Los Angeles Community College District

COURSE OUTLINE

Outline Status: Outline Update (ECD 9629); 2009-2010

Section I: BASIC COURSE INFORMATION

1. **COLLEGE: L.A. SOUTHWEST COLLEGE**
2. **SUBJECT: CHEMISTRY**
3. **COURSE NUMBER: 051**
4. **COURSE TITLE: FUNDAMENTALS OF CHEMISTRY I**
5. **UNITS: 5**
6. **CATALOG COURSE DESCRIPTION:**

This introductory course which emphasizes the principles of inorganic chemistry is an introduction to elementary organic and biological chemistry. It is planned primarily for non-science majors.

7. **CLASS SCHEDULE COURSE DESCRIPTION:**

This course is specifically designed to help students prepare for careers in health-related professions, therapy such as nursing and respiratory

8. **INITIAL COLLEGE APPROVAL DATE: 1993**
9. **LAST UPDATE DATE: 12/15/09**
10. **CLASS HOURS:**

	Standard Hrs Per Week (based On 18 weeks)		Total Hs per Term (hrs per week x 18)		Units	
Lecture:	**4**		**72**		**4**	
Lab/Activity (w / homework):	**0**		**0**		**0**	
Lab/Activity (w /o homework):	**3**		**54**		**1**	
Totals:	Lecture:	**4**	Lecture:	**72**	Lecture:	**4**
	Lab:	**3**	Lab:	**54**	Lab:	**1**
	Total:	**7**	Total:	**126**	Total:	**5**
Totals In Protocol:	Lecture:	**4**	Lecture:	**72**		
	Lab:	**3**	Lab:	**54**		
	Total:	**7**	Total:	**126**	Total:	**5**

11. PREREQUISITES, COREQUISITES, ADVISORIES ON RECOMMENDED PREPARATION, and LIMITATION ON ENROLLMENT:

Note: The LACCD's *Policy on Prerequisites, Corequisites and Advisories* requires that the curriculum committee take a separate action verifying that a course's prerequisite, corequisite or advisory is an 'appropriate and rational measure of a student's readiness to enter the course or program' and that the prerequisite, corequisite or advisory meets the level of scrutiny delineated in the policy.

PREREQUISITES: Yes

	Subject	Number	Course Title	Units	Validation Approval Date
	MATHEMATICS	**115**	**Elementary Algebra**	**5**	**12/15/09**

COREQUISITES: No

	Subject	Number	Course Title	Units	Validation Approval Date

ADVISORIES: No

	Subject	Number	Course Title	Units	Validation Approval Date

12. OTHER LIMITATIONS ON ENROLLMENT: (See Title 5, Section 58106 and Board Rule 8603 for policy on allowable limitations. Other appropriate statutory or regulatory requirements may also apply):

None

Section II: COURSE CONTENT AND OBJECTIVES

1. COURSE CONTENT AND OBJECTIVES:

COURSE CONTENT AND SCOPE - **Lecture:** Outline the topics included in the lecture portion of the course *(Outline reflects course description, all topics covered in class).*	Hours per topic	COURSE OBJECTIVES - **Lecture:** Upon successful completion of this course, the student will be able to..*(Use action verbs - see Bloom's Taxonomy for 'action verbs requiring cognitive outcomes.')*
1. Measurements, Matter and Energy, Atoms and Molecules a. Units of measurement, significant figures, density b. Temperature and heat changes c. Classification of matter, periodic table, atomic structure	12	As a result of completing this course, the students will: 1. Perform conversions within the metric or English systems, or between the metric and English system.
2. Chemical Bonding and Nomenclature a. Ionic and covalent compounds b. Naming and writing formulas c. Lewis structure and shape of simple molecules.	8	2. Describe atomic structure, temperature/heat changes, and organization of the periodic table of elements. 3. Explain the concept of chemical bonding.
3. Weight Relationships and Chemical Equations a. Chemical reactions, types of reactions b. Molar mass and the mole concept	8	4. Be able to name inorganic compounds given chemical formulas or vice versa 5. Identify types of chemical reactions, calculate molar mass and use mole concept.
4. Gases a. Properties of Gases b. Gas laws	8	6. Demonstrate an understanding of gas behavior and perform calculations involving pressure (P), volume (V), number of moles (n) and temperature (T) of gases.
5. Solutions a. Electrolytes (strong, weak, and non-) b. Solubility c. Concentrations d. Solutions and biological chemistry	8	7. Perform calculations involving solution concentrations.
6. Acids and Bases a. Theories of acids and bases b. Hydrogen ion function c. Reactions and buffers	8	8. Distinguish between acids and bases, and solve problems related to acid f-base reactions.
7. Nuclear Radiation a. Radioactivity and types of radiation b. Nuclear equations c. Half-life of radioisotopes d. Medical applications e. Nuclear fission and fusion	8	9. Explain basic concepts of radioactivity, atomic fission and atomic fusion. 9. Identify basic classes of organic compounds and have a general understanding of introductory organic chemistry.
8. Organic Chemistry a. Hydrocarbons b. Derivatives of hydrocarbons	12	10. Demonstrate an understanding of the following terms in biological chemistry as they relate to concentrations and solutions: dialysis; osmosis; crenation; hemolysis; isotonic, hypotonic and hypertonic solutions.
Total:	72	
Total Hrs In Protocol:	72	

