WASC ASSESSMENT PLANNING

Division of Natural Sciences and Mathematics

Chaminade University of Honolulu

A. Collected Mission Statements

A.1. Biology.

The mission of the biological sciences programs at Chaminade University of Honolulu includes a recognition of its Catholic/Marianist tradition and addresses the five principles that make Chaminade unique in its curriculum. Those principles are providing a quality education; educating for formation in faith; in maintaining family spirit; working towards service, peace, and justice; and preparing students for adaptation and change. The biology curriculum has successfully offered a broad based, quality education for years. This has resulted in our graduates successfully applying to graduate and professional schools, as well as employment in a community. Faith is involved in many educational pursuits and biology works unceasingly towards improving the human condition and society in which we live. The laboratory environment of the program encourages and fosters a family spirit amongst biology students and faculty. Additionally, many students and faculty offer their talents and skills in community service projects and voluntary experiences at health or scientific institutions. Finally, the very nature of science, including the cornerstone of the scientific method encompasses adaptation and change, fundamental components of a scientific and biological education.

A.2. Computer Science

The mission of the Computers Science (CS) program at Chaminade University of Honolulu is to help students acquire skills, knowledge, and habits that will be useful in career fields that are specifically related to computer applications. The Computer Science Program emphasizes the more technical aspects of the computing field in general, while the Computer Information Systems emphasizes the application of the computer in the business world.

One of the characteristics of the Marianist approach to education is to provide an integral education, by linking theory and practice and by combining liberal and professional education. The CS program strives to maintain an atmosphere in which the students learn the importance of understanding basic principles and practices by which the computing and information technology fields operate as well as of gaining practical skills that allow them to become productive citizens.

A.3. Computer Information Systems.

The mission of the Computer Information Systems (CIS) program at Chaminade University of Honolulu is to help students acquire skills, knowledge, and habits which will be useful in career fields that are specifically related to computer applications. The Computer Information Systems emphasizes the application of the computer in the business world, while the Computer Science Program emphasizes the more technical aspects of the computing field in general.

One of the characteristics of the Marianist approach to education is to provide an integral education, by linking theory and practice and by combining liberal and professional education. The CIS program strives to maintain an atmosphere in which the students learn the importance of understanding basic principles and practices by which the computing and the information technology fields operate as well as of gaining practical skills that allow them to become productive citizens.

Another characteristic of the Marianist education is that it constantly adapts to the changing needs of the time. This is especially important in the computer information technology, in which advances in both the hardware and software are measured in terms of months. The faculty tries to maintain the curriculum which is fresh and relevant to meet the changing demands of the academic standards and societal needs.

Implicit in the Marianist philosophy of education, which considers the development of the whole person -- in their psychological, social, spiritual, moral, as well as intellectual dimensions -- is the importance of

understanding ethical values. The CIS program requires majors to take an upper-level course in ethics in order to help them become more sensitive to their social responsibilities.

A.4. Forensic Sciences

The mission of the program at Chaminade University of Honolulu leading to the degree Bachelor of Science in Forensic Sciences is to train students in the objective application of scientific principles and methods to the analyses and solutions to criminal problems in keeping with the Marianist principles. This is particularly relevant to the ideal Marianist principles of fostering inquiry into and the supporting of social justice. In pursuing this aim, the highest level of ethical behavior will be required of students.

A.5. Minor/Support disciplines.

Chemistry: The mission of the chemistry program is to provide a strong chemistry background for students majoring in forensic sciences and biology, as well as for students pursuing a career in professional fields requiring some chemistry knowledge. The program is also committed to the liberal arts concept of providing a broad background of knowledge and encouraging students to learn about all areas of study. The chemistry faculty is dedicated to teaching chemistry in a stimulating environment that provides ample opportunity for hands on experimentation and, whenever possible, individual research.

Mathematics: Mathematics is offered as a Minor degree at Chaminade. The mission of the Mathematics program is to provide a strong mathematics background for students majoring in science disciplines, as well as to provide the requisite mathematical skills for career success in non-science fields and everyday life. The mathematics program at Chaminade University provides general education requirement in mathematics (MA100 and MA103) to all undergraduate students, teaches supporting mathematics courses to other sciences disciplines (Biology, Forensic Science, Computer Science, Chemistry, and Physics), and offers higher-level mathematics courses to students who are pursuing a minor in mathematics.

