

Draft Course Descriptions and Learning Outcomes Texas Higher Education Coordinating Board August 2012

Materials for the 2012 ACGM Learning Outcomes Project

Faculty groups made up of individuals representing Texas public community and technical colleges and public universities equally have developed new course descriptions and learning outcomes for courses in the discipline areas of Philosophy, Psychology, Spanish, Speech and Sociology. Student learning outcomes describe what students should be able to demonstrate in terms of knowledge, skills, and attitudes upon completion of a course. The goal is for the new descriptions and learning outcomes to be included in the ACGM. As part of the development process the faculty groups surveyed course syllabi from public institutions. We invite you to review and comment upon these draft descriptions and outcomes. The public comment period will begin August 17, 2012 and will end on September 17, 2012.

Please email your comments to Ms. Rebecca Leslie at Rebecca.Leslie@thehb.state.tx.us. The faculty groups will take into consideration comments received.

Philosophy (PHIL)

PHIL 1301 Introduction to Philosophy

A study of major issues in philosophy and/or the work of major philosophical figures in philosophy. Topics in philosophy may include theories of reality, theories of knowledge, theories of value, and their practical applications.

Learning Outcomes

Upon successful completion of this course, students will:

1. Read, analyze, and critique philosophical texts.
2. Demonstrate knowledge of major arguments, problems, and terminology in philosophy.
3. Articulate key conceptual distinctions in philosophy.
4. Present logically persuasive arguments in writing.
5. Demonstrate an ability to discuss and reflect upon the application of the course material to various aspects of life.
6. Evaluate the personal and social responsibilities of living in a diverse world.

PHIL 1304 Introduction to World Religions

A comparative study of world religions, including but not limited to Hinduism, Buddhism, Judaism, Christianity, and Islam.

Learning Outcomes

Upon successful completion of this course, students will:

1. Read, analyze, and critique religious texts.
2. Demonstrate knowledge of beliefs, practices, and values of major world religions.
3. Trace the historical developments and cultural expressions of world religions;
4. Articulate key conceptual distinctions in world religions.
5. Communicate understanding of world religions, orally or in writing.
6. Reflect upon ways of living responsibly in a world where people have diverse religious beliefs.

PHIL 1316 History of Religion I **PHIL 1317 History of Religion II**

A comparative study of world religions, including but not limited to Hinduism, Buddhism, Judaism, Christianity, and Islam.

Learning Outcomes

Upon successful completion of this course, students will:

1. Read, analyze, and critique religious texts;
2. Demonstrate knowledge of beliefs, practices, and values of selected religious traditions.
3. Locate the origin and trace the historical developments of selected religious traditions.
4. Communicate understanding of selected religious traditions, orally or in writing.
5. Reflect upon ways of living responsibly in a world where people have diverse religious beliefs.

PHIL 2303 Introduction to Formal Logic

The purpose of the course is to introduce the student to symbolic logic, including syllogisms, propositional and predicate logic, and logical proofs in a system of rules.

Learning Outcomes

Upon successful completion of this course, students will:

1. Determine the logical structure of English arguments by identifying premises and conclusions.
2. Translate English statements into propositional and predicate notation;
3. Validate argument forms using the methods of truth tables and a system of propositional logic.
4. Understand basic concepts of formal logic including truth functionality, validity, soundness, tautology, contradiction, counterexample, and equivalence.

PHIL 2306 Introduction to Ethics

The systematic evaluation of classical and/or contemporary ethical theories concerning the good life, human conduct in society, morals, and standards of value.

Learning Outcomes

Upon successful completion of this course, students will:

1. Read, analyze, and critique philosophical texts.
2. Define and appropriately use important terms such as relativism, virtue, duty, rights, utilitarianism, natural law, egoism, altruism, autonomy, and care ethics.
3. Demonstrate knowledge of major arguments and problems in ethics.
4. Present and discuss ethical positions in well-reasoned writing.
5. Apply ethical concepts and principles to address moral concerns.
6. Demonstrate an ability to discuss and reflect upon the application of the course material to various aspects of life.
7. Reflect upon ways of living responsibly in a world where people have diverse ethical beliefs.

