

Curriculum Layout for Degree Audit

School: Agricultural and Natural Sciences

Catalog Year: 2009-2011

Major: CHEMISTRY

Concentration/Track/Option: Teaching

Grades of “C” or above must be attained in each required course of the Chemistry Education major, the specialized content area combined with the professional educational courses. A candidate’s progress is monitored each semester by the academic advisor to ensure that the candidate continues to meet the minimum GPA of 2.75 in both the core courses and overall program. Chemistry Education Program Requirements are divided into the following categories: General Education Requirements, Program Core Requirements, Supportive Courses Requirements, Core Program Electives and Professional Education Requirements. Students are required to complete a total of 131 credit hours in these categories for graduation. A research manuscript or undergraduate thesis is required following completion of Undergraduate Research. The Research project has to be approved by a committee consisting of advisor who will serve as the thesis or project supervisor and another faculty member from the Department of Natural Sciences.

General Education Requirements: A grade of “C” or better is required in GER courses. Chemistry Education Program students are required to complete a total of 42 credit hours for graduation in this category. These credit hours are divided into six areas as noted below.

Area I: Arts & Humanities

9 Credits

(Students must select one course in each of two *different* disciplines; all students must take ENGL 203)

Discipline A: ARTS ARTS 101, ARTS 310, MUSI 100, MUSI 101, MUSI 109

Discipline B: HISTORY HIST 101/101H, HIST 102/102H, HIST 201, HIST 202, PHIL 201

Discipline C: LANGUAGE FREN 101, FREN 102, SPAN 101, SPAN 102, ASLS 203

Discipline D: LITERATURE ENGL 204, ENGL 205, ENGL 206, ENGL 207

Area II: Social and Behavioral Sciences

6 Credits

(Students must have one course in social sciences *and* one course in behavioral sciences)

Discipline A: SOCIAL SCIENCES

AGEC 213 *or* AGECE 213H, ECON 201 *or* ECON 201H, ECON 202 *or* ECON 202H, GEOG 201 *or* 202, HIST 101/HIST 101H, HIST 102/HIST 102H, HIST 201, HIST 202, PHIL 201, POLI 200 *or* POLI 200H, POLI 220H or POLI 342, SOCI 101 *or* SOCI 111H

Discipline B: BEHAVIORAL SCIENCES

CRJS 101, HUEC 203, HUEC 220, HUEC 361, PSYC 200, SOCI 201

Area III: Biological and Physical Sciences

8 Credits

Course & No. Title

PHYS 121 General College Physics I 3

PHYS 123 General College Physics I Lab 1

PHYS 122 General College Physics II 3

PHYS 124 General College Physics II Lab 1

Area IV: Mathematics

6 Credits

(List specific math course(s) required for major)

Course & No. Title

MATH 110 Trigonometry & Analytical Geometry *or* HIGHER 3

MATH 210 Elementary Statistics 3

Area V: English Composition **9 Credits**

ENGL 101	Basic Composition I or	
ENGL 101H	Honors Basic Composition I	3
ENGL 102	Basic Composition II or	
ENGL 102H	Honors Basic Composition II	3
ENGL 305/W	Technical Writing or	
ENGL 310/W	Advanced Composition	3

Area VI: Emerging Issues **4 Credits**

DNSC 100	Freshman Seminar	1
EXSC 111	Personalized Health Fitness	3

Chemistry Core Requirements **29 Credits**

Following are the Chemistry Core Requirements. Candidates in Chemistry Education are required to earn at least a grade of C or above in each of these courses, and maintain a minimum GPA of **2.75** in the core courses.

CHEM 111	Principles of Chemistry I	3
CHEM 112	Principles of Chemistry II	3
CHEM 113	Principles of Chemistry I Laboratory	1
CHEM 114	Principles of Chemistry II	1
CHEM 211	Fundamentals of Organic Chemistry I	3
CHEM 212	Fundamentals of Organic Chemistry II	3
CHEM 213	Fundamentals of Organic Chemistry I Laboratory	1
CHEM 214	Fundamentals of Organic Chemistry II Laboratory	1
CHEM 311	Analytical Chemistry I	4
CHEM 401	Principles of Physical Chemistry	4
CHEM 497	Chemistry Seminar	1
CHEM 499	Undergraduate Research*	4

*** Undergraduate Research with advisor can be taken either during junior or senior years, and has to be completed in two semesters**

Supportive Course Requirements **15 Credits**

The supportive courses that Chemistry Education candidates are required to complete for graduation are listed below. Candidates are required to earn at least a grade of C or better in each of these courses, and maintain a minimum GPA of **2.75** in the supporting courses.

BIOL 111	Principles of Biology I	3
BIOL 113	Principles of Biology I Laboratory	1
CSDP 121	Microcomputer Applications* or	
BUED 212	Computer Concepts / Applications*	3
MATH112	Calculus I	4
MATH 211	Calculus II	4

***CSDP 220 may be substituted for CSDP 121 or BUED 212.**

Core Program Electives **3 Credits**

The Department of Natural Sciences offers many electives. Candidates of Chemistry Education are required to take the following core elective as this meets the National Science Teachers Association (NSTA) and National Science Education Standards (NSES) content standards. Candidates are required to earn no less than a C in this course.

