2-1-17 RECOMMENDATIONS (DISCUSSION AGENDA)

RECOMMENDATIONS PRESENTED AT PRIOR CIC MEETINGS NEEDING FURTHER DISCUSSION OR NOT SUPPORTED BY ONE FIRST LEVEL REVIEWER

OWG 7: Math:
OWG Co-Chairs: Zephyrinus Okonkwo & Tony Smith:

Recommends the following change concerning COPR/CSCI 2235 – Database Management Systems

- **Discontinue the CSCI 2235 designation and have this course offered solely as COPR 2235:**

This recommendation has previously been sent to the CiC and was confirmed as the Math Approved recommendation 5. However, on the approved recommendation list, the thought is not complete.

Currently the approved recommendation reads as follows:

- **For *COPR/CSCI 2235 – Database Management Syste*ms**

As this fails to identify the conclusion of the recommendation regarding COPR/CSCI 2235, it was suggested that we submit a new recommendation to confirm that this action is taken. Please note, this recommendation was approved already, we're just asking that the results of discontinuing the CSCI 2235 designation be included to the approved Math recommendation 5 on the approved recommendations list.

Clarification of action to previously approved MATH OWG recommendation is noted.

OWG 9: Science:
(reviewed & comments/questions from Tau Kadhi &Funke Fontenot):

1. Recommends the adoption of the following with regard to the Science Education Undergraduate Program at the new ASU:

Science Education Undergraduate Program

Program Description

The mission of the Department of Natural Sciences and The College of Education is to collaboratively prepare candidates who possess a strong content knowledge base and the knowledge and skills to perform as effective teachers in diverse school settings across the state and nation. The mission is to support scholarship and professional practices of all the teacher candidates.

The preparation of the Broad Field Science teacher candidates is a joint effort: content knowledge training is provided by The Department of Natural Sciences and pedagogical content knowledge, professional and pedagogical knowledge and skills, assessment of student knowledge and professional dispositions training is provided through Teacher Education. Both Departments collaborate extensively to prepare a well-trained candidate with a common mission: to support scholarship and professional practices of all the teacher candidates.

The Department of Natural Sciences of the College of Sciences and Health Professions believes that candidates should be provided with quality and quantifiable learning experiences needed for professional competence and to become productive citizens in a highly technical society. The Department is determined to meet the needs of the students that we serve. Consequently, Science Education graduates will be able to master the many academic and professional challenges found in the workplace. The program for a B.S. in Science Education leads to initial certification in Broad Field Science.

GOALS AND OBJECTIVES

GOALS

The goals of the Department of Natural Sciences are as follows:

1. To help students demonstrate mastery of the basic concepts and principles inherent in the body of knowledge of science.
2. To allow students the opportunity to practice using the scientific method during laboratory activities.
3. To help develop rational thinking in our students. (Science is a cognitive tool used in all intellectual endeavors).
4. To sensitize the future citizenry concerning the role that science and technology play in modern society to foster interests, appreciation, positive attitude and cultural values in harmony with the scientific enterprise.
5. To prepare students for entrance into graduate and professional schools.
6. To prepare students for professional employment in the sciences, including teaching biology and chemistry. The degree requires 36 semester hours, with 18 hours in the cognate field.

OBJECTIVES (What we want our students to KNOW OR BE ABLE TO DO):

Note: Objectives are measurable.

The objectives of the Science Education preparation program are as follows:

1. The candidate demonstrates mastery of the content knowledge in the core science areas of biology, chemistry, physics, and earth science as measured by GACE.
2. The candidate applies scientific inquiry to solve problems through laboratory activities as measured through lab reports.
3. The candidate prepares an accurate standards-based lesson plan that includes differentiated instructional strategies, implements various assessments measures, and infuses appropriate technology as measured by changes in student performance.
4. The candidate rewrites lesson plans to reflect data-driven instructional decisions based on the analysis of student performance.
5. The candidate analyzes student performance data and uses the information to revise instruction that supports improved student performance as measured through pre- and post-tests.
6. The candidate exhibits the College of Education professional dispositions as measured by the dispositions rubric.

Program of Study:

The program requires 129 hours in Areas A – H. Courses in Areas A – E are classified as core program courses. Area F courses are classified as Foundation education courses. Area G courses are classified as content area courses and include science and education courses. Area H courses are classified as performance based education courses, including student teaching.

Required credit hours above the minimum of 120 increases cost to students and may impact progression and on time graduation. Consider reducing the total credit hours to 120-123.

The following table identifies the number of hours and courses required in each defined area:

Area	Course	Hours
A1: 6 hours	ENGL 1101: English Composition I	3
	ENGL 1102: English Composition II	3
A2: 3 hours	MATH 1113: Pre-Calculus	3
B: 5 hours	HIST 1002: Introduction to African Diaspora	2
	COMM 1100: Fundamentals of Public Speaking	3
	(Subject to revision to reflect area B courses adopted for the new U).	
C: 6 hours	ENGL 2111: World Literature I	3
	One fine arts option	3
D: 12 hours	CHEM 1211/L: General Chemistry I	4
	CHEM 1212/L: General Chemistry II	4
	MATH 1211: Calculus I	4

E: 12 hours	POLS 1101: US & GA Government	3
	HIST option	3
	Social Science option	3
	Social Science option	3
Above the Core: 5 hours	ASU 1201: Foundations of College Success	2
	Physical Education options	3
F: 17 hours	PHYS 1111/L: Introductory Physics I	4
	PHYS 1112/L: Introductory Physics II	4
	EDUC 2110: Investigating Critical and Contemporary Issues in Education	3
	EDUC 2120: Exploring Socio-Cultural Perspectives on Diversity	3
	EDUC 2130: Exploring Teaching and Learning	3
G: 45 hours	EDUC 4405: Methods and Materials for Teaching Science	3
	EDUC 4451: Instruction and Assessment	3
	SPED 3231: Contemporary Perspectives of Exceptional Children	3
	BIOL 2111/L: Biology I	4
	BIOL 2112/L: Biology II	4
	BIOL 2411/L: Human Anatomy & Physiology I	4
	BIOL 3101K: Environmental Biology	4
	CHEM 2351/L: Quantitative Analysis I	4
	ISCI 3002: Integrated Earth & Space Science	4
Choose one from the following:	BIOL 2211/L: Introduction to Microbiology	4
	BIOL 2311/L: General Botany I	4
	BIOL 3501K: Principles of Genetics	4
	BIOL 2412/L: Human Anatomy & Physiology II	4
Choose two from the following:	CHEM 2301/L: Organic Chemistry I	4
	CHEM 2302/L: Organic Chemistry II	4
	CHEM 3250K: Biochemistry	4
	CHEM 2352/L: Quantitative Analysis II	4

H: 18 hours	EDUC 2199: Orientation to Teacher Education	0
	EDUC 3401: Practicum I	2
	EDUC 3402: Practicum II	2
	EDUC 3403: Practicum III	2
	EDUC 4412: Student Teaching	12

Course and course descriptions specific to Science Education are summarized on the following table:

Course Number and Title	Description	Hours
EDUC 2110: Investigating Critical and Contemporary Issues in Education	This course engages students in observations, interactions, and analyses of critical and contemporary educational issues. Students will investigate issues influencing the social and political contexts of educational settings in Georgia and the United States. Students will actively examine the teaching profession from multiple vantage points both within and outside the school. Against this backdrop, students will reflect on and interpret the meaning of education and schooling in a diverse culture and examine the moral and ethical responsibilities of teaching in a democracy. Prerequisite: ENGL 1101 or ENGL 1101E or ENGL 1101A.	3
EDUC 2120: Exploring Socio-Cultural Perspectives on Diversity	Given the rapidly changing demographics in our state and country this course is designed to equip future teachers with the fundamental knowledge of understanding culture and teaching children from diverse backgrounds. Specifically, this course is designed to examine 1) the nature and function of culture; 2) the development of individual and group cultural identity; 3) definitions and implications of diversity, and 4) the influences of culture on learning, development, and pedagogy. Prerequisite: EDUC 2110.	3