PHIL 2307 Introduction to Social & Political Philosophy

A study of major issues in social and political theory and/or the work of major philosophical figures in this area.

Learning Outcomes

Upon successful completion of this course, students will:

1. Read, analyze, and critique texts in social and political philosophy.
2. Define and appropriately use important terms common to social and political philosophy.
3. Demonstrate knowledge of major forms of government and social systems.
4. Assess and evaluate social and political theories orally and/or in writing.
5. Apply course material to social and political concerns.
6. Demonstrate an ability to discuss and reflect upon the application of the course material to various aspects of life.

7. Reflect upon ways of living responsibly in a world where people have diverse political beliefs.

PHIL 2316 Classical Philosophy

Study of major philosophers and philosophical themes from the ancient through medieval periods.

Learning Outcomes

Upon successful completion of this course, students will:

1. Read, analyze, and critique philosophical texts.
2. Demonstrate knowledge of major arguments, problems, and terminology in philosophy.
3. Locate the origin and trace the historical developments of selected philosophical traditions.
4. Articulate key conceptual distinctions in philosophy.
5. Present logically persuasive arguments in writing.
6. Demonstrate an ability to discuss and reflect upon the application of the course material to various aspects of life.

PHIL 2317 Seventeenth- and Eighteenth-Century Philosophy

Study of major philosophers and philosophical themes from the seventeenth through the eighteenth centuries.

Learning Outcomes

Upon successful completion of this course, students will:

1. Read, analyze, and critique philosophical texts.
2. Demonstrate knowledge of major arguments, problems, and terminology in philosophy.
3. Locate the origin and trace the historical developments of selected philosophical traditions.
4. Articulate key conceptual distinctions in philosophy.
5. Present logically persuasive arguments in writing.
6. Demonstrate an ability to discuss and reflect upon the application of the course material to various aspects of life.

PHIL 2318 Nineteenth- and Twentieth-Century Philosophy [Staff recommend deletion of this course due to low frequency of use by institutions.]

Study of major philosophers and philosophical themes from the nineteenth century to the present.

Learning Outcomes

Upon successful completion of this course, students will:

1. Read, analyze, and critique philosophical texts.
2. Demonstrate knowledge of major arguments, problems, and terminology in philosophy.
3. Locate the origin and trace the historical developments of selected philosophical traditions.
4. Articulate key conceptual distinctions in philosophy.
5. Present logically persuasive arguments in writing.
6. Demonstrate an ability to discuss and reflect upon the application of the course material to various aspects of life.

PHIL 2321 Philosophy of Religion

A study of the major issues in the philosophy of religion such as the existence and nature of God, the relationships between faith and reason, the nature of religious language, religious experience, and the problem of evil.

Learning Outcomes

Upon successful completion of this course, students will:

1. Read, analyze, and critique texts in the philosophy of religion.
2. Demonstrate knowledge of major arguments, problems, and terminology in the philosophy of religion.
3. Articulate key concepts and issues in the philosophy of religion.
4. Write logically persuasive assessments of key concepts and issues.
5. Demonstrate an ability to discuss and reflect upon the application of philosophy to various aspects of religion.
6. Evaluate the personal and social responsibilities of living in a diverse world.

PHIL 13XX Critical Thinking [A new course created by the faculty work group]

Nature and methods of clear and critical thinking and methods of reasoning such as deduction, induction, scientific reasoning, and fallacies.

Learning Outcomes

Upon successful completion of this course, students will:

1. Analyze the form and structure of arguments, including the identification of premises and conclusions.
2. Evaluate the correctness of deductive, inductive and other forms of reasoning.
3. Distinguish the validity of an argument from the strength of its premises.
4. Recognize common fallacies.
5. Use research tools for evaluating the truth of premises.
6. Recognize ambiguity and evaluate its effects on cogent reasoning.
7. Apply argument analysis to improve the organization of their writing.
8. Apply argument analysis to problem solving.