Professional Education Requirements**42** credits

Chemistry Education candidates are required to complete 42 credit hours under the Professional Education Requirements. Candidates are required to earn no less than a C in any course, and maintain a minimum GPA of **2.75** in these courses. EDCI 201-Praxis Preparation (1 cr. hour) does not count toward graduation.

EDCI 200	Introduction to Contemporary Education	3
EDCI 201	Praxis Preparation	1
PSYC 305	Developmental Psychology/online	3
PSYC 307	Educational Psychology	3
EDCI 311	Comprehensive Assessment in Education	3
EDCI 409	Teaching Reading in the Content Areas I	3
EDCI 410	Teaching Reading in the Content Areas II	3
EDCI 406	Classroom Management	3
EDCI 425A	Curriculum and Instructional Methods in Natural Sciences	3
EDSP 400	Senior Seminar in Education	3*
EDSP 428	Communication and Collaboration in Special Education	3
EDCI 480	Teaching Internship I: Teaching Chemistry in high school	6*
EDCI 490	Teaching Internship II: Teaching Chemistry in high school	6*

*EDCI 400, EDCI 480 and EDCI 490 are to be taken concurrently during the last semester of the senior year.

Total Credits Required for Graduation**131****Field and Clinical Experiences**

Clinical Experiences are those experiences which are based on a very specific purpose. They may consist of interviewing a student, teacher, or administrator, observing a meeting or a conference; visiting a school or community resource center; developing a case study; peer teaching; administering a test; or attending a meeting or a conference. Clinical Experiences generally require a limited amount of time in a school or with a student (10 hours). Teacher Candidates are asked to submit a report or a reflective journal that documents the completion of the assignment. **Field Experiences** always occur in a school setting and consist of 10 to 25 hours of visitation per course. The times vary based on the course requirement. Field Experiences usually require a student to keep a reflective journal which is submitted as part of the final grade. Listed below are the clinical and field experiences required for all professional courses in Chemistry Education

Course Number	Titles	Type of Experience/Hours
EDCI 200	Introduction to Contemporary Education	Field/10 hours
PSYC 305	Developmental Psychology	Clinical/10 hours
PSYC 307	Educational Psychology	Clinical/10 hours
EDCI 311	Comprehensive Assessment	Field/10 hours
EDCI 406	Classroom Management	Field/15 hours
EDCI 409	Teaching Reading in the Content Areas I	Field/15 hours
EDCI 410	Teaching Reading in the Content Areas II	Field/15 hours
EDCI 425A	Curriculum and Instructional Methods in Natural Sciences	Field/25 hours
EDSP 428	Communication and Collaboration in Special Education	Field/10 hours
	Total	110 hours (Field Experience-90 hours; Clinical Experience-20 hours)

Internships

EDCI 480/490 Internship -2 consecutive 7-8 week (5 days/week) placement at 2 different sites (Refer to the course description)

In EDCI 480/490 (Internship), the teacher candidates in Chemistry have a full semester of student teaching-a middle school experience and a high school experience. Candidates are under the direct supervision of a Science Cooperating Teacher in and also supervised by the University Supervisor who also serves as the Teacher Educator (Instructor of Methods and Internship) of Chemistry Education. University supervisor is required to observe and conference with the candidate and cooperating teacher a minimum of eight times, four times per student teaching placement, with an additional introductory meeting for each placement. Candidates begin by taking one or two classes from their cooperating teacher's schedule of teaching, and gradually picking up more until they have the experience of teaching a full load. The candidates are expected to demonstrate effective teaching skills such as facilitating collaborative group learning, motivating, and encouraging student learning activities, and assessing students' responses. They are to design a bulletin board display, prepare appropriate instructional materials, observe teaching, interview school personnel, participate in parent meetings, evaluate student work using multiple assessments, and become involved in the life of the school and the full role of a teacher. Documentation of performance based outcomes, as well as summative evaluative reports are prepared by cooperating teachers, based on their day-to-day experiences with the candidate, and by the university supervisor based on the observational visits and discussions with the candidates and cooperating teachers.

Chemistry Education Recommended Course Sequence

Freshman Year

Fall Semester			Spring Semester		
BIOL 111	Principles of Biology I	3	CHEM 112	Principles of Chemistry II	3
BIOL 113	Principles of Biology I Lab	1	CHEM 114	Principles of Chemistry II Lab	1
CHEM 111	Principles of Chemistry I	3	EXSC 111	Personal Health and fitness	3
CHEM 113	Principles of Chemistry I Lab	1	ENGL 102	Basic Composition II	3
ENGL 101	Basic Composition I	3	ENGL 001	English Proficiency	0
MATH 110	Trig & Anal Geometry	3	MATH 210	Elementary Statistics	3
DNSC 100	Freshman Seminar	1	MATH 112	Calculus I	4
TOTAL CREDITS			15	TOTAL CREDITS	17

Sophomore Year

Fall Semester			Spring Semester		
CSDP 121 ¹ or BUED 212	Microcomputer Applications* <u>or</u> Computer Concepts/Applications*	3	CHEM 212	Organic Chemistry II	3
MATH 211	Calculus II	4	CHEM 214	Organic Chemistry II Lab	1
CHEM 211	Organic Chemistry I	3	PSYC 305	Developmental Psychology	3
CHEM 213	Organic Chemistry I Lab	1	ENGL 305/W or ENGL 310/W	Technical Writing <u>or</u> Adv Composition	3
ENGL 203	Fund of Contemp Speech	3	ENVS 460	Earth Science or Equivalent	3
EDCI 200	Introduction to Contemporary Ed	3	Curri. Area I	Gen Ed. Elective	3
EDCI 201 ²	Praxis Preparation	1 [^]			
TOTAL CREDITS			17	TOTAL CREDITS	16