Physics: The mission of the physics program is to provide a strong physics background for students majoring in forensic science and biology, as well as for students pursuing a career in professional fields such as engineering, medicine and biology that require some physics knowledge. The program is also committed to the liberal arts concept of providing a broad background of knowledge, and encouraging students to learn about all areas of study. The physics faculty is dedicated to teaching physics in a stimulating environment that provides ample opportunity for hands on experimentation and, whenever possible, individual research. Course offerings include both College and University general physics course sequences, as well as courses of more general interest, including Astronomy and the Physics of Photography.

B. Collected Program Learning Outcomes

B.1. Biology.

Upon completion of the B.A. or B.S. Degree program in the Biological Sciences, the student will demonstrate an understanding of the following:

1. The scientific method and its application in the Biological Sciences.
2. Living organisms and their relationship to each other and the environment.
3. Theoretical and practical experiences in Biology.
4. Opportunities available in the Biology Discipline.

B.2. Computer Sciences.

After completing the Computer Science program leading to a Bachelor of Science degree, the student is expected to demonstrate the following outcomes:

1. • Understanding of the basic elements of the Computer Science field

2. • Basic skills in problem solving
3. • Ability to write computer programs in several programming languages
4. • Understanding of how the computer operates
5. • Basic understanding of data communication and network systems
6. • Understanding of ethical responsibilities for computer professionals

B.3. Computer Information Systems.

After completing the Computer Information Systems program leading to a Bachelor of Science degree, the student is expected to demonstrate the following outcomes:

1. Understanding of the basic elements of the Information Technology field
2. Basic skills in problem solving
3. Understanding of basic programming concepts
4. Basic understanding of data communication
5. Ability to express ideas through oral and written communication
6. Familiarity with basic business concepts
7. Understanding of ethical responsibilities in business

B.4. Forensic Sciences.

Upon completion of the undergraduate Major in Forensic Sciences:

1. Students completing the BSFS program will be able to demonstrate comprehension of basic sciences related to FS.
2. Students completing the BSFS program will be able to demonstrate an understanding of the legal system governing the admissibility of the evidence they will be collecting and analyzing.
3. Students completing the BSFS program will be able to demonstrate a proficiency in preparation of written and oral reports and testimony.
4. Students completing the BSFS Program will be able to demonstrate a working knowledge of the different sub disciplines in the forensic sciences.
5. Students completing the BSFS will be able to demonstrate an understanding of the techniques involved in recognition, documentation, and analysis of forensic evidence.

B.5. Minor/support disciplines.

Chemistry: Upon completion of the undergraduate minor in Chemistry, the student will demonstrate an understanding of:

1. The scientific method and its application in Chemistry
2. The different areas of research and practice in Chemistry
3. The general concepts and principles of Chemistry

Mathematics: The Program Outcomes for the Mathematics Minor at Chaminade are as follows:

1. To demonstrate the understanding and skills in reading, interpreting and communicating mathematical contents which are integrated into other disciplines or appear in everyday life.
2. To gain understanding of, and practical skills in, and logical thinking, deductive and inductive reasoning.
3. To articulate the understanding of more advanced mathematical concepts and quantitative skills to support the study of other disciplines, including skills with numeric and symbolic computations, and problem solving using numeric, analytic and graphic methods.
4. Where relevant, to develop mathematical maturity in order to undertake higher-level studies in mathematics and related fields.

Physics: Student completing a course of study in Physics will demonstrate an understanding of:

1. The scientific method and its application in Physics:
2. The different areas of research and practice in Physics:
3. The general concepts and principles of Physics:

C. Course/PLO matrices

I – Introduced, D = developed, M – mastered

C.1. Biology PLO matrix.