General Recommendations for Philosophy Courses.

Create **RELS** rubric for the ACGM in order to cross-list relevant Philosophy courses with Religion courses.

Cross-listing:

PHIL 1304 with RELS 1304 Introduction to World Religions

PHIL 1316 with RELS 1316 History of Religion I

PHIL 1317 with RELS 1317 History of Religion II

Psychology (PSYC)

PSYC 2301 General Psychology

Survey of the essential subject areas, major theories and approaches to the scientific study of behavior and mental processes.

Learning Outcomes

Upon successful completion of this course, students will:

1. Research methods: Identify research findings through the application of the scientific method. OR Exhibit an understanding and ability to apply basic research methods in psychology including research design, data analysis, and interpretation.
2. Identify factors in the historical development of the study of human behavior including current theoretical perspectives prominent in the field of psychology.
3. Identify terminology unique to the study of psychology.
4. Identify accepted approaches and standards in psychological assessment and evaluation.
5. Identify factors in physiological and psychological processes involved in human behavior.

PSYC 2306 Human Sexuality

This course will provide an overview of the broad field of human sexuality. Topics will be covered from various perspectives – biological, sociological, anthropological, etc., but will focus primarily on the psychological perspective. The goal is for each student to learn factual, scientifically-based information that will provoke thought and contribute to his/her own decision-making on sexual issues outside of the classroom.

Learning Outcomes

Upon successful completion of this course, students will:

1. Identify common myths of human sexual functioning.
2. Identify human sexual behaviors and sexual responses.
3. Identify the relationship between sexuality and developmental changes throughout the lifespan.
4. Identify the causes, symptoms, and treatments for sexually transmitted infections and the behaviors that increase and decrease the risk of contracting an STI.
5. Identify the principles of effective communication and the specific barriers to effective communication about sex and sexuality.
6. Demonstrate an academic sexual vocabulary.
7. Identify cultural differences in sexual attitudes and behaviors.
8. Recall the occurrence and causes of sexual variations.
9. Identify contraceptive methods and how these methods prevent conception.

PSYC 2307 Adolescent Psychology

This course explores the physical, behavioral, mental, emotional, and social changes that accompany growth and development in adolescence. The purpose of this course is to provide an overview of theories, research, issues, and applications related to adolescent development.

Learning Outcomes

Upon successful completion of this course, students will:

1. Describe the major theoretical perspectives in normal adolescent development.
2. Identify major changes in physical, cognitive and socioemotional development associated with adolescence.
3. Distinguish between normal and abnormal behavior (psychological problems) and development within adolescence.
4. Identify factors that put adolescents at risk.

PSYC 2308 Child Psychology

This course will address psychological development from conception through middle childhood with references to physical, cognitive, social and personality changes. Students will examine the interplay of biological factors, human interaction, social structures and cultural forces in development.

Learning Outcomes

Upon successful completion of this course, students will:

1. Describe how human beings change physically, cognitively, socially and emotionally from conception through childhood.
2. Identify fundamental concepts and theories, both recent and historical, within the field of child psychology.
3. Evaluate research issues and methodologies used to investigate developmental phenomena.
4. Describe the process of development and the multiple sources of influence on a developing child.

PSYC 2314 Lifespan Growth & Development

Life-Span Growth and Development is a study of development from conception to death with emphasis on factors which influence growth and development. Consideration will be given to social, emotional, cognitive, and physical growth.

Learning Outcomes

Upon successful completion of this course, students will:

1. Identify the stages of the developing person at different periods of the life span from birth to death.
2. Identify the social, political, economic, and cultural forces that affect the development process of the individual.
3. Identify factors of responsible personal behavior with regard to issues such as sexual activity, substance abuse, marriage, and parenting.
4. Identify the biosocial, cognitive and psychological influences throughout the lifespan as an ongoing set of processes, involving both continuity and change.
5. Identify the different developmental perspectives of the major theories of development (i.e. cognitive, learning, humanistic and psychodynamic).
6. Identify examples of some of the cultural and ethnic differences that influence development throughout the lifespan.
7. Demonstrate critical thinking and cognitive processing abilities by careful, thoughtful reading and clear written expression through written assignments and class interaction.
8. Identify the various causes or reasons for disturbances in the developmental process.