EDUC 2130: Exploring Teaching and Learning	This course is designed to explore some of the principle theories of learning and teaching. Students will examine their own learning processes and those of others, with the goal of applying that knowledge toward enhancing the learning of all students in a variety of educational settings and contexts. Prerequisite: EDUC 2120.	3
EDUC 4405: Methods and Materials for Teaching Science	This course emphasizes methods and materials for teaching science in secondary schools. Candidates must earn a minimum grade of C to receive credit for this course in the program of study.	3
EDUC 4451: Instruction and Assessment	This course examines curriculum, instruction, and assessment in the context of standards based education. It explores theories, methods, and procedures that are applicable to the development and design of curriculum and instruction, the interrelationships among curriculum, instruction, and assessment and presents researched best practices for developing curriculum and instruction that will meet the needs of an inclusive environment. The history of curriculum development and evaluation; the importance of aligning learning theory and learner variables; removal of barriers to student achievement; and how to meet diverse student needs are discussed. Grading, use of assessment data, planning, and collaboration are also addressed. Students will learn how data driven decision making and the integration of technology can lead to improved academic achievement for all students.	3
SPED 3231: Contemporary Perspectives of Exceptional Children	A study of the characteristics, identification and educational needs of children and youth with exceptionalities.	3

EDUC 2199: Orientation to Teacher Education	Orientation to Teacher Education provides students with the training and information needed to successfully navigate ASU teacher preparation program requirements. Students will receive training on the College of Education's Conceptual Framework; the requirements needed to successfully complete teacher preparation programs; learn to navigate Degreeworks to complete academic program plans of study; and learn to navigate LiveText for purposes of assessment and evaluation of Key Unit and Program specific assessments. All students will be required to purchase a LiveText account and have an active ASU account prior to participation in the course. Prerequisite: EDUC 2110 and EDUC 2120 and EDUC 2130.	0
EDUC 3402: Practicum II	An individually arranged introductory course of classroom observation during field placement in public schools.	2
EDUC 3403: Practicum III	An individually arranged introductory course of classroom observation during field placement in public schools.	2
EDUC 4412: Student Teaching (4470)	Observation and teaching for one semester under the direction of an approved supervising teacher in selected middle school centers. A seminar component is included.	12

Program Completion in Eight Semesters:

Fall Freshman Year

Course	Name	Hours
ENGL 1101	English Comp I	3
BIOL 2111/L	Biology I	4

MATH 1113	Precalculus	3
HIST 1002	African Diaspora	2
ASU 1201	Foundations College Success	2
PHED	elective	1
PHED 1010	Introduction to Yoga	1
	Total Hours	16

Spring Freshman Year

Course	Name	Hours
ENGL 1102	English Composition II	3
GEOG 1101	Intro to Human Geography	3
COMM 1101	Public Speaking	3
BIOL 2112/L	Biology II	4
EDUC 2110	Invest Crt/Cont Issues Ed*	3
PHED	Elective	1
	Total Hours	17
*Prereq	ENGL 1101	

TAKE GACE PROGRAM ENTRY

Fall Sophomore Year

Course	Name	Hours
ENGL 2111	World Literature	3
BIOL 2411L	Human Anatomy & Physiology	4
MATH 1211	Calculus I	4
CHEM 1211/L	General Chemistry I	4
EDUC 2120*	Explore Socio Cult Persp Diver	3
	Total Hours	18
*Prereq	EDUC 2110	

Spring Sophomore Year

Course	Name	Hours
BIOL 3101L	Environmental Biology	4
CHEM 1212/L	General Chemistry II	4
POLS 1101	US & GA Government	3
HIST 2111	American History I	3
EDUC 2130	Explore Teach and Learning	3
	Total Hours	17
*prereq	EDUC 2110, EDUC 2120	

Must PASS GACE Program Entry and complete application to Teacher Education

Fall Junior Year

Course	Name	Hours
BIOL	elective	4
CHEM 2351/L	Quantitative Analysis I	4
PHYS 1111/L	Introductory Physics I	4
SPED 3231	Contemp Presp of Excep Child	3
EDUC 2199	Orientation to Education	0
EDUC 3401	Practicum I	2
	Total Hours	17

Spring Junior Year

Course	Name	Hours
CHEM	elective	4
PHYS 1112/L	Introductory Physics II	4
EDUC 4451	Instruction and Assessment	3
ARAP 1100	Art Appreciation	3
EDUC 3402	Practicum II	2

	Total Hours	16

TAKE GACE 024 and 025

Fall Senior Year

Course	Name	Hours
HIST	elective	3
ISCI 3002	Advanced Earth and Space Science	4
CHEM	elective	4
EDUC 4405	Methods/Materials for Teaching Science	3
EDUC 3403	Practicum III	2
	Total Hours	16

Spring Senior Year

Course	Name	Hours
EDUC 4412	Student Teaching	12
	Total Hours	12

Total Hours in Program 129 hrs.

Program Check Sheet:

THE DEPARTMENT OF NATURAL SCIENCES AND THE COLLEGE OF EDUCATION

BROAD FIELD SCIENCE EDUCATION PROGRAM OF STUDY (B.S. Ed. SCIENCE EDUCATION)

Name: _____ Address: : _____ City/State/Zip: _____ Home Telephone: _____ Cell Telephone: _____ Email: _____ Advisor: _____ GACE Program Entry: _____ Ethics Test: _____	RAM ID: _____ Date Admitted to Program: _____ GPA Requirement Met (2.5 or higher) _____ 2 week Beginning School Experience: _____ Date Passed GACE I _____ GACE II _____ Expected Graduation Date: _____ Graduation Audit: _____ PreSevice Certificate:_____ Application to TE: _____

*required course

AREA A1: COMMUNICATION SKILLS (6 HRS)		SEMESTER PLANNED	SEMESTER TAKEN	GRADE	HRS
ENGL 1101	English Composition I				3
ENGL 1102	English Composition II				3
AREA A2: QUANTITATIVE SKILLS (3 HRS)					
MATH 1111	College Algebra				3
MATH 1113	Pre-Calculus* [prerequisite: MATH 1111]				3
AREA B: INSTITUTIONAL OPTIONS (5 HRS)					
HIST 1002	Introduction to African Diaspora				2
COMM 1100	Fundamentals of Public Speaking				3
AREA C: HUMANTITIES/FINE ARTS/ETHICS (6 HRS)					
ENGL 2111	World Literature I*				3
SELECT ONE					
ARAP 1100	Art Appreciation				3
ENGL 2112	World Literature II				3
MUSC 1100	Music Appreciation				3
FIAR 1100	Introduction to Fine Arts				3
AREA D: SCIENCE, MATH & TECHNOLOGY (12 HRS)					
CHEM 1211/L	General Chemistry I				4
CHEM 1212/L	General Chemistry II				4
SELECT ONE					
MATH 1211	Calculus I				4
MATH 2212	Calculus II				4
AREA E: SOCIAL SCIENCES (12 HRS)					
POLS 1101	U.S. & GA Government*				3