1. (cont'd) LAB:

COURSE CONTENT AND SCOPE - **Lab:** Outline the topics included in the laboratory portion of the course *(Outline reflects course description, all topics covered in class).*	Hours per topic	COURSE OBJECTIVES - **Lab:** Upon successful completion of this course, the student will be able to..*(Use action verbs - see Bloom's Taxonomy for 'action verbs requiring cognitive outcomes.')*
The experiments done in the laboratory are: 1. Safety, Measurements and Significant Figures. 2. Conversion Factors in Calculation. 3. Density and Specific Gravity. 4. Atomic Structure, Electronic Configuration and Periodic Properties. 5. Compounds and Their Formulas. 6. Energy and Specific Heat, Energy and the States of Matter. 7. Computer computation (CAI). 8. Chemical Reactions and Equations. 9. Reaction Rates and Reaction Equilibrium. 10. Moles and Chemical Formulas 11. Gas Laws 12. Solutions, Electrolytes, and Concentration. 13. Soluble and Insoluble Salts. 14. Solution, Colloids and Suspensions 15. Acids, Bases, pH, and Buffers. 16. Structure of Hydrocarbons and Derivatives	 2 2 4 6 2 4 6 2 4 4 6 4 2 2 2 2	Upon successful completion of this laboratory, the student will be able to 1. exercise safety precautions. 2. perform calculations using formulas with accuracy and precision. 3. describe the meaning of some physical properties. 4. solve problems of the many topics introduced in the lecture. 5. name compounds given the chemical formulas or given the names, write the formulas by IUPAC nomenclature. 6. balance chemical equations by inspection. 7. perform calculations involving moles, atoms, molecules, and grams. 8. describe the behavior of gases. 9. calculate problems involving solution concentrations. 10. name and write the chemical formulas of acids, bases, and salts. 11. use molecular models to better learn structures of hydrocarbons and derivatives. 12. acquire technique to determine the difference between solutions, colloids and suspensions. 13. determine pH of some selective substances. 14. determine the concentration of a solution by titration.
Total:	54	
Total Hrs In Protocol:	54	

1. (cont'd) SLO:

The student will.. **(outcome)**	As measured by the following method.. **(assessment strategy)**	And, if applicable, scored by the following learning rubric. (provide attachment)	Results are examined to determine if the outcome is achieved. Include planned or actual assessment date. **(results & evaluation)**	Recommendations to improve teaching and learning. **(modifications)**
1. demonstrate proficiency in performing conversions within the metric or English systems, or between the English and metric systems. (70% meets expectation) 2. demonstrate proficiency	embedded in midterm exams and the final exam	NA	Fall 2009	

in naming a compound given its chemical formula or vice versa (70% meets expectation) SLO REVIEWED 12/13/09 GY				

2. REQUIRED TEXTS:

Provide a representative list of textbooks and other required reading; include author, title and date of publication:

Chemistry: An Introduction to General, Organic, and Biological Chemistry, 9th ed., Timberlake, Karen C., 2006; Laboratory Manual: An Introduction to General, Timberlake, Karen C. 2006

3. READING ASSIGNMENTS:

Provide a representative list of textbooks and other required reading; include author, title and date of publication:

Additional reading assignment on radioactivity and nomenclature of organic compounds from published papers in scientific journals such as Journal of American Chemical Society, lecture handouts or news magazines.