Psychology course recommended for deletion from the ACGM:

PSYC 2311 Adult Development [This course is rarely used by institutions and has very low student enrollment. FY2010 enrollment=244]

PSYC 2302 Applied Psychology [FY2010 enrollment=1478]

Sociology (SOCI)

SOCI 1301 Introduction to Sociology

Introduction to the scientific study of human society, including ways in which groups, social institutions, and individuals affect each other. Causes of social stability and social change are explored through the application of various theoretical perspectives, key concepts, and related research methods of sociology. Analysis of social issues in their institutional context may include topics such as social stratification, gender, race/ethnicity, and deviance.

Learning Outcomes

Upon successful completion of this course, students will:

1. Demonstrate understanding of basic theoretical perspectives of sociology.
2. Demonstrate understanding of various methodological approaches to the collection and analysis of data in sociology.
3. Demonstrate understanding of key concepts in sociology.
4. Demonstrate understanding of empirical findings of various subfields of sociology.
5. Demonstrate understanding of the complex links between individual experiences and broader institutional forces.

SOCI 1306 Social Problems

Application of sociological principles and theoretical perspectives to major social problems in contemporary society such as inequality, crime and violence, substance abuse, environmental issues, deviance, or family problems.

Learning Outcomes

Upon the successful completion of this course, students will:

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1. Describe how the sociological imagination can be used to explain the emergence and implications of contemporary social problems.
2. Explain the nature of social problems from at least one sociological perspective, e.g., critical, functional, interpretive, etc.
3. Identify multidimensional aspects of social problems including the global, political, economic, and cultural dimensions of social problems.
4. Discuss how "solutions" to social problems are often contentious due to diverse values in society.
5. Describe how the proposed "solutions" to a social problem, including social policies, may bring rise to other social problems.

SOCI 2301 Marriage & Family

This course encompasses the sociological and theoretical analysis of the structures and functions of the family, the varied cultural patterns of the American family, and the relationships that exist among the individuals within the family, as well as the relationships that exist between the family and other institutions in society.

Learning Outcomes

Upon the successful completion of this course, students will:

1. Demonstrate understanding of the family and marriage as social institutions through theoretical perspectives.
2. Examine the diversity and complexity of contemporary families.
3. Explore changing cultural attitudes about marriage and alternatives to marriage.
4. Critically evaluate such issues as sexuality, partner choice, resolving marital issues, having and raising children, and combining work with family.
5. Demonstrate understanding of the relationship between theories and research methods used in the scientific study of marriage and family.
6. Describe some of the historical changes and current trends regarding the structural nature of the American family including the role of gender in relationships.
7. Identify causes and consequences of relevant problems within contemporary families.

SOCI 2319 Minority Studies

A sociological study of minority-majority group relations that addresses their historical, cultural, social, economic, and institutional development in the United States. Discussion includes the experiences of minority groups within the context of their own cultural heritage and tradition, as well as that of the dominant culture. Core concepts of migration, prejudice/discrimination, inequality, dominance/subordination and diversity are included. Analysis of minorities may include race/ethnicity, sex/gender, disability, and religion.

Learning Outcomes

Upon the successful completion of this course, students will:

1. Differentiate between important concepts and theories pertaining to prejudice and discrimination.
2. Describe the social constructs of minority/majority status, gender, race, and ethnicity.
3. Analyze the developmental history, culture, experiences of inequality, and current life chances of minority groups in the United States.
4. Analyze minority group interactions in the United States focusing on immigration and migration patterns, assimilation processes, and adjustments to American life.
5. Describe the effects of discrimination and prejudice on the everyday life of minority group members in the context of social institutions.
6. Describe some of the challenges of living and interacting within a diverse multicultural society.