AREA E ELECTIVES (SELECT AT LEAST ONE HISTORY)					
GEOG 1101	Introduction to Human Geography				3
HIST 1111	Survey of World History I				3
HIST 1112	Survey of World History II				3
HIST 2111	Survey of American History I				3
HIST 2112	Survey of American History II				3
PHIL 2101	Introduction to Philosophy				3
PSYC 1101	General Psychology				3
ABOVE THE CORE (5 HRS)					
ASU 1201	Foundations of College Success				2
SELECT THREE					
HEDP 1001	Introduction to Wellness				1
PEDH 1001	Team Sports				1
PEDH 1002	Fitness				1
PEDH 1003	Recreational Skills I				1
PEDH 1004	Recreational Skills II				1
PEDH 1005	Lifetime Skills I				1
PEDH 1006	Lifetime Skills II				1
PEDH 1007	Aquatics				1
PEDH 1008	Progressive Resistance Exercise				1
PEHD 1010	Introduction to Yoga				1
AREA F: SCIENCE EDUCATION (17 HRS)					
PHYS 1111/L	Introductory Physics I				4
PHYS 1112/L	Introductory Physics II				4
EDUC 2110#	Investigating Critical/Contemp Issues in Ed				3
EDUC 2120##	Explore Soci Cultural Perspect on Diversity				3
EDUC 2130###	Exploring Teaching and Learning				3

AREA G: METHODS/CURRICULUM/CONTENT (45 HRS)					
EDUC 4405	Methods and Materials for Teaching Science				3
EDUC 4451	Instruction & Assessment				3
SPED 3231	Contemp Perspect of Exceptional Children				3
BIOL 2111/L	Biology I				4
BIOL 2112/L	Biology II				4
BIOL 2411/L	Human Anatomy/Physiology I				4
BIOL 3101K	Environmental Biology				4
CHEM 2351/L	Quantitative Analysis I				4
PHYS 3002K	Advanced Earth and Space Science				4
Choose ONE from the following:					
BIOL 2211/L	Introduction to Microbiology				4
BIOL 2311/L	General Botany I				4
BIOL 3501K	Principles of Genetics				4
BIOL 2412/L	Human Anatomy/Physiology II				4
Choose TWO from the following:					
CHEM 2301/L	Organic Chemistry I				4
CHEM 2302/L	Organic Chemistry II				4
CHEM 3250K	Biochemistry				4
CHEM 2352/L	Quantitative Analysis II				4
AREA H: CULMINATING CLINICAL EXPERIENCE (18 HRS)					
EDUC 2199	Orientation to Teacher Education				0
EDUC 3401	Practicum I				2
EDUC 3402	Practicum II				2
EDUC 3403	Practicum III				2
EDUC 4412	Student Teaching				12

	Total Hours Required	129 hours			

#must have credit for ENGL 1101

##must have credit for EDUC 2110

###must have credit for EDUC 2110, EDUC 2120

H: 18 hours EDUC 2199: Orientation to Teacher Education 0

Does EDUC 2199: Orientation to Teacher Education: 0 hr (a non-credit-bearing course) require contact hours? If so how many? Does it count in the faculty workload?

Recommendation # 1, approved subject to highlighted comments noted in this section.

From December 1, 2016 CIC Meeting: ORIGINAL RECOMMENDATION:

OWG 9: Science:
(reviewed & supported by Tau Kadhi and from Funke Fontenot):

Recommends the adoption of the following with regard to the Chemistry program at the new ASU:

Chemistry

CHEM 1101K Intro to Chemistry (3-3-4):

This course is designed to prepare students with little, if any, chemistry or math backgrounds for the General Chemistry I and General Chemistry II sequence (CHEM 1211K/1212K). Topics to be studied include matter, measurement, units and unit conversions, graphing, atomic structure, nomenclature, bonding, the periodic table, chemical equations, chemical reactions, stoichiometry. Exercises designed to improve science study skills will be included. The emphasis of the lecture will be on problem solving strategies, skill building and real life applications. ~~The~~ Laboratory exercises will supplement lectures. 4 credits.
Offered: Not offered on a regular basis.

CHEM 1151K Survey of Chemistry I (3-3-4):

This course is the first in a two-semester sequence covering elementary principles of general and organic chemistry and biochemistry designed for allied health profession majors. Topics to be covered include elements and compounds, chemical equations, nomenclature, and molecular geometry. Laboratory exercises will supplement the lecture material. 4 credits. Prerequisite(s): Permission of instructor.
Offered: Fall

CHEM 1152K Survey of Chemistry II (3-3-4):

This course is the second in a two-semester sequence covering elementary principles of general and organic chemistry and biochemistry designed for allied health profession majors. Topics to be covered include gases, solutions, acids/bases, basic functional groups and reactions of organic molecules. Additionally, carbohydrates, lipids, proteins, and enzymes are introduced. Laboratory exercises will supplement lecture material. 4 credits. Prerequisite(s): CHEM 1151K
Offered: Spring

CHEM 1211K Principles of Chemistry I (3-3-4):

This course is the first part of a two-semester general chemistry curriculum. It is primarily designed for students with career interests in chemistry, biology, medicine, pharmacy and other STEM (Science, Technology, Engineering, and Mathematics) fields. This course covers basic chemistry: the fundamental concepts concerning the atomic and molecular structures and properties of matter, states of matter, stoichiometry, chemical equations and various types of equilibrium in solution including electrochemistry. Laboratory exercises supplement lectures. 4 credits. Prerequisite(s): Permission of instructor.
Offered: Fall, Spring, Summer

CHEM 1212K Principles of Chemistry II (3-3-4):

This course is the second part of a two-semester general chemistry sequence. It is primarily designed for students with career interests in chemistry, biology, medicine, pharmacy and other science fields. It will mainly deal with states of matter, solutions, chemical reactions, chemical kinetics, equilibrium, acids/bases and pH with corresponding laboratory activities. The laboratory activity is extremely important to enhance understanding of the materials learned from lecture. 4 credits. Prerequisite(s): CHEM 1211K
Offered: Fall, Spring, Summer

CHEM 2250/BIOL 2250 Responsible Conduct of Research (2-0-2):

This course is designed to provide appropriate training and oversight in the responsible and ethical conduct of research to students engaging in undergraduate research. Ethical and policy issues relevant to the responsible conduct of research will be discussed. Analysis and application of topics including conflict of interest, responsible authorship, policies for handling misconduct, data management, data sharing, and policies involving use of human and animal subjects. 2 credits.

Prerequisite(s): CHEM 1212K
Offered: Not offered on a regular basis

CHEM 2301K Organic Chemistry I (3-3-4):

This is the first course of a two-semester sequence in modern organic chemistry. In this course, the student will be introduced to concepts of reactivity from structural, mechanistic, and synthetic perspectives. We will explore details of aliphatic substitution, addition, elimination, and free-radical reaction types. The systematic naming of compounds, stereochemistry, conformation, and isomerism will also be covered extensively. Laboratory exercises supplement lectures. 4 credits.
Prerequisite(s): CHEM 1212K
Offered: Fall, Spring, Summer

CHEM 2302K Organic Chemistry II (3-3-4):

This course is a continuation sequence of CHEM 2301K and ~~it~~ includes a systematic description of the chemistry of functional groups such as alkenes, alkynes, alcohols, aromatic and carbonyl compounds. Spectroscopic methods of analysis, including infrared, ultraviolet/visible, mass spectroscopy and nuclear magnetic resonance spectroscopy are also included. Laboratory exercises supplement lectures. 4 credits. Prerequisite(s): CHEM 2301K
Offered: Fall, Spring, Summer

CHEM 2310 Scientific Mathematics (2-0-2):

This course is designed to acquaint students with mathematical concepts used in scientific studies including those required for the laboratory and publications. Prerequisite(s): Permission of instructor. 2 credits.
Offered: Fall

BIOL 2320/CHEM 2320 Laboratory Research Techniques (0-3-3):

