics instrumentation, adaptive optics for astronomical applications, detectors, robotics, and computer hardware. The scheduling is designed for a cohort of students to complete the AS degree program in four semesters.
* Lower division pathway to the Bachelor of Applied Science (BAS) in Engineering Technology (ENGT). Courses that are prerequisites to the BAS require a grade C or better.

Admission process

For admission to the UH Maui College ECET program, complete all required steps outlined below. Applications will be reviewed on a first come - first served basis.

1) Complete the Math and English COMPASS tests. (ECET courses require specific placement scores: CMPW 74 and CMPX 75.)

2) Contact the program coordinator, Mark Hoffman (by email at markhoff@hawaii.edu or at 984-3321), or the program counselor, Kulamanu Ishihara (by email at vorhies@hawaii.edu or at 984-3272), to schedule an application review counseling session and create an academic plan of study. Math and English COMPASS scores (shown above) are required for counseling.

Requirements for Certificate of Competence (CO) in Electronic & Computer Engineering Technology: 10 credits
Electronics 101(3), 102(4)
Information & Computer Science 101(3)

Requirements for Certificate of Competence (CO) in Cybersecurity: 18 credits
Information & Computer Science 101(3), 102(3), 183(3), 171(3), 281(3) and 282(3)

Requirements for Certificate of Achievement (CA) in Electronic & Computer Engineering Technology: **26 credits**
Electronics 105(4), 106(4)
English 100(3)
Information & Computer Science 110(3), 111(4)
Physics 105(4) – *Natural Science elective*
Mathematics 119(4)

Requirements for Associate in Science (AS) degree in Electronic & Computer Engineering Technology: **61 credits**
All CA courses (26) plus:
Electronics 140(4), 161(3), 201(4), 205(4), 210(3), 212(3), 296(3)
Electronics/ICS 193v(1), 293v(1)
Communication elective(3) - *100 or above*

ENG 210 (3)- *Humanities elective,*
Social Science elective(3) - *100 or above*

Cohort takes courses in this sequence:

Electronic and Computer Engineering Technology (ECET) Associate in Science (AS) Degree

Program Map

First semester (Fall)		credits	Second semester (Spring)		credits
*ETRO 105	Electronic Circuit Analysis I	4	*ETRO 106	Electronic Circuit Analysis II	4
*ENG 100	Composition I	3	*ICS 111	Introduction to Computer Science I	4
*ICS 110	Introduction to Computer Programming***	3	*PHYS 105	Principles of Technology	4
*MATH 119	Engineering Pre-Calculus****	4	Communication elective	*100 or above*	3
Social Science elective	*100 or above*	3			15
		17			

Third semester (Fall)		credits	Fourth semester (Spring)		credits
ETRO 140	Computer Networking I	4	ETRO 161	Introduction to Optics & Photonics	3
ETRO 193v	Internship I	1	ETRO 205	Digital Computer Technology II	4
ETRO 201	Digital Computer Technology I	4	ETRO 212	Electronic Technology II	3
ETRO 210	Electronic Technology I	3	ETRO 293v	Engineering Technology Internship II	1
ENG 210	Research Writing**	3	ETRO 296	Special Projects in Electronic Technology	3
		15			14

*Note: Courses required for the Certificate of Achievement

**Note: Course is prerequisite to the BAS in Engineering Technology. Students not planning to pursue the BAS should see program
   visor about substituting another course from the corresponding elective list.

***Note: ICS 101 with grade C or better, or consent is a prerequisite for ICS 110.

****Note: or MATH 135 and MATH 140

111 Intro to Computer Science I

Prereq: ICS 110 with grade C or better, and MATH 82 with grade C or better or placement at least MATH 107, and ENG 19 with grade C or better or placement at least ENG 22, or consent.

Introduces problem solving using computers. Provides a background for students entering computer science, engineering, or other fields that require a background in computer programming. Teaches the basics of the computer hardware/software interfaces. Includes programs, applications, and compilers. Introduces programming concepts, algorithms, and problem solving techniques using high-level object-oriented programming languages. *Meets ACM CS 1 course standards.* 4cr., 4hr. lect./lab

115 Microcomputer Applications

Prereq: ICS 101 or BUSN 150, or consent. Recommended: MATH 82 and elementary word processing or typing skills.

Examines the utilization of major application packages as tools in business problem solving. Covers the following applications: a micro-computer operating system, word processing, spreadsheets, graphics, and database management systems. 3cr., 3hr. lect./lab

116 Designing for Cross-Media: Publishing for Print & Web

Prereq: ICS 101 or BUSN 150, or consent.

Focuses on design and layout for cross-media publishing. Examines the interface, functions, and integration of publishing software for graphic design and production. Explains how to prepare content for publication for print, Portable Document Format (PDF), and on the web. 3cr., 3hr. lect./lab

150 Introduction to GIS/GPS

Prereq: ICS 101 or BUSN 150, either with grade C or better; or consent. Recommended: Familiarity with computer databases.