SOCI 2336 Criminology

This is an introduction to the sociological study of crime and criminal behavior. The course surveys various theories of crime, with an emphasis on understanding the social causes of criminal behavior. The techniques for measuring crime as a social phenomenon and the characteristics of criminals are examined. This course addresses crime types (such as consensual or white-collar crimes), the criminal justice system, and other social responses to crime.

Learning Outcomes

Upon the successful completion of this course, students will:

1. Demonstrate an understanding of key concepts associated with criminology.
2. Identify major criminological theories.
3. Describe the major categories of crime.
4. Identify and explain the various methodological approaches used to research crime and criminal behavior.
5. Describe the components and explain the dynamics of the criminal justice system.

Sociology courses recommended for deletion from the ACGM.

SOCI 2320 Minority Studies II (FY 2010 enrollment = 20)

SOCI 2339 Juvenile Delinquency (FY 2010 enrollment = 18)

Spanish (SPAN)

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SPAN 1311 Beginning Spanish I (3 SCH version)

SPAN 1411 Beginning Spanish I (4 SCH version)

SPAN 1511 Beginning Spanish I (5 SCH version)

Basic Spanish language skills in listening, speaking, reading, and writing within a cultural framework. Students will acquire the vocabulary and grammatical structures necessary to communicate and comprehend at the beginner level.

Learning Outcomes

Upon successful completion of this course, students will:

1. Engage in conversations using level-appropriate grammatical structures including narrating events that take place in the present and producing questions and responses on a variety of topics dealing with everyday life.
2. Understand level-appropriate spoken Spanish.
3. Write simple sentences and organize them into paragraphs.
4. Read and comprehend level-appropriate texts.
5. Identify and discuss traditions, customs and values of the Hispanic world, and compare and contrast them with characteristics of their own culture.

SPAN 1312 Beginning Spanish II (3 SCH version)

SPAN 1412 Beginning Spanish II (4 SCH version)

SPAN 1512 Beginning Spanish II (5 SCH version)

Continued development of basic Spanish language skills in listening, speaking, reading, and writing within a cultural framework. Students acquire the vocabulary and grammatical structures necessary to communicate and comprehend at the high beginner to low intermediate level.

Learning Outcomes

Upon successful completion of this course, students will:

1. Engage in conversations using level-appropriate grammatical structures including narrating events that take place in the past.
2. Understand level-appropriate spoken Spanish produced by Spanish speakers of diverse origins.
3. Write simple and moderately complex sentences using level-appropriate grammatical structures and organize them into cohesive paragraphs.
4. Read and comprehend level-appropriate authentic texts.
5. Identify and discuss traditions, customs and values of the Hispanic world, and compare and contrast them with characteristics of their own culture.

SPAN 2311 Intermediate Spanish I (3rd semester Spanish)
SPAN 2312 Intermediate Spanish II (4th semester Spanish)

Review and application of skills in listening comprehension, speaking, reading, and writing. Emphasizes conversation, vocabulary acquisition, reading, composition, and culture.

SPAN 2311 Intermediate Spanish I

Learning Outcomes

Upon successful completion of this course, students will:

1. Comprehend authentic spoken discourse produced by Spanish speakers of diverse origins.
2. Produce oral Spanish comprehensible to native speakers using complex grammatical structures to narrate, describe, and elicit information.
3. Demonstrate increasing comprehension of authentic written texts in a variety of genres.
4. Write descriptions and narratives using complex grammatical structures. Demonstrate ability to formulate cohesive paragraphs and essays.
5. Describe cultural practices and products of the Spanish speaking world drawing on authentic materials including literature and the visual arts.

SPAN 2312 Intermediate Spanish II

Learning Outcomes

Upon successful completion of this course, students will:

1. Summarize authentic spoken discourse produced by Spanish speakers of diverse origins.
2. Produce Spanish comprehensible to native speakers using complex grammatical structures to communicate analytical and interpretive information in both impromptu and prepared speech.
3. Demonstrate increasing comprehension of authentic written texts in a variety of genres.
4. Write evaluations and critiques using complex grammatical structures. Demonstrate ability to formulate cohesive paragraphs and essays.
5. Interpret cultural practices and products of the Spanish speaking world drawing on authentic materials including literature and the visual arts.