This course provides students with hands-on training on cutting-edge techniques, technologies, and equipment that are essential for conducting general and biomedical research. It contains four modules: Basic Lab Skills, DNA, Protein Techniques and Instrumental Methods in Chemistry. Students learn experimental techniques including reagent preparation, pipetting, DNA isolation, protein purification, Agarose Gel Electrophoresis, SDS Gel Electrophoresis, conventional PCR, cell culture, Western blot, ELISA, chromatography (GC-MS) and spectroscopy (FT-IR, NMR, UV-Vis). 3 credits. Prerequisite(s): Permission of instructor.
Offered: Spring, Fall

CHEM 2351K Quantitative Analysis I (3-3-4):

This course involves the study of theory and practice of gravimetric and titrimetric analyses with emphasis on solution equilibria as applied to acid-base, precipitation, and complexiometric methods. The laboratory work will cover basic laboratory techniques, solution preparation, titrations, equilibrium constants, statistics, gravimetric analysis, and EDTA experiments. 4 credits. Prerequisite(s): CHEM 1212K

Offered: Fall

CHEM 2352K Quantitative Analysis II (3-3-4):

This course is a continuation of the study of analytical methods including oxidation-reduction, titration and an introduction to instrumental methods-potentiometric, spectrophotometric, and chromatographic. The laboratory work will cover spectroscopic methods, electrochemical methods, and chromatographic methods. Modern analytical instruments such as UV-Vis and Infrared (IR) spectrophotometers, Gas Chromatograph (GC), High Performance Liquid Chromatograph (HPLC), Atomic Absorption Spectrophotometer (AAS), and electrochemical instruments will be introduced and data from each of the methods will be analyzed. 4 credits.
Prerequisite(s): CHEM 2351K
Offered: Spring

CHEM 2415 Scientific Writing (3-0-3):

This course is designed to acquaint learners with the discovery inquiry processes and to provide competencies for writing scientific papers. Prerequisite(s): Permission of instructor. 3 credits.
Offered: Not offered on a regular basis

CHEM 3221K Physical Chemistry I (3-3-4):

This course is a study of the fundamental laws governing matter in the gaseous state, the laws of thermodynamics (0th-3rd laws), and chemical kinetics. It will also include the applications of principles, such as solid and liquid states, solutions, phase equilibria, and electrochemistry. In this class, students will learn what constitutes the driving force for physical and chemical changes, and how it changes with temperature and pressure. The laboratory work is designed to provide students ~~you~~ with first-hand, practical experience in making and interpreting scientific observations. 4 credits. Prerequisite(s): PHYS 2222K
Offered: Spring

CHEM 3222K Physical Chemistry II (3-3-4):

This course introduces the study of the theory and application of quantum theory and bonding; magnetic and spectral properties of atoms and molecules; and statistical mechanics. 4 credits.
Prerequisite(s): PHYS 2222K
Offered: Fall

CHEM 3231K Intermediate Inorganic Chemistry I (3-3-4):

The course will focus on acquiring different conceptual tools that are necessary to understand structure-function correlations in inorganic systems. The tools include chemical forces, symmetry and point groups, qualitative molecular orbital theory and coordination chemistry. This course will cover 12 chapters in the textbook, ranging from the first principles, transition elements to bioinorganic chemistry. The laboratory work will supplement lecture material. 4 credits. Prerequisite(s): CHEM 3222K
Offered: Spring

CHEM 3232 Intermediate Inorganic Chemistry II (3-0-3):

This course involves the study of the transition elements including their bonding of coordination compounds, stereo-chemistry and reactions, and an introduction to organometallic chemistry and catalysis. 3 credits. Prerequisite(s): CHEM 3231K
Offered: Not offered on a regular basis

CHEM 3250K Biochemistry I (3-3-4):

In this course, the student examines the structure and function of carbohydrates, amino acids and proteins, lipids, and nucleic acids. The laboratory work is designed to supplement lectures. 4 credits. Prerequisite(s): CHEM 2302K
Offered: Spring, Fall, Summer

CHEM 3252 Biochemistry II (3-0-3):

Designed to present details of biochemical processes normally covered in the second semester of a two semester biochemistry sequence. This includes an in-depth study of the metabolism of amino acids, lipids, carbohydrates and nucleic acids; advanced enzyme kinetics; reaction mechanisms and regulatory pathways. Recombinant DNA technology will also be addressed. Prerequisite(s): CHEM 3250K
Offered: Not offered on a regular basis

CHEM 3300 Nanoscience and Nanotechnology (3-0-3):

This course is designed for a multidisciplinary audience with a variety of backgrounds such as chemistry, biology, physics, and forensic science. It will provide an introduction into the principles and applications of the promising field of nanotechnology and nanoscience. Furthermore, it will introduce the tools and principles relevant at the nanoscale dimension, and discuss current and future nanotechnology applications in engineering, materials, physics, chemistry, biology, electronics and energy. 3 credits. Prerequisite(s): CHEM 2302K and BIOL 2107K and (PHYS 1112K or PHYS 2222K)
Offered: Fall

CHEM 3400 Polymer Science (3-0-3):

Polymer science has diffused into the modern world with polymers finding applications in areas such as construction materials, drug design, computing hardware and optoelectronics, healthcare as well as biomedical applications. This course provides an introduction to the fundamental physical and chemical properties of polymers such as their molecular, thermal, mechanical, and electrical properties. In addition, we explore how these materials are synthesized, evaluated, and their commercial applications. 3 credits. Prerequisite(s): CHEM 2302K
Offered: Fall

CHEM 4100K Instrumental Analysis (3-3-4):

In this course, the student will be introduced to ~~study~~ the principles and applications of modern instrumental methods of analysis with special emphasis on spectrophotometric, chromatographic,

electroanalytical and radiochemical techniques. The laboratory work is designed to provide the practical experience on state-of-the-art analytical instruments such as NMR, IR spectrophotometer and Scanning Electron Microscope. 4 credits. Prerequisite(s): CHEM 3222K
Offered: Spring

CHEM 4110 Chemical Literature (1-0-1):

This course is designed to acquaint the student with ethics, governmental regulations of chemicals in the work place, and primary sources of information from journals to databases that are currently available. 1 credit. Prerequisite(s): Senior Status.
Offered: Fall

CHEM 4111 Junior Seminar (1-0-1):

This course is designed to train students in using science literature and presenting scientific information. Students will review scientific writing styles and presentation formats, prepare a poster presentation, and observe and evaluate scientific presentations by invited guest, ASU faculty and senior students. 1 credit. Prerequisite(s): Junior Status
Offered: Spring

CHEM 4120 Senior Research I (1-0-1):

In this course, students will present preliminary plans/ background of their senior research proposals following a review of the current literature. 1 credit. Prerequisite(s): CHEM 4111
Offered: Fall

CHEM 4130K Senior Research II (1-6-3):

In this course, students select a research area in chemistry and the final written report is completed as a senior thesis (Off campus research experience or industrial co-op/ internships may be substituted if taken at the junior/senior level). 3 credits. Prerequisite(s): CHEM 4120
Offered: Spring, Fall

CHEM 4140 Advanced Biochemistry (3-0-3):

This course examines detailed biochemical pathways and elucidates the nature and mechanism of these reactions with special emphasis on the quantification of the chemical components of cells. 3 credits. Prerequisite(s): CHEM 3250K
Offered: Not offered on a regular basis

CHEM 4150K Computational Chemistry (3-3-4):

Computer application of molecular orbital calculation using semi-empirical and *ab initio* programs incorporating molecular modeling aspects are investigated in this course. 0 - 4 credits. Prerequisite(s): CHEM 3222K
Offered: Spring

CHEM 4160 Special Topics in Chemistry (2-0-2):