Junior Year

Fall Semester			Spring Semester		
CHEM 311	Analytical Chemistry	4	PHYS 182H	Intr. Physics II	3
CHEM 497	Seminar	1	PHYS 184H	Intro. Physics II Lab	1
PHYS 181H	Intro. Physics I	3	Curri. Area II	Gen. Ed. Elective	3
PHYS 183H	Intro. Physics Lab	1	EDCI 406	Classroom Management	3
Curri. Area II	Gen. Ed. Elective	3	CHEM 499 ³	Undergraduate Research	4
PSYC 307	Educational Psychology	3	EDCI 409	Teach. Read. in Cont. Areas I	3
EDCI 311	Comprehensive Assessment	3			
	TOTAL CREDITS	18		TOTAL CREDITS	17

Senior Year

Fall Semester			Spring Semester		
CHEM 401	Principles of Phys. Chemistry Seminar	4	EDCI 400	Senior Seminar	3
EDCI 410	Teach. Read. in Content Area II	3	EDCI 480	Internship (Middle School)	6
EDCI 425A	Curriculum and Instructional Methods in Natural Sciences	3	EDCI 490	Internship (High School)	6
Curri Area I	Gen. Ed. Elective	3			
EDSP 428	Communication and Collaboration in Special Education.	3			
	TOTAL CREDITS	16		TOTAL CREDITS	15

Total Credits Required for Graduation- 131⁴

Note: Undergraduate Research with advisor can be taken either during junior or senior years, and has to be completed in two semesters. CSDP 220 may be substituted for CSDP 121 or BUED 212

²Credit does not count toward graduation.

³Students may take CHEM 499 for 1 to 4cr hrs. a semester, but they must repeat the course to accumulate as many credits as required in the core program.

⁴ The higher than 120 credit hour requirement is to meet the standards of NCATE (National Council for Accreditation of Teacher Education) and NSTA (National Science Teachers Association).

Course Descriptions

BIOL 111 Principles of Biology I 3 cr.

This course is an introduction to the basic concepts of biology, with emphasis on molecular, cellular and genetic concepts related to living organisms. Basic concepts are considered, and major topics deal with (1) organization of cells and the molecular basis of life, (2) energetics and metabolism, (3) cell growth and reproduction, and (4) genetics. This course is for Natural Sciences majors and others in the related sciences. Co-requisite: BIOL 113. This course is comprised of three hours per week and one-hour discussion for the Honors section only.

BIOL 113 Principles of Biology I Lab 1 cr.

This laboratory course is designed to accompany BIOL 111 and to reinforce the basic biological concepts of cellular biology, molecular biology, and Mendelian and molecular genetics discussed in the corresponding lecture. Supervised laboratory sessions enhance the student's skills in experimental manipulation, data collection, data interpretation and analysis, and data presentation in an effort to stimulate logical thinking and scientific reasoning. Co-requisites: BIOL 111 (grade of C or better).

CHEM 111 Principles of Chemistry I 3 crs.

This course deals with the basic concepts in chemistry (the study of the changes in matter and energy). The student learns logical problem-solving skills, including strategies to attack complicated problems by using a step-by-step procedure. The concepts studied in this course include density, basic atomic and molecular theory, chemical nomenclature, reaction stoichiometry, and the gas laws. The course is intended for science majors. Prerequisite:

High School Chemistry or CHEM 101. Pre or Co-requisite MATH 109. Pre or Co-requisite: CHEM 113 or consent of instructor.

CHEM 113 Principles of Chemistry Lab I 1 cr.

This course is the laboratory companion to CHEM 111. It is designed to deepen the students' understanding of topics discussed in the lecture, increase their skill with common laboratory equipment, and indoctrinate them in proper chemical safety practices. The students will learn to perform a valid experiment in a safe manner, to observe and record any data acquired, and interpret the data using various equations and graphs. Laboratory skills such as filtration, titration, and the accurate measurement of masses and volumes will be developed. The lab period will be a three-hour session. Prerequisite or Co-requisite CHEM 111 or consent of instructor.

CHEM 112 Principles of Chemistry II 3 crs.

This course explores more advanced topics in chemistry, building on the concepts covered in CHEM 111. The concepts studied in this course will include VSPER theory, intermolecular forces, properties of liquids and solids, chemical kinetics, chemical equilibrium, acid/base chemistry and electrochemistry. The course is intended for science majors. Prerequisite: CHEM 111/113. Pre or Co-requisite: CHEM 114 or consent of instructor.

CHEM 114 Principles of Chemistry Lab II 1 cr.

This course is the laboratory companion to CHEM 112. It is designed to deepen the students' understanding of topics discussed in the lecture, increase their skill with common laboratory equipment, and indoctrinate them in proper chemical safety practices. The students will learn to perform a valid experiment in a safe manner, to observe and record any data acquired, and interpret the data using various equations and graphs. Laboratory skills such as spectroscopic measurement, pH measurement, and qualitative analysis will be developed. The lab period will be a three-hour session. Pre or Corequisite CHEM 112 or consent of instructor.