SPAN 2313 Spanish for Native/Heritage Speakers I
SPAN 2315 Spanish for Native/Heritage Speakers II

Review and application of skills in reading and writing. Emphasizes vocabulary acquisition, reading, composition, and culture. Designed for individuals with oral proficiency in Spanish, these courses are considered equivalent to SPAN 2311 & 2312.

Builds upon existing oral proficiencies of heritage speakers of Spanish. Enhances proficiencies in the home-based language by developing a full range of registers including public speaking and formal written discourse. Emphasis on comprehension, appreciation, and interpretation of the cultures of the Spanish-speaking world.

SPAN 2313 Spanish for Native/Heritage Speakers I

Learning Outcomes

Upon successful completion of this course, students will:

1. Write dialogues, descriptions and narratives demonstrating:
 - Correct orthography and punctuation
 - Cohesion between sentences
 - Appropriate register.
2. Expand vocabulary.
3. Apply strategies for linking ideas in complex sentences.
4. Identify similarities and differences among distinct varieties of Spanish.
5. Give oral presentations in a formal register appropriate for professional and academic settings.
6. Describe cultural practices and products of the Spanish speaking world drawing on authentic materials including literature and the visual arts.

SPAN 2315 Spanish for Native/Heritage Speakers II

Learning Outcomes

Upon successful completion of this course, students will:

1. Write evaluations, explanations and other types of academic writing demonstrating development of rhetorical skills.
2. Expand vocabulary.
3. Apply strategies for linking ideas in complex sentences.
4. Identify similarities and differences among distinct varieties of Spanish.
5. Give oral presentations in a formal register appropriate for professional and academic settings.
6. Interpret cultural practices and products of the Spanish speaking world drawing on authentic materials including literature and the visual arts.

Spanish courses recommended for deletion from the ACGM.

SPAN 1100 Beginning Spanish Conversation I (FY 2010 enrollment=227)
SPAN 1110 Beginning Spanish Conversation II (FY 2010 enrollment=55)
SPAN 1200 Beginning Spanish Conversation I (FY 2010 enrollment=30)
SPAN 1210 Beginning Spanish Conversation II (FY 2010 enrollment=0)
SPAN 1300 Beginning Spanish Conversation I (FY 2010 enrollment=2276)
SPAN 1310 Beginning Spanish Conversation II (FY 2010 enrollment=154)
SPAN 2106 Intermediate Spanish Conversation (FY 2010 enrollment=55)
SPAN 2206 Intermediate Spanish Conversation (FY 2010 enrollment= 0)
SPAN 2306 Intermediate Spanish Conversation (FY 2010 enrollment=28)
SPAN 1305 Intensive Beginning Spanish (FY 2010 enrollment=385)
SPAN 2316 Career Spanish I (FY 2010 enrollment=233)
SPAN 2317 Career Spanish II (FY 2010 enrollment=67)
SPAN 2321 Introduction to Spanish Literature I (Iberian) (FY 2010 enrollment=369)
SPAN 2322 Introduction to Spanish Literature II (Iberian) (FY 2010 enrollment=235)
SPAN 2323 Introduction to Latin American Literature (FY 2010 enrollment=62)
SPAN 2324 Spanish Culture (FY 2010 enrollment=70)

SPEECH (SPCH)

SPCH 1321 Business & Professional Communication

Study and application of communication within the business and professional context. Special emphasis will be given to communication competencies in presentations, dyads, teams, and technologically mediated formats.

Learning Outcomes

Upon successful completion of this course, students will:

1. Demonstrate communication competence through an understanding of the foundational communication models.
2. Demonstrate essential public speaking skills in professional presentations.
3. Demonstrate written and oral competencies related to job searches, professional interaction, conflict management, leadership, and performance appraisals.
4. Understand essential dyadic and small group processes as they relate to the workplace.
5. Utilize various professional technologies as they relate to competent communication.