This course is designed to allow students and faculty to explore some topics in greater detail than in a regular classroom setting, or to allow the introduction of such additional topics as specific areas of biochemistry, chemical physics, polymer chemistry, bio-analytical and environmental chemistry. Students must be enrolled in one of the following Class(s): Junior, Senior – Prerequisite(s): Permission of Instructor (may be repeated twice). 2 credits.
Offered: Not offered on a regular basis

CHEM 4170K Special Laboratory Problems (0-2-2):

This course is similar to Special Topics in Chemistry (CHEM 4160) but involves laboratory experiences. Prerequisite(s): Senior status and permission of Instructor. 2 credits.
Offered: Not offered on a regular basis

CHEM 4180K Topics in Research Technology (3-3-4):

This course examines relevant methods and techniques that are used in biomedical research. Prerequisite(s): Permission of instructor. 0 - 4 credits.
Offered: Not offered on a regular basis

CHEM 4200K Environmental Chemistry (3-3-4)

This course will include an overview of the earth and its atmosphere and a study of the chemical processes that occur in this environment. The chemical structures and toxic properties of chemical pollutants and the reactions in the environment will be included, as well as a discussion of the sources for chemical contamination and methods for controlling pollution. Prerequisite(s): CHEM 2302K and MATH 1113
Offered: Not offered on a regular basis

CHEM4210K Nanoscale Analytical Methods (3-3-4)

This course provides an introduction to the novelty, the challenge and the excitement of nanoscale science and technology. This course is designed to explore the principles of nanoscale analytical methods that are essential to nanoscience and nanomaterial chemistry. This course will also provide fundamental theoretical and practical knowledge of nanomaterials. ~~The~~ Students will be introduced to applications and characterizations of nanomaterials. Prerequisite(s): CHEM 2352K
Offered: Not offered on a regular basis

Area F Chemistry (18 Hours)

Class Title	Class Name	Lecture Hours	Lab Hours	Credit Hours
CHEM 1211K	Principles of Chemistry I	3	3	4
CHEM 1212K	Principles of Chemistry II	3	3	4

CHEM 2301K	Organic Chemistry I	3	3	4
CHEM 2302K	Organic Chemistry II	3	3	4
2 credits from area D*				

Area G Major Courses (61 Hours)

Class Title	Class Name	Lecture Hours	Lab Hours	Credit Hours
BIOL 2107K	Principles of Biology I	3	3	4
MATH 2212	Calculus II	3	3	4
CHEM 2351K	Quantitative Analysis I	3	3	4
CHEM 2352K	Quantitative Analysis II	3	3	4
CHEM 3221K	Physical Chemistry I	3	3	4
CHEM 3222K	Physical Chemistry II	3	3	4
CHEM 3231K	Intermediate Inorganic Chemistry I	3	3	4
CHEM 3250K	Biochemistry	3	3	4
CHEM 4100K	Instrumental Analysis	3	3	4
CHEM 4110	Chemical Literature	1	0	1
CHEM 4111	Junior Seminar	1	0	1
CHEM 4120	Senior Research I	1	0	1
CHEM 4130K	Senior Research II	0	3	3
PHYS 2100	Computer Applications	3	0	3
ELECTIVES				16 Hours
At least 3 credits non-science electives (2000 level or Higher)				

At least 8 credits in 3000 level or higher Chemistry electives				
Suggested Electives (Math & Chemistry)				
MATH 2213	Calculus III	4	0	4
MATH 2411	Statistics	3	0	3
CHEM2250/ BIOL 2250	Responsible Conduct of Research	2	0	2
CHEM 2320K	Laboratory Research Techniques	0	3	3
CHEM 3252	Biochemistry II	3	0	3
CHEM 3300	Nanoscience and Nanotechnology	3	0	3
CHEM 3400	Polymer Science	3	0	3
CHEM 4140	Advanced Biochemistry	3	0	3
CHEM 4150K	Computational Chemistry	3	3	4
CHEM 4200K	Environmental Chemistry	3	3	4
CHEM 4210K	Nanoscale Analytical Methods	3	3	4

CIC requested clarification with regard to credits for area D

REVISED RECOMMENDATION:

OWG 9: Science:
(reviewed & NOT supported byTau Kadhi &Funke Fontenot):

Recommends the adoption of the following with regard to the Chemistry program at the new ASU:

Chemistry

CHEM 1101K Intro to Chemistry (3-3-4):

This course is designed to prepare students with little, if any, chemistry or math backgrounds for the General Chemistry I and General Chemistry II sequence (CHEM 1211K/1212K). Topics to be studied include matter, measurement, units and unit conversions, graphing, atomic structure, nomenclature, bonding, the periodic table, chemical equations, chemical reactions, stoichiometry. Exercises designed to improve science study skills will be included. The emphasis of the lecture will be on problem solving strategies, skill building and real life applications. ~~The~~ Laboratory exercises will supplement lectures. 4 credits.
Offered: Not offered on a regular basis.

CHEM 1151K Survey of Chemistry I (3-3-4):

This course is the first in a two-semester sequence covering elementary principles of general and organic chemistry and biochemistry designed for allied health profession majors. Topics to be covered include elements and compounds, chemical equations, nomenclature, and molecular geometry. Laboratory exercises will supplement the lecture material. 4 credits. Prerequisite(s): Permission of instructor.
Offered: Fall

CHEM 1152K Survey of Chemistry II (3-3-4):

This course is the second in a two-semester sequence covering elementary principles of general and organic chemistry and biochemistry designed for allied health profession majors. Topics to be covered include gases, solutions, acids/bases, basic functional groups and reactions of organic molecules. Additionally, carbohydrates, lipids, proteins, and enzymes are introduced. Laboratory exercises will supplement lecture material. 4 credits. Prerequisite(s): CHEM 1151K
Offered: Spring

CHEM 1211K Principles of Chemistry I (3-3-4):

This course is the first part of a two-semester general chemistry curriculum. It is primarily designed for students with career interests in chemistry, biology, medicine, pharmacy and other STEM (Science, Technology, Engineering, and Mathematics) fields. This course covers basic chemistry: the fundamental concepts concerning the atomic and molecular structures and properties of matter, states of matter, stoichiometry, chemical equations and various types of equilibrium in solution including electrochemistry. Laboratory exercises supplement lectures. 4 credits. Prerequisite(s): Permission of instructor.
Offered: Fall, Spring, Summer

CHEM 1212K Principles of Chemistry II (3-3-4):

This course is the second part of a two-semester general chemistry sequence. It is primarily designed for students with career interests in chemistry, biology, medicine, pharmacy and other science fields. It will mainly deal with states of matter, solutions, chemical reactions, chemical kinetics, equilibrium, acids/bases and pH with corresponding laboratory activities. The laboratory activity is extremely important to enhance understanding of the materials learned from lecture. 4 credits. Prerequisite(s): CHEM 1211K

Offered: Fall, Spring, Summer

CHEM 2250/BIOL 2250 Responsible Conduct of Research (2-0-2):

This course is designed to provide appropriate training and oversight in the responsible and ethical conduct of research to students engaging in undergraduate research. Ethical and policy issues relevant to the responsible conduct of research will be discussed. Analysis and application of topics including conflict of interest, responsible authorship, policies for handling misconduct, data management, data sharing, and policies involving use of human and animal subjects. 2 credits.
Prerequisite(s): CHEM 1212K
Offered: Not offered on a regular basis

CHEM 2301K Organic Chemistry I (3-3-4):

This is the first course of a two-semester sequence in modern organic chemistry. In this course, the student will be introduced to concepts of reactivity from structural, mechanistic, and synthetic perspectives. We will explore details of aliphatic substitution, addition, elimination, and free-radical reaction types. The systematic naming of compounds, stereochemistry, conformation, and isomerism will also be covered extensively. Laboratory exercises supplement lectures. 4 credits.
Prerequisite(s): CHEM 1212K
Offered: Fall, Spring, Summer