CHEM 211 Fundamentals of Organic Chemistry I 3 crs.

Topics presented in this course include molecular structure, isomerism, and stereochemistry. The chemistry of alkanes, alcohols, ethers, alkenes, and aromatic hydrocarbons will also be discussed. Interpretation of spectra of major functional classes will be explained. Three hours of lecture, a one-hour discussion, and one three-hour lab (see below) must be taken concurrently. Prerequisite: The successful completion of CHEM 111 and CHEM 112. Pre or Co-requisite: CHEM 213 or consent of instructor.

CHEM 213 Fundamentals of Organic Chemistry I Lab 1 cr.

This is the laboratory part of CHEM 211. This course covers the practical application of theory presented in the lecture. Laboratory record keeping, neatness, laboratory notebooks, manipulation of common laboratory glassware, and safe practice and handling of chemicals will be stressed. Analysis of preparations by UV-Vis, FTIR, NMR etc., will be done. Careful recording of laboratory data and its interpretation will be covered. The lab period will be a three-hour session. Pre or Co-requisite CHEM 211 or consent of instructor.

CHEM 212 Fundamentals of Organic Chemistry II 3 crs.

This course is a continuation of CHEM 211. Preparation and functional group reactions of carboxylic acids and their derivatives, aldehydes, carbanions, amines, polycyclic and heterocyclic aromatics, and macromolecules will be presented. Three hours of lecture, a one-hour discussion, and a three-hour laboratory (see below) must be taken concurrently. Prerequisite: successful completion of CHEM 211. Pre or Co-requisite: CHEM 214 or consent of instructor.

CHEM 214 Fundamentals of Organic Chemistry Lab II 1 cr.

This course is the laboratory part of CHEM 212. The course is designed to refine the skills of safe practice and effective handling of chemicals and common laboratory equipment presented in CHEM 213. Spectroscopic analysis, laboratory data keeping and interpretation skills acquired in the previous laboratory course will be extended. The lab period will be a three-hour session. Prerequisites: CHEM 211, 213. Co-requisite: CHEM 212 or consent of instructor.

CHEM 311 Analytical Chemistry I 4crs.

This is a general course in quantitative analysis, including gravimetric, volumetric and instrumental analysis. The emphasis is placed on the understanding of the reaction stoichiometry involved for the various methods. Statistical analysis using spreadsheet programs is also introduced. The course consists of three hours of lecture and one three-hour laboratory period per week. Prerequisites: CHEM 112/112H and CHEM 212/212H or consent of instructor.

CHEM 401 Principles of Physical Chemistry 4 crs.

This course covers the laws of thermodynamics with emphasis on their application to chemical systems. Topics covered include: thermochemistry, equation of state, physical and chemical equilibrium and electrochemistry. The course consists of three hours of lecture and one three-hour laboratory period per week. Prerequisites: CHEM 112/112H. Co-requisites: PHYS 161/181H, PHYS262/182H, MATH 211 or consent of instructor.

CHEM 497 Chemistry Seminar 1cr.

This course focuses on current issues in the chemical field. Student participation is required. Both oral and written presentations will be required. Prerequisite: CHEM 112/112H or consent of instructor.

CHEM 499 Undergraduate Research 4crs.

The hours for this course are by arrangement with the individual instructor. The student will be exposed to research methodology and have an opportunity to work closely with a faculty research advisor. It usually requires the use of advanced concepts, a variety of experimental techniques, and state-of-the-art instrumentation. This course is open to undergraduate students with an interest in pursuing a special problem as an independent research project. A written final report is required and an oral presentation is encouraged. Students should finish a contract with the instructor during the first week of the class. The students must follow American Chemical Society guidelines for preparing the final research report. Pre- or Co-requisite: CHEM 498 or consent of instructor.

ENVS 288 Introduction to Geology 3 crs.

This is a sophomore level course intended for Agriculture, Biology, Chemistry, Marine and Environmental Sciences majors. This course will encompass general aspects of the origin of the earth, mineralogy, igneous, sedimentary and metamorphic rocks and processes, weathering, folds, faults, and mountains. The history of life and geological time scale will be discussed. Topics related to earthquakes, plate tectonics, streams and floods, glaciers and ice ages, deserts and coastal processes will be covered. Special emphasis will be given to Geology of south eastern United States. **Prerequisites:** Chem 111, Math 101-102.

ENVS 460 Earth Science 3 crs.

This course is an interdisciplinary examination of the grand challenges confronting the environmental sciences in the 21st Century. Topics examined include biogeochemical cycles, biodiversity and ecosystem functioning, climate variability, hydrologic forecasting, infectious disease and the environment, legal control of resource use, land-use dynamics, and the re-use of materials. The practical and scientific importance of each topic is discussed as well as the readiness of the scientific establishment to meet important areas for future research. Students are expected to research and answer a series of practical hypothetical environmental problems in each area discussed. Prerequisites: ENVS 221, 222, or consent of the instructor

PHYS 181H Introduction to Physics I 3crs.