PROGRAM LEARNING OUTCOME ***I = introduced*** ***D = developed*** ***M = mastered***	**1. The scientific method and its application in the biological sciences.**	**2. Living organisms and their relationship to each other and the environment**	**3. Theoretical and practical experiences in Biology**	**4. Opportunities available in the Biology discipline.**
Undergraduate Premajor requirements for BS				
(a) Foundational Mathematics & Sciences MA210 Calculus I MA211 Calculus II PHY251/251L University Physics I/Lab PHY252/252L University Physics II/Lab	 I I			
(b) Biology BI203/203L Cellular & Organismic Bio I/Lab BI204/204L Cellular & Organismic Bio II/Lab BI210 Biological Techniques	 I/D I/D I/D	 I/D I/D I/D	 I/D I/D I/D	
(c) Chemistry CH203/203L General & Analytical Chemistry I/Lab CH204/204L General & Analytical Chemistry II/Lab CH323/323L Organic Chemistry I/Lab CH324/324L Organic Chemistry II/Lab	 I/D I/D I/D I/D			
Required Core for both BS degree and BA				
BI370/370L Cell & Molecular Bio /Lab	D	D	D	
BI351/351L Comparative Vertebrate Anatomy	D	D	D	
BI431/431L Genetic Biology/Lab	D/M	D/M	D/M	
BI442/442L General & Comparative Physiology/Lab	D	D	D	
BI490 Senior Seminar	D/M	D/M	D/M	D/M
Undergraduate Premajor requirements for BA				
(d) Foundational Mathematics & Sciences MA210 Calculus I PHY151/151L College Physics I/Lab				

PHY152/152L College Physics II/Lab	I I			
(e) Biology BI203/203L Cellular & Organismic Bio I/Lab BI204/204L Cellular & Organismic Bio II/Lab BI210 Biological Technique	 I/D I/D I/D	 I/D I/D I/D	 I/D I/D I/D	
(f) Chemistry CH203/203L General & Analytical Chemistry I/Lab CH204/204L General & Analytical Chemistry II/Lab CH323/323L Organic Chemistry I/Lab CH324/324L Organic Chemistry II/Lab	 I/D I/D I/D I/D			
Required Core for BA degree				
BI351/351L Comparative Vertebrate Anatomy/Lab	D	D	D	
BI370/370L Cell and Molecular Biology/Lab	D	D	D	
BI431/431L Genetic Biology/Lab	D/M	D/M	D/M	
BI471/471L Ecology/lab	D/M	D/M	D/M	
BI490 Senior Seminar	D/M	D/M	D/M	D/M

C.2. CIS PLO Matrix.

PROGRAM LEARNING OUTCOME ***CIS DEGREE*** ***I = introduced*** ***D = developed*** ***M = mastered***	**1. Basic elements IT field**	**2. Basic problem solving**	**3. Programming concepts**	**4. Oral and written comunication**	**5. Basic business conceptrs**	**6. Ethical responsibilities**	
Undergraduate Premajor requirements for CIS							
Foundational Mathematics & Sciences							
MA110 Pre-Calculus		I/D					
BU200 Intro to Business				I/D	I/D	I/D	
AC201 Principles of Accounting I					I/D		
EC202 Principles of Microeconomics					I/D		
MA331 Intro to Probability & Statistics		I/D			I/D		
Major requirements for CIS							
CS310 Object-oriented Programming	D/M		D/M				
CS350 Data Structures	D/M		D/M				
CS420 Database Management Systems	D/M						
CS430 Software Engineering	D/M		D/M				
CS460 Telecommunications/Network Systems	D/M						
BU324 Quantitative Methods in Business		I/D		I/D	I/D		
BU362 Legal and Ethical Issues in Business				I/D	I/D	D/M	
MA308 Discrete Mathematics		I/D			D/M		
MKT301 Principles of Marketing					D/M		
MGT407 Operations Management					D/M		
MGT305 Management of Information Resources	D/M			I/D	D/M		
OR BU308 Professional Writing /Presentation				D/M	D/M		
Other CS Courses							
CS103 Computers and Application Software	I/D	I/D	I/D	I/D			
CS480 Special Topics	D/M	D/M	D/M	D/M	D/M	D/M	
CS487 Internship	D/M	D/M	D/M	D/M	D/M	D/M	
CS499 Directed Study	D/M	D/M	D/M	D/M	D/M	D/M	

C.3. CS PLO Matrix.