CHEM 2302K Organic Chemistry II (3-3-4):

This course is a continuation sequence of CHEM 2301K and ~~it~~ includes a systematic description of the chemistry of functional groups such as alkenes, alkynes, alcohols, aromatic and carbonyl compounds. Spectroscopic methods of analysis, including infrared, ultraviolet/visible, mass spectroscopy and nuclear magnetic resonance spectroscopy are also included. Laboratory exercises supplement lectures. 4 credits. Prerequisite(s): CHEM 2301K
Offered: Fall, Spring, Summer

CHEM 2310 Scientific Mathematics (2-0-2):

This course is designed to acquaint students with mathematical concepts used in scientific studies including those required for the laboratory and publications. Prerequisite(s): Permission of instructor. 2 credits.
Offered: Fall

BIOL 2320/CHEM 2320 Laboratory Research Techniques (0-3-3):

This course provides students with hands-on training on cutting-edge techniques, technologies, and equipment that are essential for conducting general and biomedical research. It contains four modules: Basic Lab Skills, DNA, Protein Techniques and Instrumental Methods in Chemistry. Students learn experimental techniques including reagent preparation, pipetting, DNA isolation, protein purification, Agarose Gel Electrophoresis, SDS Gel Electrophoresis, conventional PCR,

cell culture, Western blot, ELISA, chromatography (GC-MS) and spectroscopy (FT-IR, NMR, UV-Vis). 3 credits. Prerequisite(s): Permission of instructor.
Offered: Spring, Fall

CHEM 2351K Quantitative Analysis I (3-3-4):

This course involves the study of theory and practice of gravimetric and titrimetric analyses with emphasis on solution equilibria as applied to acid-base, precipitation, and complexiometric methods. The laboratory work will cover basic laboratory techniques, solution preparation, titrations, equilibrium constants, statistics, gravimetric analysis, and EDTA experiments. 4 credits. Prerequisite(s): CHEM 1212K
Offered: Fall

CHEM 2352K Quantitative Analysis II (3-3-4):

This course is a continuation of the study of analytical methods including oxidation-reduction, titration and an introduction to instrumental methods-potentiometric, spectrophotometric, and chromatographic. The laboratory work will cover spectroscopic methods, electrochemical methods, and chromatographic methods. Modern analytical instruments such as UV-Vis and Infrared (IR) spectrophotometers, Gas Chromatograph (GC), High Performance Liquid Chromatograph (HPLC), Atomic Absorption Spectrophotometer (AAS), and electrochemical instruments will be introduced and data from each of the methods will be analyzed. 4 credits.
Prerequisite(s): CHEM 2351K
Offered: Spring

CHEM 2415 Scientific Writing (3-0-3):

This course is designed to acquaint learners with the discovery inquiry processes and to provide competencies for writing scientific papers. Prerequisite(s): Permission of instructor. 3 credits.
Offered: Not offered on a regular basis

CHEM 3221K Physical Chemistry I (3-3-4):

This course is a study of the fundamental laws governing matter in the gaseous state, the laws of thermodynamics (0th-3rd laws), and chemical kinetics. It will also include the applications of principles, such as solid and liquid states, solutions, phase equilibria, and electrochemistry. In this class, students will learn what constitutes the driving force for physical and chemical changes, and how it changes with temperature and pressure. The laboratory work is designed to provide students ~~you~~ with first-hand, practical experience in making and interpreting scientific observations. 4 credits. Prerequisite(s): PHYS 2222K
Offered: Spring

CHEM 3222K Physical Chemistry II (3-3-4):

This course introduces the study of the theory and application of quantum theory and bonding; magnetic and spectral properties of atoms and molecules; and statistical mechanics. 4 credits.
Prerequisite(s): PHYS 2222K
Offered: Fall

CHEM 3231K Intermediate Inorganic Chemistry I (3-3-4):

The course will focus on acquiring different conceptual tools that are necessary to understand structure-function correlations in inorganic systems. The tools include chemical forces, symmetry and point groups, qualitative molecular orbital theory and coordination chemistry. This course will cover 12 chapters in the textbook, ranging from the first principles, transition elements to bioinorganic chemistry. The laboratory work will supplement lecture material. 4 credits. Prerequisite(s): CHEM 3222K
Offered: Spring

CHEM 3232 Intermediate Inorganic Chemistry II (3-0-3):

This course involves the study of the transition elements including their bonding of coordination compounds, stereo-chemistry and reactions, and an introduction to organometallic chemistry and catalysis. 3 credits. Prerequisite(s): CHEM 3231K
Offered: Not offered on a regular basis

CHEM 3250K Biochemistry I (3-3-4):

In this course, the student examines the structure and function of carbohydrates, amino acids and proteins, lipids, and nucleic acids. The laboratory work is designed to supplement lectures. 4 credits. Prerequisite(s): CHEM 2302K
Offered: Spring, Fall, Summer

CHEM 3252 Biochemistry II (3-0-3):

Designed to present details of biochemical processes normally covered in the second semester of a two semester biochemistry sequence. This includes an in-depth study of the metabolism of amino acids, lipids, carbohydrates and nucleic acids; advanced enzyme kinetics; reaction mechanisms and regulatory pathways. Recombinant DNA technology will also be addressed.
Prerequisite(s): CHEM 3250K
Offered: Not offered on a regular basis

CHEM 3300 Nanoscience and Nanotechnology (3-0-3):

This course is designed for a multidisciplinary audience with a variety of backgrounds such as chemistry, biology, physics, and forensic science. It will provide an introduction into the principles and applications of the promising field of nanotechnology and nanoscience. Furthermore, it will introduce the tools and principles relevant at the nanoscale dimension, and discuss current and future nanotechnology applications in engineering, materials, physics, chemistry, biology, electronics and energy. 3 credits. Prerequisite(s): CHEM 2302K and BIOL 2107K and (PHYS 1112K or PHYS 2222K)
Offered: Fall

CHEM 3400 Polymer Science (3-0-3):

Polymer science has diffused into the modern world with polymers finding applications in areas such as construction materials, drug design, computing hardware and optoelectronics, healthcare

as well as biomedical applications. This course provides an introduction to the fundamental physical and chemical properties of polymers such as their molecular, thermal, mechanical, and electrical properties. In addition, we explore how these materials are synthesized, evaluated, and their commercial applications. 3 credits. Prerequisite(s): CHEM 2302K
Offered: Fall

CHEM 4100K Instrumental Analysis (3-3-4):

In this course, the student will be introduced to ~~study~~ the principles and applications of modern instrumental methods of analysis with special emphasis on spectrophotometric, chromatographic, electroanalytical and radiochemical techniques. The laboratory work is designed to provide the practical experience on state-of-the-art analytical instruments such as NMR, IR spectrophotometer and Scanning Electron Microscope. 4 credits. Prerequisite(s): CHEM 3222K
Offered: Spring

CHEM 4110 Chemical Literature (1-0-1):

This course is designed to acquaint the student with ethics, governmental regulations of chemicals in the work place, and primary sources of information from journals to databases that are currently available. 1 credit. Prerequisite(s): Senior Status.
Offered: Fall

CHEM 4111 Junior Seminar (1-0-1):

This course is designed to train students in using science literature and presenting scientific information. Students will review scientific writing styles and presentation formats, prepare a poster presentation, and observe and evaluate scientific presentations by invited guest, ASU faculty and senior students. 1 credit. Prerequisite(s): Junior Status
Offered: Spring

CHEM 4120 Senior Research I (1-0-1):

In this course, students will present preliminary plans/ background of their senior research proposals following a review of the current literature. 1 credit. Prerequisite(s): CHEM 4111
Offered: Fall