This is the first semester of a two-semester calculus-based sequence in introductory physics. Topics include Newtonian mechanics, hydrostatics, thermal physics, and mechanical waves. The detailed subject matter for the

course is chosen to emphasize physical principles and their applications, which are essential to an understanding of contemporary physics. Registration in the laboratory part of the course is required. Three lectures and one-hour discussion session per week. Prerequisites: High School Physics and MATH 112. Co-requisite: PHYS 183H. Concurrent enrollment in MATH 211 is recommended.

PHYS 183H Introduction to Physics I Lab 1cr.

The course consists of one three-hour laboratory session per week to accompany PHYS181H. Laboratory exercises are designed to relate to the material covered in the accompanying course. Experiments are computer based, and a spreadsheet program is used to analyze, plot, and interpret data. Pre-requisites: High school physics and basic knowledge of using a computer and a spreadsheet program. Co-requisite: PHYS181H. Laboratory Fee: \$25.

PHYS 182H Introduction to Physics II 3crs.

This is the second half of the two-semester course in calculus-based introductory physics. Areas covered include electrostatics, electrodynamics, geometrical and physical optics, and selected topics in modern physics. Three lectures and one-hour discussion session per week. Registration in the laboratory part of the course is required. Prerequisites: PHYS 181H and PHYS 183H. Co-requisite: PHYS 184H.

PHYS184H Introduction to Physics II Lab 1cr.

The course consists of one three-hour laboratory session to accompany PHYS182H. Laboratory exercises are designed to reinforce the material covered in the accompanying course. Most experiments are computer based. Pre-requisites: PHYS181H and PHYS 183H. Co-requisite: PHYS182H. Laboratory Fee: \$25.

MATH 110 Trigonometry and Analytic Geometry 3 crs. (meeting General Ed requirements)

This course is intended for students majoring in mathematics, computer science, science, technology, or engineering, or for students preparing to take calculus. Topics covered include the unit circle and graphs of the trigonometric functions, trigonometric identities, trigonometric equations, inverse trigonometric functions, complex numbers, and polar coordinates. Prerequisites: MATH 109 with a grade of at least "C", or three years of high school mathematics (Algebra I or higher) plus permission of the Department (obtained by receiving a satisfactory score on the placement test).

MATH 112 Calculus I 4crs.

This course covers differential calculus of functions of one variable, graphing, and differentiating algebraic and transcendental functions. It also covers limits, continuity, and Mean Value Theorem and applications, as well as maximizing and minimizing functions, related rate, and approximation applications. An introduction to integration is also included. Prerequisites: MATH 110 or MATH 111H with a grade of a least "C" or better.

MATH 210 Elementary Statistics 3 crs. (meeting General Ed requirements)

The course covers frequency and graphs of distributions; calculation of averages from raw data and grouped data; the standard deviation; the Binomial, Poisson, and normal distribution and their properties; Bayes Theorem and Baysean inference; Regression and correlation in two variables; and Times Series Analysis and applications. Prerequisite: MATH 109 or MATH 110 or MATH 111H.

MATH 211 Calculus II 4 crs.

This course covers Integral calculus of functions of one variable; techniques and theory of the Riemann integral, including the fundamental theorem and its application; applications to area, volume, surface area work, centroids, arc length, and polar coordinates; advanced work with transcendental functions; and an introduction to series and sequences. Prerequisite: MATH 112.

2. Professional Education Courses

EDCI 200 Introduction to Contemporary Education 3 crs.

This course is a comprehensive overview of the foundations of education in the United States. It incorporates the historical, political, economic, legal, social, philosophical and curricular foundations to provide future educators with an understanding of the teaching profession and the issues and controversies confronting American education today. The topics covered in the course provides novice educators with a broad picture of P-12 education and schooling in the United States. The primary focus is the preparation of reflective teachers who will make informed decisions that will improve and enhance the learning environment for children. Students will have a required field experience in the local public schools, as well as required preparation for the Praxis I tests.

EDCI 201 PRAXIS Preparation 1 cr.

This course provides training in the context and skills assessed in PRAXIS I testing in the areas of Reading, Mathematics, and Writing. This course must be retaken until the PRAXIS I tests have been passed. Credit for this course does not count toward graduation.

PHYC 305 Developmental Psychology/online 3cr.

This course presents a lifespan survey of human growth and development, beginning at conception and ending with death with emphasis on intellectual, linguistic, emotional, perceptual, social and personality development. Prerequisite: PSYC 200 with a grade of —C| or better.

PHYC 307 Educational Psychology 3cr.

This course examines scientific research and psychological principles as they apply to teaching and learning. Topics include theories of learning, intelligence, memory, creativity, human diversity, and other factors influencing effective instruction and learning. Clinical/classroom experiences provide opportunity to apply learning theory within an educational framework. Prerequisites: PSYC 200 with a grade of —C| or better.

EDCI 311 Comprehensive Assessment in Education 3 crs.

This course is designed to present an in-depth study of the purposes, principles, practices, and ethics of student assessment in elementary and secondary classrooms. The course emphasizes the basic concepts and terminology of assessment, as well as classroom applications. The course addresses the purposes, goals, and strategies for developing, administering, and interpreting a variety of assessments, including performance, portfolio, and standardized assessments. An understanding of current trends and practices in state and national assessment is emphasized. Prerequisite: Teacher Candidacy Status.

EDCI 406 Classroom Management 3 crs.