PROGRAM LEARNING OUTCOME ***I = introduced*** ***D = developed*** ***M = mastered***	**1. Basic elements CS field**	**2. Basic problem solving**	**3. Write computer programs in several languages**	**4 How computer operates**	**5. Data communication and network systmes**	**6. Ethical responsibilities**	
Undergraduate Premajor requirements for CS							
Foundational Mathematics & Sciences							
MA110 Pre-Calculus		I/D					
BU362 Legal and Ethical Issues in Business						D/M	
Computer Science							
CS110 Intro to Web Page Design	I/D	I/D	I/D	I/D	I/D	I/D	
CS150 Intro to Programming	I/D	I/D	I/D	I/D	I/D	I/D	
Major requirements for CS							
CS310 Object-oriented Programming			D/M	D/M			
CS330 Computer Architecture	D			D/M			
CS350 Data Structures	D		D/M	D/M	D/M		
CS410 Operating Systems	D			D/M	D/M		
CS420 Database Management Systems	D/M			D/M	D/M		
CS430 Software Engineering	D/M		D/M	D/M			
CS460 Telecommunications/Network Systems	D/M			D/M	D/M	D/M	
CS470 Network Management	D/M				D/M	D/M	
MA308 Discrete Mathematics		D/M					
MA331 Intro to Probability and Statistics		D/M					
MA401 Linear Algebra		D/M					
Other CS Courses							
CS103 Computers and Application Software	I/D	I/D	I/D	I/D	I/D	I/D	
CS480 Special Topics	D/M	D/M	D/M	D/M	D/M	D/M	
CS487 Internship	D/M	D/M	D/M	D/M	D/M	D/M	
CS499 Directed Study	D/M	D/M	D/M	D/M	D/M	D/M	

C.4. Forensic Sciences PLO Matrix.

	Learning Outcomes 1: Demonstrate Mastery of Basics	Learning Outcome 2: Demonstrate Understanding of Evidence and Legal Issues	Learning Outcome 3: Demonstrate Proficiency in Reports and Testimony	Learning Outcome 4: Demonstrate Advanced Mastery of At Least One Subdiscipline
Undergraduate Premajor	X	X	X	
Foundational Mathematics & Sciences BI203/203L Cellular and Organismic Biology I/Lab BI204/204L Cellular and Organismic Biology II/Lab CH203/203L General and Analytical Chemistry I/Lab CH204/204L General and Analytical Chemistry II/Lab CH323/323L Organic Chemistry I/Lab CH324/324L Organic Chemistry II Lab MA210 Calculus I MA211 Calculus II PHY251/251L University Physics I/Lab PHY252/252L University Physics II/Lab	I/D I/D I/D I/D D/M D/M D/M D/M			
Criminal Justice CJ 151 Criminal Justice Systems CJ 223 Introduction to Law		I/D I/D	I/D	
Forensic Sciences FS190 Intro to Forensic Sciences FS 330 Forensic Sciences	I I/D		I/D I/D	I/D I/D
Major Courses				
BI431/431L Genetics/Lab	D/M	X		
CH360/360L Biochemistry/Lab	D/M			
CH434/434L Analytical Chemistry/Lab	D/M			
CJ423 Criminal Law II		D/M	D/M	
FS333 Physical Forensic Science	D/M			D/M
FS340/340L Crime Scene Investigation/Lab	M	D/M		D/M
FS444/444L Forensic Biology/Lab	D/M			D/M
FS487 Internship	M	M	M	M

FS490 Seminar – 2 semesters required		D/M	D/M	
MA331 Intro to Probability and Statistics	D/M	D/M		

Major Electives				
BI362/362L Microbiology/Lab	D/M	D/M	D/M	D/M
BI370/370L Cell and Molecular Biology/Lab	D/M	D/M	D/M	D/M
BI454/454LHistology/Lab	D/M	D/M	D/M	D/M
CJ463 Sex Crimes	D/M	D/M	D/M	D/M
CJ465 Narcotics and Drug Use	D/M	D/M	D/M	D/M
FS335/335L Forensic Entomology/Lab	D/M	D/M	D/M	D/M
FS350/350L Forensic Photography/Lab	D/M	D/M	D/M	D/M
FS440 Detection and Recovery of Human Remains	D/M	D/M	D/M	D/M
FS450 Forensic Anthropology	D/M	D/M	D/M	D/M

D. Assessment Plans Overview.

The types of evidence to be collected obviously vary depending upon the program outcome to be evaluated and the course content. The types of evidence requested from Faculty in support of Program and Student Learning Outcomes falls broadly into the following categories:

Outcome	Evidence Gathered	Location of Evidence
Acquisition of conceptual understanding, factual knowledge, quantitative, qualitative or practical skill.	Syllabi that contain instructional reference to the concept, fact or skill.	Copies in Dean of NSM office
	Testing that directly assesses whether a student has acquired the concept, fact or skill.	Copies in Dean of NSM office, question analysis in Assessment Cycle Report
	Grading profiles reflecting student competency in the concept, fact or skill.	Data presented in Assessment Cycle Report
	Perfromance on Divisional Exit Instrument that assesses attainment of PLO both directly and indirectly.	
Ability to exhibit skills and behaviors at the conclusion of a course of study that mirror those expected in the relevant professional setting.	Syllabi that contain instructional reference to expectations that match those of the professional setting.	Copies in Dean of NSM office
	Evaluations by professionals practicing in the relevant field.	Examples presented in Assessment Cycle Report
	Work products that reflect the standards and content that would be professionally acceptable in the relevant field.	Examples presented in Assessment Cycle Report

E. Program Assessment Plans.

E.1. Divisional Exit Instrument.