4. WRITING ASSIGNMENTS:

Writing assignments, as required by Title 5, in this course may include, but are not limited to the following:

Homework Assignments and Lab Reports. Example: Selected problems from each chapter in the lecture textbook and problem set handouts are assigned. The lab reports consist of pre-lab, data, calculations, questions, and problems sections

5. REPRESENTATIVE OUTSIDE ASSIGNMENTS (HOMEWORK):

Out of class assignments (Homework) may include, but are not limited to the following:

Homework Assignments and Lab Reports. (Refer to #4 above) In addition, students write the names of each compound by the IUPAC nomenclature.

6. REPRESENTATIVE ASSIGNMENTS THAT DEMONSTRATE CRITICAL THINKING:

Provide examples of assignments, as required by Title 5, that demonstrate critical thinking.

An example of an assignment demonstrating critical thinking is taken from pre-lab reports: Given a vinegar solution, use titration to determine the molar concentration of acetic acid in this solution.

7. METHODS OF EVALUATION:

Title 5, section 55002 requires grades to be 'based on demonstrated proficiency in subject matter and the ability to demonstrate that proficiency, at least in part, by means of essays, or, in courses where the curriculum committee deems them to be appropriate, by problem solving exercises or skills demonstrations by students.' Methods of evaluation may

include, but are not limited to the following (please note that evaluation should measure the outcomes detailed 'Course Objectives' at the beginning of Section II):

Quizzes, Pre-final Examinations, Laboratory (Experiments, Reports, Practical demonstrations), Homework Assignment, Computer Usage, and Final Examination.

8. METHODS OF INSTRUCTION:

Please Check All That Apply

- [x] **Lecture**
- [x] **Discussion**
- [x] **Laboratory**
- [ ] **Activity**
- [ ] **Field Experience**
- [ ] **Independent Study**
- [ ] **Other (Please Explain)**

9. SUPPLIES:

List the supplies the student must provide.

Personal safety goggles and a personal scientific calculator.

10. COMPUTER COMPENTENCY:

If applicable, explain how computer competency is included in the course.

The students are taken to the computer Lab to do chemistry quizzes.

11. INFORMATION COMPENTENCY:

If applicable, explain how information competency is included in the course.

Students locate and evaluate material applicable to solving problems in chemistry.

12. DIVERSITY:

If applicable, explain how diversity (e.g., cultural, gender, etc.) is included in the course.

Students from all backgrounds are encouraged to enroll in this class.

13. SCANS COMPETENCIES:

(required for all courses with vocational TOP Codes; recommended for all courses)

SCANS (Secretary's Commission on Necessary Skills) are skills the Department of Labor identified, in consultation with business and industry leaders, which reflect the skills necessary for success in the workplace. Check the appropriate boxes to indicate the areas where students will develop the following skills (please note that all SCANS competencies do not apply to all courses):

RESOURCES

☑ **Managing Time:** Selecting relevant goal-related activities, ranking them in order of importance, allocating time to activities, and understanding, preparing and following schedules.

☐ **Managing Money:** Using or preparing budgets, including making cost and revenue forecasts; keeping detailed records to track budget performance, and making appropriate adjustments.

☑ **Managing Material and Facility Resources:** Acquiring, storing, allocating, and distributing materials, supplies, parts, equipment, space or final products in order to make the best use of them.

INTERPERSONAL

☐ **Participating as Member of a Team:** Working cooperatively with others and contributing to group's efforts with ideas, suggestions and effort.

☑ **Teaching Others New Skills:** Helping others learn needed knowledge and skills.

☑ **Exercising Leadership:** Communicating thoughts, feelings, and ideas to justify a position, encouraging, persuading, convincing or otherwise motivating an individual or group, including responsibly challenging existing procedures, policies or authority.

☑ **Negotiating:** Working toward agreement that may involve exchanging specific resources or resolving divergent interests.

☑ **Working with Cultural Diversity:** Working well with men and women and with people from a variety of ethnic, social, or educational backgrounds.

INFORMATION

☑ **Acquiring and Evaluating Information:** Identifying a need for data, obtaining the data from existing sources or creating them, and evaluating their relevance and accuracy.

☑ **Organizing and Maintaining Information:** Organizing, processing and maintaining written or computerized records and other forms of information in a systematic fashion.