This course introduces the basic theories, techniques, and skills necessary to successfully manage small and large groups of diverse student populations at the elementary and secondary school levels. The focus of the course is on the study and application of effective individual and group management techniques based upon behavioral, cognitive, environmental, developmental, and psychoanalytic theories. Special emphasis is placed on developing supportive learning environments that promote self-esteem and motivate success. Students will have a required field experience in the local public schools. Prerequisite: Teacher Candidacy Status.

EDCI 409 Teaching Reading in the Content Areas: Part I 3 crs.

This course addresses the fundamentals of the reading process, theories, and instructional strategies. It emphasizes the development of vocabulary and comprehension skills, the assessment of student reading levels, and textbook readability, with particular emphasis on the reading of content material at the secondary level. This course is intended for all secondary and P-12 specialty area teacher candidates. This course includes a required field experience. Prerequisite: Teacher Candidacy Status.

EDCI 410 Teaching Reading in the Content Areas: Part II 3 crs.

This course addresses the literacy needs of diverse student populations and includes training in specific strategies to facilitate reading comprehension, incorporate writing to increase reading comprehension, interpret standardized reading test scores, use collaborative learning to promote literacy and content learning, and model processes for

assessing literacy growth. It builds on theories and strategies in EDCI 409. A field experience/pre-internship in the area of specialization at a Professional Development School is required. This course is intended for all secondary and P-12 specialty area teacher candidates. Prerequisites: Teacher Candidacy Status and a "C" or better in EDCI 409.

EDCI 425A Curriculum and Instructional Methods in Natural Sciences 3crs.

This course is an in-depth study of current instructional methods and curricular materials used in teaching Science and Biology at the middle and secondary levels respectively. The focus of the course is on effective program development and instructional delivery for students including lesson and unit planning, collection of reference/illustrative materials, observation and evaluation, effective strategies and techniques, grouping, behavioral objectives, student outcomes, scheduling classroom procedures, course outlines, community needs/interactions, special equipment, laboratory practices and administration/supervision. The philosophies, history, status, trends, issues, principles and foundation of Biology will be fully discussed and the inter-relationship of disciplines will be considered. A research paper based on independent research related to contemporary educational issues is required.

All professional development courses must be completed prior to enrollment.

Prerequisite: Teacher Candidacy status and passing PRAXIS I scores.

EDCI 400 Senior Seminar in Education 3 crs.

The senior seminar is designed to supplement and complement the teaching internship phase of the teacher education program. The seminar focuses on the analysis and synthesis of the internship experiences so that teacher interns may successfully integrate their experiences into future practice. Preparation of a professional portfolio, maintenance of a log book and journal, and participation in group synthesis and analysis are required. This course is intended for all secondary and P-12 specialty teacher interns. Students enroll concurrently in the teaching internship and the senior seminar. Prerequisites: Admission to the Teacher Internship. This includes passing the Praxis II Tests for the specific content or specialty major.

EDCI 480 Teaching Internship: Secondary Program (7-12): High School I 6 crs.

The student is assigned to a seven (7) or eight (8) week teaching internship at a Professional Development School at the middle school level. During this directed teaching experience, the student assumes the role and responsibilities of an educator on a full-time basis in the area of specialization. The internship provides the student with the opportunity to study the application of methods and techniques in a clinical setting through extended supervised practice. The student has the opportunity, under the direction and guidance of a university supervisor and a professional mentor, to refine skills and to develop professional expertise. This course is taken concurrently with EDCI 400 and EDCI 490. Prerequisites: Admission to Teacher Internship. This includes passing the Praxis II Tests for the specific content major.

EDCI 490 Teaching Internship: Secondary Programs (7-12) High School II 6 crs.

The student is assigned to a seven (7) and eight (8) week teaching internship at a Professional Development School at the high school level. During this directed teaching experience, the student assumes the role and responsibilities of an educator on a full-time basis in the area of specialization. The internship provides the student with the opportunity to study the application of methods and techniques in a clinical setting through extended supervised practice. The student has the opportunity, under the direction and guidance of a university supervisor and a professional mentor, to refine skills and to develop professional expertise. This course is taken concurrently with EDCI 400 and EDCI 480. Prerequisites: Admission to Teacher Internship. This includes passing the Praxis II Tests for the specific content major.

EDSP 400 Senior Seminar in Education 3 crs.

The senior seminar is designed to supplement and complement the teaching internship phase of the teacher education program. The seminar focuses on the analysis and synthesis of the internship experiences so that teacher interns may successfully integrate their experiences into future practice. Preparation of a professional portfolio, maintenance of a log book and journal, and participation in group synthesis and analysis are required. This course

is intended for all special education (1-12) teacher interns. Students enroll concurrently in the teaching internship (EDSP 442 and EDSP 450) and the senior seminar. Prerequisites: Admission to Teacher Internship. This includes passing the PRAXIS II Tests for special education.

EDSP 428 Communication and Collaboration in Special Education 3 crs.