All graduating seniors in the DNSM will complete the Divisional Exit Instrument (DEI) during their final semester at Chaminade. This instrument is in two parts. First, an *indirect* survey instrument that assesses students' perception about their learning and experience in the major. Second, a comprehensive exam component which *directly* assesses the students knowledge via a series of discipline-specific problems that are designed and graded by faculty. A rubric is used to assess the performance on both of these DEI components in order to quantify the students' overall attainment of the PLO.

E.2. Biology.

1. Individual Course Assessment:

Individual progress through a given course is evaluated by at least 2 processes. Students are given a pre-test during the first class session and a post-test during the last week of classes. The same test is administered on both occasions. Questions are constructed to include areas listed in the course syllabus for which the student is expected to demonstrate competence. A typical pre and post test for BI 203-Cellular and Molecular Biology as well as a syllabus are appended. Further evaluations of the student's comprehension of the course materials are completed during the semester through traditional testing, either written, practical, and/or oral presentations.

Assessments of the student's perception of the teaching of the instructor are completed using the student evaluation forms provided by Chaminade University of Honolulu.

2. Assessment of Student Progress through the Curriculum:

As courses in the Biological Sciences major are designed to be completed in sequence with educational cumulative in nature, a measure of a student's overall comprehension of theories and techniques is reflected in their continued success in the Biological Sciences Core Courses, e.g. BI 203/203L, 204/204L-Cellular & Organismic Biology and BI 351/351L-Comparative Vertebrate Anatomy sequential courses. Due to overlapping

nature of the core courses, like CH 203/203L, 204/204L, 323/323L, and 324/324L, weaknesses exhibited by the student can be detected and possible remedies suggested. As the student completes the majority of the core courses, students can select elective courses allowing them to meet career goals, e.g., BI 362/362L-Microbiology elective for pre-med or graduate school prospective students.

In the past 4 years, a number of students have chosen to complete 2 science degrees. Biology alumni have graduated with a B.A. in biology and also with a B.S. in forensic science. Hence, these graduates have been assessed in both the biology and the forensic science disciplines.

External evaluations for those enrolled in the biology field experience courses, BI 287-Intro to Field Experience and BI 487-Field Experience are an additional means of assessment for students in these courses. Students are required to complete 45 hours at a participating institution or professional organization, such as Kaiser Hospital Emergency Department or Cancer Research Center of Hawaii, for one semester credit. The immediate supervisor of the internship provides a written evaluation of the student's competence and professionalism. In addition, the biology faculty mentor also provides an overall evaluation based on the student's completion of reports, hours completed, supervisor's evaluation, and oral presentation to the university community.

3. Pre-Exit Assessment and Senior Portfolios:

Junior and senior biology students are assessed in several ways. During their junior year or senior year, biology majors are required to enroll in BI 490-Senior Seminar, a course that includes constructing a resume, finding funding sources for graduate and professional studies, preparing a protocol for research, learning to do a literature search, and completing an oral presentation using powerpoint. In the senior year, biology seniors enroll in BI 499-Directed Senior Research , choose and complete a research project with a faculty mentor that culminates in a seminar presentation open to the university, and produce a research paper following accepted format in the biology field. Biology students who have completed summer research at extramural universities or organizations may have BI 499 waived, but must also present a videotaped seminar at our university and submit a paper.

A senior portfolio is another assessment instrument for biology seniors. Each senior is videotaped in an oral presentation, submits the presentation in a CD or disc, and submits a paper. These are retained by the biology discipline.

4. Post-Exit Assessment:

One of the means of measuring success of a program is the employability or successful completion of a postgraduate program by graduates. The biology discipline has maintained records of its graduates through correspondence, surveys and newsletters. The biology discipline maintains a list of postgraduate universities and professional schools attended by biology graduates. In the future, survey forms will be developed to receive feedback from biology majors and graduates to determine strengths and weaknesses of the program. Especially helpful should be suggestions made by biology graduates, those within 1-2 years of graduation, on what aspects of their biology education were particularly helpful to them in their careers. National exam scores, e.g. GRE and MCAT, have also been discussed as possible assessment tools by the biology discipline.