☑ **Interpreting and Communicating Information:** Selecting and analyzing information and communicating the results of others, using oral, written, graphic, pictorial, or multimedia methods.

☑ **Using Computers to Process Information:** Employing computers to acquire, organize, analyze and communicate information.

SYSTEMS

☐ **Understanding Systems:** Knowing how social, organizational and technological systems work and operating effectively with them.

☑ **Monitoring and Correcting Performance:** Distinguishing trends, predicting impacts of actions on system operations, diagnosing deviations in the functioning of a system/organization, and taking necessary steps to correct performance.

☐ **Improving or Designs Systems:** Making suggestions to modify existing systems in order to improve the quality of products or services and developing new or alternative systems.

TECHNOLOGY

☑ **Selecting Technology:** Judging which sets of procedures, tools or machines, including computers and their programs, will produce the desired results.

☑ **Applying Technology to Tasks:** Understanding overall intent and proper procedures for setting up and operating machines, including computers and their reprogramming systems.

☐ **Maintaining and Troubleshooting Equipment:** Preventing, identifying, or solving problems with equipment, including computers and other technologies.

Section III: RELATIONSHIP TO COLLEGE PROGRAMS

1. THIS COURSE WILL BE AN APPROVED REQUIREMENT FOR AN APPROVED ASSOCIATE DEGREE OR CERTIFICATE PROGRAM: Yes

a. If yes, the course will be a requirement portion of the 'approved program' listed on the State Chancellor's Inventory of Approved Programs (approved programs can be found on the State Chancellor's Office website at https://misweb.cccco.edu/webproginv/prod/invmenu.htm)

Liberal Arts: Natural Sciences AA - Program: 490104 State ID: 19064

2. GENERAL EDUCATION REQUIREMENTS FOR THE ASSOCIATE DEGREE STATUS:

a. Area Requested: A. Natural Science

Approval Date:

If applicable, provide an explanation of how the course meets the General Education parameters for one of the five general education areas - Natural Sciences, Social and Behavioral Sciences, Humanities, Language and Rationality, Health and Physical Education -- contained in Board Rule 6201.14 -General Education Requirements. http://marlin.laccd.edu/district/BoardRules_AdmRegs/boardrules.htm

b. Area Requested: None

Approval Date:

If applicable, provide an explanation of how the course meets the General Education parameters for one of the five general education areas - Natural Sciences, Social and Behavioral Sciences, Humanities, Language and Rationality, Health and Physical Education -- contained in Board Rule 6201.14 -General Education Requirements. http://marlin.laccd.edu/district/BoardRules_AdmRegs/boardrules.htm

Section IV: ARTICULATION INFORMATION

(Complete in consultation with College Articulation Officer)

1. TRANSFER STATUS:

a. **Transferable to the University of California: Yes**	c. **Transferable to the California State University: Yes**
b. **UC Approval Date:**	d. **College Approval Date: 1993**

2. GENERAL EDUCATION FOR TRANSFER:

IGETC Certification	*CSU Certification*
a. **Area Requested: 5A : Physical Science** b. **Date Requested: 12/1/94** c. **IGETC Approval Date:** If applicable, provide an explanation of how the course meets the appropriate General Education parameters, as defined in IGETC Certification Guidelines.	a. **Area Requested: B1 : Physical Science** b. **Date Requested: 1/1/94** c. **CSU Approval Date:** If applicable, provide an explanation of how the course meets the appropriate General Education parameters, as defined in CSU Certification Guidelines.
a. **2nd Area Requested:** b. **Date Requested:** c. **IGETC Approval Date:** If applicable, provide an explanation of how the course meets the appropriate General Education parameters, as defined in IGETC Certification Guidelines.	a. **2nd Area Requested: B3 : Laboratory Activity** b. **Date Requested: 12/1/94** c. **CSU Approval Date:** If applicable, provide an explanation of how the course meets the appropriate General Education parameters, as defined in CSU Certification Guidelines.