This course is designed to prepare both special and general education teachers to work together in the identification, instruction, and assessment of students with disabilities. An emphasis will be placed on effective personal and interpersonal communication strategies useful in working with parents, students and other educators. In addition, the course will focus on ways that teams of educators can collaborate to best meet the needs of all students. It will include current information on the nature of disabilities, legal aspects of students with disabilities, and instructional modifications. This course is required of all teacher education majors. It will have a required field experience/pre-internship in a Professional Development School. **PREREQUISITES:** The student must have Teacher Candidacy Status. Undergraduate special education majors will take this course concurrently with EDSP 404, EDSP 430, and EDSP 431, immediately prior to their internship. Other teacher education majors will take this course concurrently with or following their methods course.

3. General Education Courses (not listed in 1)

ARTS 101: Exploration of the Visual Arts 3 crs.

A philosophical course in the nature of Art designed to acquaint the student with the complex phenomena that makes up the art of our time, ranging from prehistory to the present. Emphasis is placed primarily upon the visual arts of painting, drawing, sculpture, pottery, and the graphic arts. Features specifically, the nature of visual form, the art object, the material and process by which it was formed and the creative process. Field trips are a requirement. **OPEN TO ALL STUDENTS.**

BUED 212 Computer-Concepts/ Applications I/Hybrid/Online 3crs.

The course introduces students to electronic information processing. Emphasis is placed on various computer concepts and applications. Contemporary computer software including System Software, and Application Software for word processing, spreadsheets and databases relevant to business and industry are taught. Not Open as Free or Program Elective.

CSDP 121 Microcomputer Applications 3crs.

This course is designed for non-technical majors in different applications of modern computing systems. The course surveys computing hardware and software systems and introduces students to the present state-of-the-art word processing, spreadsheet, and database software. Applications to other disciplines, such as medicine, administration, accounting, social sciences and humanities, will be considered. Prerequisite: High School Mathematics. CSDP 121 does not satisfy the General Education Area III Requirement.

DNCS 100 Freshman Seminar 1cr.

This course is designed to facilitate the adjustment of freshman science majors to college life. Aspects of preparing students for career opportunities, professional development, adjustments needed to succeed in college, study and test taking skills, crisis or stress management, and understanding the significance of the land-grant system will be discussed. Other topics include note taking, time management, conflict resolution, proper use of a science textbook, analyzing graphs and figures, test taking skills, preparing laboratory reports, and adapting to instructor style.

ECON 201 Principles of Economics I (Macro) 3 crs.

A study of the principles of economic analysis, economic institutions and issues of public policy. Emphasis is placed on aggregate economics covering national income analysis, money and banking, business cycles and economic stabilization. Prerequisite: MATH 109. Co-requisite: ECON 088 when via Distance Education.

ENGL 101/Basic Composition I — 3 crs.

This course is designed to review the fundamentals of grammar, punctuation, and conventional usage and to provide skills of organization and development in writing. Adequate opportunity for written and oral discussion of selected examples of prose and creative writing will be provided to encourage an interest in literature and the development of a critical attitude toward literature in general.

ENGL 101 Honors English Composition I Honors 3crs.

The major goal of this course is to develop proficiency in expository writing, particularly the communication of ideas in clear, precise language that demonstrates advanced knowledge of organization, grammar, and usage. This course satisfies the "Statement of Expectations" for freshman writing.

ENGL 102/ Basic Composition II 3 crs.

This course continues the study of basic elements of written composition, especially organization and development, including examination of selections from prose, poetry and drama. A research paper will be required. Prerequisite: ENGL 101.

ENGL 102 Honors English Composition II Honors 3crs.

This course is a continuation of ENGL 101H. The course will review modes of expository writing with emphasis on the research paper. The major goal is to develop proficiency in critical writing.

ENGL 001 English Proficiency 0 cr.**ENGL 203 Fundamentals of Contemporary Speech 3 crs.**

This course requires the preparation and delivery of short original speeches, outside readings and reports. It is recommended that this course be taken during the sophomore year. Prerequisites: ENGL 101 and ENGL 102.

ENGL 305 Technical Writing 3 crs.

This course will concentrate on the techniques of expository writing in the preparation of technical material. Among the areas of concentration will be writing to support graphic illustrations, writing to clarify statistical information and writing to explain process. Students will be introduced to the selective use of the library and basic research facilities, particularly the use of periodical indexes and selective bibliographies. The course is open to all degree-seeking and special students who have successfully completed the Freshman and Sophomore year, and who have satisfactorily completed ENGL 101, ENGL 102, and ENGL 203. Any waiver of these prerequisites based on special circumstances must be with the consent of the dean or department chairperson.

ENGL 310 Advanced Composition/Honors/Online 3 crs.

This course involves a study of prose techniques such as definition, classification, analysis, and process analysis. It includes the reading of model documents (essays, news stories, etc.) and a substantial amount of practice of expository writing. The course is open to all students who have successfully completed ENGL 101 and ENGL 102.

EXSC 111 Personal Health and Fitness 3crs.

This course studies the principles and practices that affect human health. Emphasis is on physical fitness, stress management, nutrition, and weight control with specific personalized techniques for optimizing health. The course can be repeated for credit. Students should select the course they desire as indicated by the topic. Satisfies GEN CURR AREA VI.