5. Presentations at National Conferences as Assessment:

In the past decade, a large number of biology students and biology faculty mentors have attended national conferences, e.g. SACNAS and ABRCMS, to present the results of their research. Since the abstracts of their research are refereed for acceptance as an attendee and presenter, this is a means to assess both student and program effectiveness.

E.3. Computer Sciences.

The following report describes the process of assessing students' success in the Computer Science (CS) program. These paragraphs are concerned mainly with assessment methods related to individual courses. At this stage the process of measuring the overall effectiveness of the program is yet to be developed, and it is being considered as one of the ongoing projects for the faculty.

Assessment of Students in Individual Courses

In order to collect data from multiple points of view and to acknowledge different modes by which students learn, instructors in the Computer Science classes use a variety of means to assess the progress of students, especially in the lower-level classes. For example, in the CS110 (*Introduction to Web Page Design*) class, elements of grading include daily hands-on exercises, which are relatively short, longer project assignments, an oral presentation, a midterm test, and a final exam. In the CS150 (*Introduction to Programming*) class, grading is based on weekly lab exercises, four tests, a final exam, as well as a series of short quizzes. In the CS420 (*Database Management Systems*) class, grading is based on short, frequent quizzes, ten exercises and projects which are spaced over the semester, a midterm exam, and a final exam.

Introductory courses aim to teach individual skills in each student. But the ability to function with coworkers in common projects is an important skill for computer professionals. Some courses try to include working in teams as part of their requirements. For example, in CS420, students complete some projects with their partners, and each student in the team receives the same grade. A more precise assessment of students' ability to work as a member of a team is yet to be developed.

In several classes, instructors assign additional projects in which students may earn extra credits. This provides opportunities, from the instructor's perspective, to allow the more capable students to explore topics which are not thoroughly covered in the class, and also, from the student's perspective, to earn additional points which can offset unsatisfactory quiz and test scores.

Assessment of Course Effectiveness

In addition to traditional tests administered at regular intervals to measure students' achievement, a set of pre-test and a post-test is administered in a selected number of classes each semester. During the first day of a class, even before the syllabus is distributed, students are asked to take a pre-test, which consists of questions that are considered to cover core contents of the course. The same set of questions is asked of the students in a post-test at the end of the semester, and the results of the two tests are compared. In theory, a significant improvement from the pre-test to the post-test by the
majority of students would indicate the effectiveness of the class. Some instructors incorporate the post-test questions in their final exams. Examples of a pre/post test are included in Section B of the Appendix.

Students are encouraged to send feedbacks to their instructors. But this is more easily said than done. Students are often hesitant in speaking out and are fearful of sounding like they are complaining when they make suggestions. One instructor provides a feedback form on his Web site, in which students can email their comments. Another instructor has tried distributing "midway correction" forms, in which students were given a questionnaire to fill out and return anonymously. This practice seems beneficial, but it has not been conducted consistently, mainly for the perceived lack of time during the semester.

Assessment of Students through Series of Classes

The lower-level courses, namely CS110, CS150, and CS240, are prerequisite for all upper-level courses. It is assumed that students who pass these courses with a C or better grade will be prepared to study most of the upper-level courses. In a technically-oriented curriculum like CS, many upper-level courses are dependent on a successful completion of prerequisite courses by the students. A special effort was made to make some upper-level courses as independent as possible, so that students would have the maximum flexibility in registering for these courses whenever they are offered. However, students are required to pass successfully CS350 (*Data Structures*), before they can register for CS360, CS410, CS460, and CS470.

Thus, an overall average of grades in the CS courses taken by students is assumed to be a good indicator of their successfulness through the curriculum. When a student fails to achieve a C grade in a particular class, one of the faculty who is the academic adviser to the student will follow through to find the source of the problem and make appropriate recommendations.

Capstone Course

At present no specific course is considered as a capstone course for the CS program. Each upper-level course is regarded as a core course which necessary for the education of the CS majors. In the future, as the number of majors grows, it is anticipated that a *Senior Project* course can be designated as a capstone course.