3. MAJOR REQUIREMENT FOR TRANSFER:

Will this course be articulated to meet lower division major requirements?: No

List college/university and the majors:

CAN NUMBER: **CAN SEQUENCE #:**

CAN Approval -

Date requested: Date approved:

Section V: SUPPLEMENTAL COURSE INFORMATION

1. DEPT/DIVISION NAME: Natural Sciences, Health and Physical Ed

2. DEPT/DIVISION CODE: 07

3. SUBJECT CODE: 183

4. SUBJECT ABBREVIATION: CHEM

5. RECOMMENDED MINIMUM QUALIFICATION AREA:

6. ABBREVIATION FOR TRANSCRIPTS: FUND CHEM I

7. DEGREE CREDIT:

Indicate whether the course meet the 'standards for approval' for degree credit course set forth in Title 5, section 55002(a)(2), which requires the course to have a degree of intensity, difficulty, and vocabulary that the curriculum committee has determined to be at the college level: **Degree Applicable**

8. GRADING METHOD: LETTER GRADE

9. REPETITIONS: # of times repeated for credit: **0**

If this course is repeatable, explain how repetition of this course meets Title 5, section 55041(c)(2)(B):

10. PRIOR TO TRANSFERABLE LEVEL:

This course attribute applies to ***English, Writing, ESL, reading and mathematics*** courses ONLY. If applicable, indicate how many levels below the transferable level this course should be placed: **Not applicable**

11. CREDIT BASIC SKILLS:

Title 5, section 55000(j) defines basic skills as 'courses in reading, writing, computation, and English as a Second Language, which are designated as non-degree credit courses pursuant to Title 5, section 55002(b).': **No**

12. CROSS REFERENCE:

Is this course listed as equivalent in content to existing College/District courses in another discipline?: **No**

If Yes, list courses (documentation of cross-discipline agreement must be provided):

13. COURSE SPECIFICALLY DESIGNED FOR STUDENTS W/ DISABILITIES:

Title 5, section 56029 allows a course to be repeatable when continuing success of the students with disabilities is dependent on additional repetitions of a specific class. Is this course designated as an 'approved special class' for students with disabilities?: **No**

If yes, provide an explanation of how this course meets the requirements of Title 5, section 56029:

14. COOPERATIVE EDUCATION STATUS:

Title 5, section 55252 allows for two types of Cooperative Education: 1) General Work Experience Education -- i.e., supervised employment, which is intended to assist students in acquiring desirable work habits, attitudes and career awareness, which need not be related to the students' educational goals; or 2) Occupational Work Experience Education -- i.e., supervised employment, extending classroom based occupational learning at an on-the-job learning station, which is related to the students' educational or occupational goal. Is this course part of the college's approved cooperative work experience education program?: **No**

15. COURSE CLASSIFICATION: Liberal Arts and Sciences

Note: A courses Classification, TOP Code and SAM code must be aligned e.g., Courses with an 'Occupational' Course Classification must have an 'Occupational' TOP Code and a SAM Code of A, B, C, or D; courses that do not have an 'Occupational' Course Classification cannot have an Occupational TOP Code and must have an 'E' SAM Code. Courses coded as 'basic skills' in #11 should be coded 'Adult and Secondary Basic Skills.'

16. TOP CODE - (6 digits XXXX.XX)**: 1905.00**

Course content should match discipline description in Taxonomy of Programs found at http://ecd.laccd.edu/TaxonomyOfPrograms.doccurriculum.htm

17. SAM CODE (**S**tudent **A**ccountability **M**odel)**: E**

18. FUNDING AGENCY CODE:

19. STATE COURSE ID:

Section VI: APPROVAL STATUS

1. APPROVAL STATUS:

		Approval Date Of	Board Date	Requested Effective Semester	Approved Effective Semester
a.	☐ **New Course**	**College:**	Board: 4/9/93	Effective Semester:	Effective Semester:
b.	☐ **Addition of Existing District Course**	**College:**	Board:	Effective Semester:	Effective Semester:
c.	☐ **Course Change***	**College:**		Effective Semester:	Effective Semester:
d.	☑ **Outline Update**	**College: 12/15/09**			Effective Semester:
e.	☐ **New Course**	**College:**		Effective Semester:	Effective Semester:
f.	☐ **New Course**	**College:**	Board:	Effective Semester:	Effective Semester:

* Changes to a course require the completion of a 'Course Change Request' form and approval by the college's Curriculum Committee.
In some cases districtwide approval is also required; see, Administrative Regulation E-65, section 3(c) for details.