Introduces applications of geographic information systems (GIS) with a special emphasis on using ArcView GIS. Includes database construction and techniques for spatial data manipulation, analysis, and display. Teaches use of global positioning system (GPS.) Explores cross-disciplinary applications in the natural and social sciences. *(Crosslisted as GIS 150.)* 4cr., 6hr. lect./lab

151C Introduction to C Programming

Prereq: ICS 111 with grade C or better, or consent.

Introduces students to C Programming Language and an Integrated Development Environment (IDE). Develops structured programs using problem solving, algorithm development, and programming concepts using a procedural language. 3cr., 3hr. lect./lab

161 Introduction to Computer Graphics

Prereq: ICS 101 (or concurrent) or BUSN 150, or consent.

Introduces computer graphics tools and concepts in digital image editing, illustration graphics, print and web design, and 2D and 3D animation. *(Crosslisted as ART 161.)* 3cr., 3hr. lect. **(DA)**

193v Computer Science Internship I

Prereq: ICS 111, and consent of both instructor and Co-op coordinator. Coreq: Enrollment in ECET program and one or more ECET or ETRO courses. Recommended: ETRO 101 and 105, and ENG 100.

Reflects student interest area and availability of job stations. Offers opportunity to upgrade workplace employability. *Student, instructor, and employment supervisor jointly develop learning outcomes. Instructor and employment supervisor jointly evaluate student. (May be repeated for a maximum of 3 credits.)* 1-3cr., 75hrs. supervised work/cr.

200 Web Technology

Prereq: ICS 110 with grade C or better, or consent.

Introduces web page authoring. Creates client-side web pages using web authoring language and style sheets. Uses graphical design elements, validation, browser capability, and accessibility. Uses scripting language to add dynamic elements to web pages, client-side scripting, regular expressions, event handling, input validation, selection, repetition, and parameter passing. 3cr., 3hr. lect.

205 Photoshop and Illustrator

Prereq: ICS 101 or BUSN 150, or consent.

Introduces the basic tools and features of digital image editing, photo retouching, and color correction of images. Focuses on the fundamental drawing techniques of illustration graphics including pen tool paths, objects, and type. *(Crosslisted as ART 205.)* 3 cr., 3hr. lect./lab **(DA)**

211 Introduction to Computer Science II

Prereq: ICS 111 with grade C or b. consent. Recommended: MATH 1

Reinforces and strengthens proble solving skills using more advanced of programming languages and al such as recursion, pointers, and m management. Emphasizes use of structures, such as arrays, lists, sta queues. *Meets ACM CS2 course st.* 3cr., 3hr. lect./lab

214 Fundamentals of Design Print & Web

Prereq: ICS 101 or BUSN 150, or

Introduces development principle to graphic design terminology, to media, and layout and design con Topics include integration of type ages, and other design elements, c ing computer skills in industry st. computer programs, and study of development pertaining to color t publications, and advertising. Pr will emphasize relating form to cc through selection, creation and in of typographic, digital imaging, i tive, and design elements in print environments. *(Crosslisted as ART* 3cr., 3hr. lect./lab **(DA)**

251 Introduction to Unix/Lin

Prereq: ICS 101 with grade C or b consent.

Introduces the Unix/Linux opera system with emphasis on the Red Linux release. Covers the history structure of Unix/Linux, basic fu and fundamental commands. Ex advanced topics unique to Unix/l system administration. Stresses c and responsibilities incumbent w User privileges. 4cr., 4hr. lect./la

252 Unix/Linux System Admi

Prereq: ICS 251 with grade C or b consent.

Continues exploration of the Uni operating system with an examin the tasks and responsibilities of sy administration. Examines and e Unix group and user hierarchy, s) curity, networking fundamentals administration, system logs, trou ing, application installation, and installation and maintenance. E the ethics and responsibilities of 1 System Administration and root leges. 4 cr., 4hr. lect./lab

** Insert course info for
ICS169, ICS184 & ICS171

_8 Programming for High Performance Clusters
Prereq: ICS 111 with grade C or better, or consent.
Explores programming for high performance computational clusters. Examines the algorithmic paradigms required to most efficiently and effectively create or modify code that will exploit the unique characteristics of parallel processing. Identifies the attributes common to highly parallelizable code. Develops parallel algorithms and writes implementing computer code. Tests, evaluates, and refines code to maximize performance and efficiency. 3cr., 3hr. lect./lab

261 Intermediate Computer Graphics
Prereq: ICS 161, 205, or 214, or consent.
Provides instruction with the tools and concepts of computer graphics utilizing digital media technology. Offers experience that integrates digital image editing, illustration graphics, print publishing, web authoring, 2D, and 3D animation. *(Cross-listed as ART 218.)*
3cr., 3hr. lect./lab (DA)