Post-graduation Assessment

The primary emphasis in the CS program is on the education of students who will be able to join the job market after graduation or attend the graduate-level education. So far, there has not been a systematic procedure for tracking students' progress after graduation. As the CS program grows, such tracking will be an important task to be implemented by the Department.

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Thus, an overall average of grades in the CS courses taken by students is assumed to be a good indicator of their successfulness through the curriculum. When a student fails to achieve a C grade in a particular class, one of the faculty who is the academic adviser to the student will follow through to find the source of the problem and make appropriate recommendations.

Capstone Course

At present no specific course is considered as a capstone course for the CIS program. Each upper-level course is regarded as a core course which necessary for the education of the CIS majors. In the future, as the number of majors grows, it is anticipated that a *Senior Project* course can be designated as a capstone course.

Post-graduation Assessment

The primary emphasis in the CIS program is on the education of students who will be able to join the job market after graduation or attend the graduate-level education. So far, there has not been a systematic procedure for tracking students' progress after graduation. As the CIS program grows, such tracking will be an important task to be implemented by the Department.

E.5. Forensic Sciences.

Individual Course Assessment:

Individual progress through a given course is evaluated by at least 2 processes. Students take a pre-test during the first class session and a post-test during the last class session. The same test is administered at both times. Questions are constructed to cover the areas listed in the course syllabus for which the student should be able to demonstrate competence. A typical Pre and Post-test for the FS 335, Forensic Entomology course is appended as Appendix 1. Further evaluations of the student's comprehension of the significant materials are made during the semester through traditional testing, either written or practical. An example of the examination is attached as Appendix 2. Assessments of the student's perception of the efficiency of the instructor are made using the end of semester student evaluations provided by Chaminade University.

Assessment of Student Progress through Curriculum:

As the courses in the Forensic Sciences major are designed to be completed in sequence (Appendix 1)and the materials are cumulative in nature, a measure of the student's overall comprehension of the techniques and theories is reflected in their continued success in the Forensic Sciences Core Courses. Due to the overlapping nature of the core courses, weaknesses exhibited by the student will be detected and can be

remedied during subsequent core courses. Following the completion of the majority of the core courses, students select elective courses allowing for a degree of specialization at the B.S. Degree level.

Pre-exit Assessment:

The ultimate assessment of the success of the Forensic Sciences Program in preparation of a student is their performance following completion of the program. This assessment consists of two parts and will take place during the senior year. The first is in the Internship Program (FS 487) and the second will be a capstone examination administered during the last semester of the senior year.

During the senior year, all students are required to complete an internship program. This internship is to be based in a functioning forensic laboratory in an accredited agency, such as the Department of the Medical Examiner, Honolulu Police Department or Naval Criminal Investigation Section. During the internship the student is to perform actual forensic examinations under the supervision of a professional in a given area of expertise. The supervisor provides a written assessment of the student's competence and professionalism during their internship experience. Additionally, the student is required to submit a journal detailing their activities and an assessment of their internship experience.

The Capstone Examination Questions cover the major concepts of the Forensic Sciences and are used in the DEI. They include technical aspects of FS and ethical issues. Questions are designed to demonstrate competence in the major areas expected for entry level crime laboratory workers or scene investigators. These questions will be tied directly to the materials covered in the required Forensic Sciences Core courses.

Post-exit Assessment:

A significant measure of the effectiveness of the program would be the success of the student in employment following graduation or further postgraduate education. Graduating students will be polled 1 year and 2 years following completion of the program. Their employment and/or post-graduate status will be determined. They will be asked to provide feedback on aspects of the program they believe were helpful to them in their careers as well as aspects they feel require improvement.

Forensic Sciences Capstone Examination

Time Allotted – 3 hours

1. In processing the crime scene, what is your first and most important concern? (Links 1,2) *

2. Name 3 methods used for detecting fingerprints and explain under what circumstances you would use each. (Links 1,4)

3. You receive a piece of evidence from a crime scene for processing. This evidence is not documented but the scene investigator tells you it is from the scene and should be processed. What should your actions be and why? (Link 2)

4. You are running a test that requires a final value of 1.230 mg/l. To be considered significant. Your sample tests at 1.227 mg/l. There is a strong presumption that the suspect has committed the crime and you are convinced he is guilty, but a negative result from this test may result in his being acquitted. What will your report read and why? (Links 2,4,5)

5. When working as a forensic scientist, what are your obligations to your employer? (Links 1,2,3)

6. Discuss the value of photography to a criminal investigation. What are the concerns with the current trend toward digital imaging? (Link 4)