Section VII: APPROVAL INFORMATION FOR NEW OR ADDED COURSES

(complete in consultation with Department Chair and the appropriate Academic Administrator)

1. ORIGINATOR: Toure, Pogban

2. DEPARTMENT: 07

3. IF THIS IS A NEW COURSE, INDICATE HOW THE COLLEGE PLANS TO MEET THE EXPENSE OF THIS COURSE:

☐ By additional funds. Describe:

☐ By deleting courses from the college catalog and course database. List specific courses to be deleted:

☐ By deleting sections of existing course. List courses and number of sections to be deleted:

FIRST YEAR: SECOND YEAR: THIRD YEAR:

☐ By rotating sections of existing courses. List courses and number of sections to be rotated, as well as the semesters in which they will be offered:

4. IMPACT

IMPACT -- Will this course directly impact other course offerings and/or associate degree or certificate programs on campus? No (If yes, briefly explain how)

5. METHOD OF SUPPORT

-- Indicate how the college plans to support the proposed course:

A. Additional staff -- List additional staff needed:

B. Classroom -- List classroom type needed:

C. Equipment -- List new equipment needed and indicate funding source for any new equipment:

D. Supplies- List supplies and indicate dollar value:

E. Library/Learning Resources- The course initiator shall consult with the College Librarian and review the college library, book, periodical, and electronic resource collections relevant to this course. List additional titles and resources to be considered for purchase as funding permits:

CERTIFICATION AND RECOMMENDATION

☑ This course meets Title 5 requirements for Associate Degree applicable college credit towards an Associate Degree.

☐ This course meets Title 5 requirements but does not satisfy the requirements for an Associate Degree applicable course.

We certify that the information and answers above properly represent this course.

Originator	Date
Department/Cluster Chairperson	Date
Articulation Officer	Date
Librarian	Date
Dean (if applicable)	Date
Curriculum Committee Chairperson	Date
Academic Senate President	Date
Vice President, Academic Affairs	Date

Section VIII: ADDENDA

(Uploaded Documents)

CONTENT REVIEW FOR PREREQUISITE VALIDATION

Target Course & Number, Title: Chemistry 51
(Course to which pre/corequisite/advisory applies)

Check Applicable Box

☒ Prerequisite: **Math 115-Elementary Algebra**

☐ Corequisite:

☐ Advisory:

A. **Target Course Entry Skills: Chemistry 51, Fundamentals of Chemistrty I**
(For prerequisites/corequisites, list specific skills and/or knowledge necessary for students to succeed in the target class. For advisories, list skills/knowledge which will enrich or deepen the student's knowledge obtained from the course but without which the student may still succeed in the course. Attach additional sheet if necessary. NUMBER EACH SKILL.)

Upon entering Chemistry 51, students should be able to:

1. Solve equations with one unknown

B. **Exit Skills Provided By Prerequisite/Corequisite/Advisory Course or Assessment: Course & Number, Title**
(List specific skills and/or knowledge that are the outcome of the prerequisite/corequisite/advisory course or assessment. For courses already in the curriculum, these should be present in the course objectives in the course outline. Attach additional sheet if necessary. NUMBER EACH SKILL.)

1. Evaluate various mathematical relations including signed numbers and numbers
2. Solve polynomials, adding, subtracting, multiplying, dividing and factoring.
3. Set up and solve word problems
4. Operate with exponential properties
5. Simplify radical expressions and solve radical equations
6. Produce linear graphs, inequality graphs and double linear equation graphs.
7. Solution of linear and quadratic equations, quadratics by factoring, completing the square, and by quadratic formula.

CONTENT REVIEW SKILLS MATRIX FOR PREREQUISITE VALIDATION

CHEMISTRY 51
(Fundamental of Chemistry I)

Math 115
(Elementary Algebra)
Exit Skills of Prerequisite Course

	1	2	3	4	5	6	7	8	9
1	x								
2									
3	x								
4	x								
5									
6	x								
7									
8									
9									

Comments:
(Include justification for assessments, health and safety, or non-course prerequisites)

Validation requires at least one match of each exit skill with each entry skill.
Was validation achieved? __X__ Yes. ____ No.

PARTICIPANTS IN CONTENT REVIEW:
(Signatories should include instructors for both exit and entering skills courses.)

Name: _____ Title: _____ Initial: _____ Date: _____

Name: _____ Title: _____ Initial: _____ Date: _____

Name: _____ Title: _____ Initial: _____ Date: _____

CERTIFIED BY:

_____
Initiator Date

_____
Department Chairperson Date

_____
Curriculum Chairperson Date