CHEM 4130K Senior Research II (1-6-3):

In this course, students select a research area in chemistry and the final written report is completed as a senior thesis (Off campus research experience or industrial co-op/ internships may be substituted if taken at the junior/senior level). 3 credits. Prerequisite(s): CHEM 4120
Offered: Spring, Fall

CHEM 4140 Advanced Biochemistry (3-0-3):

This course examines detailed biochemical pathways and elucidates the nature and mechanism of these reactions with special emphasis on the quantification of the chemical components of cells. 3 credits. Prerequisite(s): CHEM 3250K

Offered: Not offered on a regular basis

CHEM 4150K Computational Chemistry (3-3-4):

Computer application of molecular orbital calculation using semi-empirical and *ab initio* programs incorporating molecular modeling aspects are investigated in this course. 0 - 4 credits.
Prerequisite(s): CHEM 3222K
Offered: Spring

CHEM 4160 Special Topics in Chemistry (2-0-2):

This course is designed to allow students and faculty to explore some topics in greater detail than in a regular classroom setting, or to allow the introduction of such additional topics as specific areas of biochemistry, chemical physics, polymer chemistry, bio-analytical and environmental chemistry. Students must be enrolled in one of the following Class(s): Junior, Senior – Prerequisite(s): Permission of Instructor (may be repeated twice). 2 credits.
Offered: Not offered on a regular basis

CHEM 4170K Special Laboratory Problems (0-2-2):

This course is similar to Special Topics in Chemistry (CHEM 4160) but involves laboratory experiences. Prerequisite(s): Senior status and permission of Instructor. 2 credits.
Offered: Not offered on a regular basis

CHEM 4180K Topics in Research Technology (3-3-4):

This course examines relevant methods and techniques that are used in biomedical research. Prerequisite(s): Permission of instructor. 0 - 4 credits.
Offered: Not offered on a regular basis

CHEM 4200K Environmental Chemistry (3-3-4)

This course will include an overview of the earth and its atmosphere and a study of the chemical processes that occur in this environment. The chemical structures and toxic properties of chemical pollutants and the reactions in the environment will be included, as well as a discussion of the sources for chemical contamination and methods for controlling pollution. Prerequisite(s): CHEM 2302K and MATH 1113
Offered: Not offered on a regular basis

CHEM4210K Nanoscale Analytical Methods (3-3-4)

This course provides an introduction to the novelty, the challenge and the excitement of nanoscale science and technology. This course is designed to explore the principles of nanoscale analytical methods that are essential to nanoscience and nanomaterial chemistry. This course will also provide fundamental theoretical and practical knowledge of nanomaterials. ~~The~~ Students will be introduced to applications and characterizations of nanomaterials. Prerequisite(s): CHEM 2352K
Offered: Not offered on a regular basis

Area F Chemistry (18 Hours)

Class Title	Class Name	Lecture Hours	Lab Hours	Credit Hours
CHEM 1211K	Principles of Chemistry I	3	3	4
CHEM 1212K	Principles of Chemistry II	3	3	4
CHEM 2301K	Organic Chemistry I	3	3	4
CHEM 2302K	Organic Chemistry II	3	3	4
2 credits from area D*				

Area G Major Courses (61 Hours)

Class Title	Class Name	Lecture Hours	Lab Hours	Credit Hours
BIOL 2107K	Principles of Biology I	3	3	4
MATH 2212	Calculus II	3	3	4
CHEM 2351K	Quantitative Analysis I	3	3	4
CHEM 2352K	Quantitative Analysis II	3	3	4
CHEM 3221K	Physical Chemistry I	3	3	4
CHEM 3222K	Physical Chemistry II	3	3	4
CHEM 3231K	Intermediate Inorganic Chemistry I	3	3	4
CHEM 3250K	Biochemistry	3	3	4
CHEM 4100K	Instrumental Analysis	3	3	4
CHEM 4110	Chemical Literature	1	0	1
CHEM 4111	Junior Seminar	1	0	1
CHEM 4120	Senior Research I	1	0	1
CHEM 4130K	Senior Research II	0	3	3
PHYS 2100	Computer Applications	3	0	3

ELECTIVES				16 Hours
At least 3 credits non-science electives (2000 level or Higher)				
At least 8 credits in 3000 level or higher Chemistry electives				
Suggested Electives (Math & Chemistry)				
MATH 2213	Calculus III	4	0	4
MATH 2411	Statistics	3	0	3
CHEM2250/ BIOL 2250	Responsible Conduct of Research	2	0	2
CHEM 2320K	Laboratory Research Techniques	0	3	3
CHEM 3252	Biochemistry II	3	0	3
CHEM 3300	Nanoscience and Nanotechnology	3	0	3
CHEM 3400	Polymer Science	3	0	3
CHEM 4140	Advanced Biochemistry	3	0	3
CHEM 4150K	Computational Chemistry	3	3	4
CHEM 4200K	Environmental Chemistry	3	3	4
CHEM 4210K	Nanoscale Analytical Methods	3	3	4

CIC requested clarification with regard to credits for area D

*** Principles of Physics I (PHYS 2221K), or Principles of Physics II (PHYS 2222K), or Calculus I (MATH 1211), or Calculus II (MATH 2212) (If not taken in Areas A or D)**

ASU and DSC faculty decided that "Principles of Physics I (PHYS 2221K), or Principles of Physics II (PHYS 2222K), or Calculus I (MATH 1211), or

Calculus II (MATH 2212) (If not taken in Areas A or D)" will be used to give such credit.

CIC requested clarification to the "2 credits from area D," reference in the list of Area F courses, but the above statement does not provide that clarification. Moreover, the BOR Guidelines for Area D stipulates that "institution or program may grant one semester hour of credit for an Area D course to count in Area F or in the general degree requirements." (http://www.usg.edu/academic_affairs_handbook/section2/C738/). The 2 credits exceed that limit.

OWG 11: Graduate Studies:
(reviewed & supported by Tau Kadhi and from Funke Fontenot):

ORIGINAL RECOMMENDATION:

10. Recommends that no more than nine (9) graduate hours earned in non-degree status may be counted toward a degree program; the courses may not be more than six-years old:

The OWG believes this is supported by best practices in graduate study.

It would be helpful for the group to articulate the "best practices in graduate study" that support this recommendation.
Returned by CIC for more study of "best practices in graduate study".

REVISED RECOMMENDATION:

(reviewed & supported by Tau Kadhi and from Funke Fontenot):

10. Recommends that with regard to Master's Degrees: If graduate credit earned at an accredited institution constitutes a logical part of the student's master's degree program, transfer of credit may be allowed when recommended by the student's graduate coordinator and approved by the dean of the Graduate School. Such transfer of credit cannot exceed nine semester hours and must fall within the time limit of the degree. No grade below B may be transferred. The courses to be transferred may not have been used in a degree program at another institution. Transfer grades are not used in calculating cumulative averages. All requests for transfer credit, with accompanying official transcripts, must be in the Graduate School by the midpoint of the semester in which the student plans to graduate.

The OWG found no definitive study on this practice. The practice throughout the USG allows six semester hours of transfer credit to be accepted and generally applied to 30 semester hour degree programs. The literature on graduate transfer credits generally discussed economic factors rather than academic issues. Graduate programs at ASU

range from 30 to 48 semester hours. The OWG supports the economic concern, in the absence of an overriding academic concern, as most relevant for ASU's students.

11. Recommends that with regard to Specialist in Education Degrees candidates may transfer up to 6 hours from an accredited institution where the student had been fully admitted into an Ed.S. degree program. This credit must meet the same criteria as credit transferred for master's degrees.