MAT Program Curriculum**Winter Term****Spring Term**

EMAT 501: Dev & Learning Applied to Teaching EMAT 502: Foundations of Ed in a Diverse and Democratic Society (at SU)
EMAT 504: Reading in the Content Area I (UMES students only)
EMAT 539: Instruction and Assessment for Student Learning (at UMES)
EMAT 538: Technology in Education (at SU)

Summer I Term

EMAT 537: Educational Research (UMES)

Fall Term

EMAT 506: The Inclusive Classroom (at UMES)
EMAT 508: Reading in the Content Area II (UMES students only)
EMAT 512: Classroom Management (at SU)
EMAT 5xx: Methods I (UMES students only)

*Take and pass Praxis II (UMES students only) before beginning student internship
Seminar Paper completed*

Spring Term

EMAT 507: Internship I
EMAT 509: Internship II
EMAT 511: Seminar
Presentations of Portfolios=the Portfolio Exam

Credits: 39 credits for UMES students

Additional Program Requirements

1. All courses taken at SU require an inter-institutional form for registration.
2. Most courses require field experiences. At least the equivalent of one day per week should be set aside to meet this requirement.
3. Students in this program must complete 100 days internship in a Professional Development School. While it may be no less than 100 days, the internship does not end when 100 days have been accumulated.

Courses are taught on both campuses. In any semester, half of the courses are taught at UMES and the others at SU.

Note: The Teacher Educator in the academic department that offers the program in which the student plans to teach must review his/her transcripts and indicate what content course work, if any, must be completed prior to the internship to admittance to the MAT program. However, if the prospective student is only lacking up to 6 credits of required courses, s/he may take these courses while enrolled in the MAT, but they must be successfully completed before the internship.

MAT Course Descriptions

EMAT 501 Development and Learning Applied to Teaching (3) (SU)

The course examines theory and research in human development and learning psychology with application to teaching in contemporary middle and secondary schools. Emphasis is placed on translating theory into practice by integrating field experiences, class work, student projects, assignments, and exams.

EMAT 502 Foundations of Education in a Diverse and Democratic Society (3) (SU)

This course is a comprehensive overview of the foundation of education in a diverse and democratic society. It is an interdisciplinary attempt incorporating the social, philosophical, economic, political, historical and curricular foundations to provide teacher candidates with a clear understanding of the teaching profession. A special attention will be given to cultural problems and issues that influence opportunities, and performance in educational institutions, including controversies confronting American education today.

EMAT 504 and 508 Reading in the Content Areas I and II (3 each) (UMES)

The courses are an analysis of reading/writing/learning processes with an emphasis on skills and strategies to facilitate student comprehension and learning of content in middle and secondary schools. The courses examine research and practice; field experiences are required.

EMAT 506 The Inclusive Classroom (3) (UMES)

This course is designed to provide students with the fundamentals of inclusive teaching. The focus of the course will be to teach students the history of special education, legal and ethical foundations for individuals with disabilities, accommodations, modifications for students with high, low, multiple incidence disabilities, effective teaching/management skills, and an overview of specific problems in content areas to learn how to effectively address them. Students will also learn how to create assessments that provide immediate feedback in a variety of formats. Field experiences are required.

EMAT 5xx Secondary School Methods (500 level course number will vary according to the content major.) (3) (UMES)

The course prepares prospective teachers to teach content area in middle and high schools. Students will integrate content knowledge with basic teaching methodologies of preparing objectives, effective questioning, curriculum and resource evaluations, teacher presentations, cooperative learning, demonstrations and experiments, student projects, classroom management, lesson and unit planning. Students will be placed with a high school or middle school teacher for observations and bit teaching experiences. (This is a sample of the course to be offered. A specialized content area methods course will be offered in each area which has a state-approved program.)

EMAT 507, 509 Internship I and II (6)

EMAT 511 Seminar (9)

Full-time fourteen weeks clinical internship and concurrent campus seminar provide the intern with opportunities to actualize the latest educational research and theory into practice. These opportunities include and are not exclusive to: observation, mini-teaching, macro-teaching, whole group lessons, and action research. The seminar provides a forum for discussing problems encountered during the internship, and also provides a colloquium for developing strategies to resolve these problems. The internship will be conducted under the direct supervision of a clinical supervisor (experienced public school teacher) with guidance and support from the university supervisor.

EMAT 512 Classroom Management (3)

The course provides the student with a repertoire of strategies to create a classroom environment that facilitates optimal learning. Different classroom management theories will be explored and evaluated for appropriateness in a given situation. Special attention is given to accommodating diversity, and strategies for effectively communicating with families are considered.

EMAT 537 Educational Research (3)

Introduction to quantitative and qualitative methods of inquiry as they apply to the needs of teacher-researchers. Attention will be given to reading, analyzing, and interpreting scholarly research to solve instructional problems. Students will design an action research project that addresses an area of current concern in the field of P-12 education.

EMAT 538 Technology in Education (3)

This course examines educational technology and its current and potential impact on schools. The course provides an introduction to the role of technology in the teaching and learning process as well as how the use of technology can enhance teacher productivity and professional development. It examines current issues in the use of education technology, the impact of technology on society, and techniques for integrating technology into the classroom. Students examine Web 2.0, audio, video, and graphic technologies, as well as tools for collecting and analyzing student data.

EMAT 539 Instruction and Assessment for Student Learning (3)

This course will focus on the appropriate selection, construction, administration and use of effective educational assessment tools particularly as they impact student learning. Using the curriculum-instruction-assessment cycle, MAT teacher candidates will explore these important connections to better understand their roles and responsibilities as classroom teachers in the assessment process.