_/2 Digital Imaging & Animation
Prereq: ICS 261, or consent.
Develops 2D computer graphics as elements for 3D projects. Compiles digital imaging and illustration using natural media tools, filters, compositing, templates for 3D project scenes, texture-mapping, and source files. Outlines 3D modeling and animation concepts, tools, and techniques for project development.
3cr., 3hr. lect./lab

275 Introduction to High Performance Computing Clusters
Prereq: ICS 251 with grade C or better, or consent. Coreq: ICS 252.
Introduces High Performance Computing (HPC) clusters. Covers the history, technology, and structure of computational clusters, with emphasis on Beowulf-style clusters. Includes design concepts, software and hardware implementations, enabling applications, and administration. Includes algorithmic considerations and structures conducive to the development and implementation of parallelized applications. Provides experience building, figuring, and utilizing the cluster.
_cr., 4hr. lect./lab

283 Advanced Computer Graphics Design
Prereq: ICS 261, or consent.
Reviews history, development, technology, and creative approaches of digital tools. Summarizes design theory. Employs graphics software to achieve concepts, content, and distinctive project solutions. Originates and manages the preproduction, production, postproduction of projects in print, web, digital imaging, illustration, and animation. Assembles projects into traditional, content, and digital portfolios. Analyzes professional issues for careers in digital media: resume, portfolio, exhibiting, personal web site, employment, and professional organization.
3cr., 3hr. lect./lab

285 Digital Media Capstone
Prereq: ICS 283 and approval of DM faculty.
Provides an opportunity to integrate and employ tools and knowledge developed during the Digital Media program. Evaluates design and technical skills in digital media publishing projects. Assesses internship experiences and job market research for employment strategies. A comprehensive professional digital media publishing portfolio is required as a capstone project. 3cr., 3hr. lect./lab

293v Computer Science Internship II
Prereq: ICS 193v, or consent.
Reflects student interest area and the availability of job stations. Offers the opportunity to upgrade employment and problem-solving skills. *Student, instructor, and employment supervisor develop learning outcomes. Instructor and the employment supervisor jointly evaluate student. (May be repeated for a maximum of 6 credits.)*
1-3cr., 75hrs./cr.

298 Special Projects in Computer Science
Prereq: ICS 252 and ICS 275 both with grade C or better; or consent. Coreq: Determined by topic. Recommended: Determined by topic.
Covers current topics in computer science. Introduces students to topics of current interest and relevant to their studies. Includes both theoretical and hands-on experience in cutting edge hardware, software, networking, operating systems, applications, and techniques. 4cr., 4hr. disc.

319 Operating Systems
Prereq: ICS 111 and 200, and MATH 203 or 205 all with grade C or better, or consent.
Covers concepts, issues and design of modern operating systems. Analyzes processes and state, concurrency, resource management algorithms for memory, processors and I/O devices, protection and security. Develops case studies of popular desktop and server operating systems. Conducts laboratory projects and teaches OS installation and administration techniques.
3cr., 3hr. lect.

320 Introduction to Information Systems & E-Commerce
Prereq: ICS 115 or BUSN 151, and ICS 214, or consent.
Introduces general concepts of information systems and e-commerce. Includes key business applications, e-commerce and the Internet, system development, outsourcing, networking and data communications, data and databases, and security. Includes relevant projects. 3cr., 3hr. lect.

340 Introduction to Visual Basic
Prereq: ICS 115 or BUSN 151 either with grade C or better, or consent.
Introduces computer programming for non-computer science majors using the Visual Basic language. Includes algorithms and problem-solving, fundamental programming constructs, object-oriented design, event-driven programming, Graphical User Interface (GUI) principles, and components. 3cr., 3hr. lect./lab

352 Networks and Security
Prereq: ICS 111 and 200, and MATH 203 or 205 all with grade C or better, or consent.
Provides detailed knowledge of the internet and its capabilities, explains details of HTTP, TCP/IP, ethernet, and wireless 802.11 router, switches, and NAT; network and wireless security; practical experience in designing and implementing networks. Laboratory projects teach network design and administration. Discusses intermediate level topics on computer security. Examines legal, ethical and technology issues in computer access, confidentiality, authentication, privacy and intellectual property. 3cr., 3hr. lect.

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** Insert course inf for ICS 281 & ICS 282

University of Hawaii Maui College
Curriculum Action Request (CAR) Signature Page

_____   9/12/14
                                             9/13/14
Proposed by: Author or Program Coordinator   Date

_____   9/12/14
Checked by: Academic Subject Area Representative to Curriculum Committee   Date

_____   9/12/2014
Requested by Department: Department Chair   Date

_____   11-19-14
Recommended by: Curriculum Chair   Date

_____   12-9-14
Approved by Academic Senate: Academic Senate Chair   Date

_____   1-6-15
Endorsed by: Chief Academic Officer   Date

_____   1-22-15
Approved by: Chancellor   Date