7. Distinguish between Mt DNA and Geonomic DNA. What are the advantages and disadvantages of both? (Link 4)

8. What is meant when we say an individual is a "secretor" and approximately what percentage of he population would be included? Link 4)

9. What is the difference between a "presumptive test" and a "definitive test" for a substance? When we say a test is "documentable" what do we mean? Why would a test involving a color change not be considered a "documentable" test. (Links 2,4,5)

10. List 2 commonly used presumptive tests for blood. (Link 4)

11. During the collection of a fluid or stain, what is the "collection Hierarchy"?

(Link 5)

12. List and discuss three methods of estimating the period of time since death. What are the advantages and disadvantages of each? (Links 1,4,5)

13. Name and briefly describe 2 different methods used to isolate DNA. (Links 1,4)

14. What material is used to cast footwear impressions? (Links 1, 4)

15. Name three (3) materials that can be used to lift a shoe impression that has been enhanced with fingerprint powder on a non-porous tile floor. Which of these will make the most complete lift? (Links 1, 4)

16. How should firearms be marked as evidence? (Link5)

17. What markings on fired bullets are compared microscopically? (Links 1, 4,5)

18. What are the three (3) types of tool marks? (Links 4,5)

19. Can you determined within a reasonable scientific certainty the age and sex of the writer from his or her handwriting? (Link 4)

20. What is the difference between requested handwriting standards and nonrequest standards? (Links 2,4,5)

21. Explain the meaning of the term “class characteristics.” (Links 2,5)

22. How are gunshot wounds of entrance classified? (Links 1,4,5)

23. What features differentiate lacerations form cuts or incised wounds? (Links 1,4,5)

24. What are the three (3) general areas involved in forensic toxicology? (Links 1,4)

25. What is the role of the forensic anthropologist in the medicolegal death investigation? (Links1,4)

26. When a forensic anthropologist generates a biological profile, what is that likely to include? (Links 1,3,4)

27. What is Locard’s Principle?” (Links 1,4,5)

28. There are “standard” photographs that are always at crime scenes. What are they? (Links 3, 4)

29. What is considered the “normal” or standard lens with reference to diameter? (Link 3, 4)

30. At what film speed (ISO) do we usually shoot photographs for forensic use? (Link 3)

31. When examining blood droplets, what information does a “tail” provide us?

(Links 1, 3, 4)

32. A blood drop at 90 degrees is round. If it exhibits “scallops” around the periphery, what does this tell us? (Links 1, 4)

33. Metal, like skin is shed onto objects it is in close contact with. This allows us to see patterns from this residue. What is the name of the text used to visualize these patterns? (Links 3, 4)

34. There are three major fingerprint patterns that are then broken down into many more. What are the three basic patterns? (Links 1, 3, 4)

35. Describe two of the major crime scene “search patterns.” (Links 1, 4)

36. While at the crime scene we wear gloves. What are the TWO major reasons we wear them? (Links 1,2, 4)

37. With regard to a spent (fired) cartridge case, what information can be learned from its examination? There are about 10 major items…name five. (Link 3)

38. What is the preferred method of examination today with regard to gunshot residue (GSR)? (Liks 1, 2, 4)

39. What is meant by the term “substrate sample?” (Link 1, 2)

40. What is the most common method used to recover latent fingerprints? (Links 3, 4)

41. What is an alternate light source (ALS)? (Links 1,4)

42. To remove a specific color from a photograph what color filter to we use? (Links 3, 4)

43. Why is it important to take the exemplar or known tire print with the tire mounted on the car? (Links 1, 2, 3, 4)

44. When photographing bloodstain patterns for possible analysis, what is the main rule for taking the photographs? (Links 1,2, 4)

45. When recovering a bullet (projectile) where do we put our evidence mark? (Links 2, 3, 4)

46. When recovering a firearm, why is it so critical not to place a pencil or any other object in the bore or muzzle of the gun? (Links 2, 3, 4)

47. Why is a hair follicle so important in forensic examination? (Links 1, 4)

48. What examination procedure should be run on all documents as a general rule? (Links 1, 2, 3, 4)

49. What is meant by “depth of field?” (link 3)

50. Why are we so concerned with 1/60th of a second with regard to camera exposure times? (Links 1, 3, 4)

**** Links refer to specific Program Goals for the Forensic Sciences Program***