The OWG found no definitive study on this practice. The practice throughout the USG allows six semester hours of transfer credit to be accepted and generally applied to 30 semester hour degree programs. The literature on graduate transfer credits generally discussed economic factors rather than academic issues. Graduate programs at ASU range from 30 to 48 semester hours. The OWG supports the economic concern, in the absence of an overriding academic concern, as most relevant for ASU's students.

OWG 12: Inventory of Programs, Authorized Degrees, Delivery Modes, Assessment etc.:
(reviewed & supported by Tau Kadhi and from Funke Fontenot):

ORIGINAL RECOMMENDATION:

2. Recommends that the new Albany State University uses the attached curriculum approval process:

Albany State University and Darton State College each have curriculum approval processes in place. Both processes were reviewed and consolidated into a new process that promotes shared governance.

Curriculum Approval Routing Process for the new ASU (July 18. 2016)

Originator

- Confers with others within the discipline and department within which courses will be taught
- Submits to the department chair* for review and discussion

Department Chair

- Reviews the proposal and seeks consultation as appropriate
- May not necessarily agree with the proposal but will ensure that all necessary information is provided and forms are filled out correctly
- Forward to the department curriculum committee**

Department Curriculum Committee (should be a standing, elected committee)

- Originator and/or department chair should attend to answer questions

- May send proposal back to chair for more information if needed
- Dean or designee may serve as ex-officio member
- Committee chair will sign and forward decision to the dean (decision may be positive, negative, or request for more information from chair)

Dean

- Dean reviews and seeks consultation as appropriate
- Dean will sign and forward to the Academic Review Committee, cc'ing VPAA

Academic Review Committee (standing committee by position)

- Dean will present to the committee
- ARC will include representation from institutional effectiveness, financial aid, online learning, registrar, enrollment management, VPAA office, and deans (others invited as needed)
- Meeting will be open to all faculty
- Originator and/or department chair may present answers to ARC questions
- This body will only address issues related to their areas such as online delivery methods, accreditation, impact on enrollment, etc. All content issues will be relegated to the department curriculum committee or faculty curriculum committee.
- Academic Review Committee chair will sign and forward to Faculty Curriculum Committee

Faculty Curriculum Committee (standing committee by appointment of the Faculty Senate)

- Originator, chair, or dean should attend to answer questions
- Committee chair will sign and forward positive decision and to the Faculty Senate cc'ing VPAA (decision may be positive or negative)
- May send proposal back to department curriculum committee for more information if needed

Faculty Senate

- Senate votes on proposal(s) – final campus approval
- Senate President signs Curriculum Proposal Transmittal Sheet and forwards to VPAA
- Publication of Senate minutes provide campus notification

Provost/VPAA

- Notifies dean and ARC members if approved
- Provides notice of other approvals needed (SACSCOC, USG etc.)

- Executive assistant provides other necessary forms and submits to external bodies as needed

*For programs without chairs, the dean will be responsible for the chair duties in the process. The dean may delegate these duties to a program director or other senior member of a school's faculty.

Curriculum Transmittal Form

This form should serve as the cover and routing page for all program and/or course proposals, including revisions and terminations. In addition to this cover page, the originator of the proposal should attach all required forms and appendices.

College	Department
Program	Course

Action ☐ Course related ☐ Program related
☐ New program ☐ Revision ☐ Deactivation ☐ Termination

Originator

Name	*Signature*	Date

Department Chair / Program Director

Name	*Signature*	Date

Departmental Curriculum Committee Chair

Name	*Signature*	Date
Circle one: Approve Disapprove		

Dean

Name	*Signature*	Date

Academic Review Committee Chair

Name	*Signature*	Date

Faculty Curriculum Committee Chair

Name	*Signature*	Date
Circle one: Approve Disapprove		

Faculty Senate (signed by Senate President)

	Signature	Date
Circle one: Approve Disapprove		

Provost/Vice President for Academic Affairs

Signature	Date

Further Action Required (please send necessary forms to department chair):

☐ USG Regents Advisory Committee ☐ USG General Education Committee

☐ SACSCOC ☐ Other:

Forwarded to the USG

Submitted by		Date
Signature		
Forms submitted (*please attach)*		

Decisions Rendered and Date Returned (*please attach)*	
Additional Information	

Forwarded to SACSCOC

Submitted by		Date
Signature		
Forms submitted (*please attach)*		
Decisions Rendered and Date Returned (*please attach)*		
Additional Information		

Forwarded to the Registrar

Submitted by		Date
Signature		

Change made to Catalog

Submitted by		Date
Signature		
Changes Made		

I support the idea of a structure and approval routing process: FF. Note that the Provost has circulated a curriculum approval routing form that is being discussed by Leadership team.

Returned by the CIC for more work with help from Linda Noble at the USG office.

REVISED RECOMMENDATION:
(reviewed & comment by Tau Kadhi and from Funke Fontenot):

2. Recommends that the new Albany State University uses the attached curriculum approval process:

Albany State University and Darton State College each have curriculum approval processes in place. Both processes were reviewed and consolidated into a new process that promotes shared governance.

Curriculum Approval Routing Process for the new ASU (January. 2017)

Department Committee

- Reviews the proposal and seeks consultation as appropriate
- Department chair will serve as a member of the committee, but should not necessarily be the chair of the curriculum committee.
- May send proposal back to Faculty initiator for more information if needed
- Dean and/or Chair will serve as ex-officio member
- Department chair will sign once approved and forward to College Review Committee

College Review Committee and Dean

- College Review Committee and Dean review and seek consultation as appropriate
- College Review Committee and Dean will sign and forward to the Curriculum Committee

Graduate or Undergraduate Programs Review Committee	**Faculty Senate**
• Graduate or Undergraduate Programs Review Committee and Dean review and forward positive recommendations to the Curriculum and New Programs Committee	• Department Chair, and/or Dean should attend to answer questions • Faculty Senate Chair or representative will sign Curriculum Approval Form at the Curriculum and New Programs Committee meeting if voted approved by Faculty Senate

• Graduate Dean or Undergraduate Programs Review Committee Chair will sign and forward to the Curriculum and New Programs Committee	• May send proposal back to College Review Committee for more information if needed

Curriculum and New Programs Committee

- Department chairs, faculty initiators, or deans should attend to answer questions
- May send proposal back to Graduate or Undergraduate Programs Review Committee for more needed information
- Faculty Senate representative will sign at this meeting if recommended by Faculty Senate

Provost/VPAA

- Final campus approval
- Notifies dean, chairs and faculty if action is approved
- Provides notice of other approvals needed (SACSCOC, USG, etc.)
- Executive assistant provides other necessary forms and submits to outside bodies as needed

*For programs without chairs, the dean will be responsible for the chair duties in the process. The dean may delegate these duties to a program director or other senior members of the college's faculty.

Curriculum Approval Form

This form should serve as the cover and routing page for all curriculum approvals. In addition to this cover page, the Department Chair or initiator should attach all required forms and appendices.

Program/Discipline	
College	Department

Action ☐ Course related ☐ Program related ☐ SACS ☐ US

Department Chair

Name	*Signature*	Date

College Review Committee Chair

Name	*Signature*	Date

Dean Approval

Name	*Signature*	Date

Graduate or Undergraduate Programs Review Committee

Name	*Signature*	Date

Faculty Senate Representative

Name	*Signature*	Date

Provost/Vice President for Academic Affairs

Signature	Date
Date copy sent to Registrar for program changes	Date
Date copy sent from Registrar to Department/College after changes made	Date

Revised 11/8/16 by
Curriculum and New Programs Committee

This proposed routing form has been presented to, and reviewed by the joint Faculty Senate, and a modified form was voted on by that body on January18, 2017.

No need for CIC approval.