6. Understand how to communicate within diverse or multi-cultural workplaces.

SPCH 1311 Introduction to Communication

Introduces basic human communication principles and theories embedded in a variety of contexts including interpersonal, small group, and public speaking.

Learning Outcomes

Upon successful completion of this course, students will:

1. Understand and apply the principles of human communication including: perception, verbal communication, nonverbal communication, listening, and audience analysis.
2. Understand how to establish and maintain relationships through the use of interpersonal communication.
3. Understand and apply small group communication skills including: problem solving, group roles, leadership styles, and cohesiveness.
4. Develop, research, organize, and deliver formal public speeches
5. Recognize how to communicate within diverse or multicultural environments
6. Demonstrate understanding of the relevance of cross-cultural, co-cultural, gender, and age influences on human communication.

SPCH 1315 Public Speaking

Application of communication theory and practice to the public speaking context, with emphasis on audience analysis, speaker delivery, ethics of communication, cultural diversity, and speech organizational techniques to develop students' speaking abilities.

Learning Outcomes

Upon successful completion of this course, students will:

1. Recognize and understand the foundational models of communication.
2. Apply elements of audience analysis.
3. Demonstrate ethical speaking and listening skills.
4. Research, develop and deliver extemporaneous speeches with effective verbal and nonverbal techniques.
5. Demonstrate effective usage of technology when researching and presenting speeches.
6. Understand how culture, ethnicity, and gender influence communication.
7. Develop proficiency in presenting a variety of speeches as an individual or group (e.g. narrative, informative, or persuasive).

SPCH 1318 Interpersonal Communication

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Application of communication theory to interpersonal relationship development, maintenance, and termination in relationship contexts including friendships, romantic partners, families, and relationships with co-workers and supervisors.

Learning Outcomes

Upon successful completion of this course, students will:

1. Exhibit understanding of interpersonal theories and principles.
2. Demonstrate ability to analyze and critique verbal and nonverbal interactions in mediated and face-to-face contexts.
3. Identify and understand perceptual processes as they relate to self and others.
4. Demonstrate critical thinking ability by effectively researching, evaluating, and applying communication theories in oral and written assignments.
5. Demonstrate understanding of the relevance of cross-cultural, co-cultural, gender, and age influences on human communication.
6. Identify, evaluate, and apply conflict styles and conflict resolution strategies.
7. Identify types of and barriers to effective listening.

Speech courses recommended for deletion from the ACGM:

SPCH 2301 Introduction to Technology and Human Communication (FY 2010 enrollment = 43)

SPCH 2316 Interviewing (FY 2010 enrollment = 21)

Materials from the 2011 Tuning Oversight Council for Engineering and Science

Biology (BIOL)

BIOL 1306 Biology for Science Majors I

Fundamental principles of living organisms will be studied, including physical and chemical properties of life, organization, function, evolutionary adaptation, and classification. Concepts of cytology, reproduction, genetics, and scientific reasoning are included.

Co-requisite: BIOL 1106 – Biology for Science Majors I Laboratory

Prerequisite: MATH 1314 – College Algebra or concurrent enrollment in higher-level mathematics

Learning Outcomes

Upon successful completion of this course, students will:

1. Describe the characteristics of life.
2. Explain the reasoning used by scientists.
3. Identify the basic properties of substances needed for life.
4. Compare and contrast the structures, reproduction, and characteristics of viruses, prokaryotic cells, and eukaryotic cells.
5. Describe the structure of cell membranes and the movement of molecules across a membrane.
6. Identify the substrates, products, and important chemical pathways in metabolism.
7. Identify the principles of inheritance and solve classical genetic problems.
8. Identify the chemical structures, synthesis, and regulation of nucleic acids and proteins.
9. Describe the unity and diversity of life and the evidence for evolution through natural selection.

BIOL 1106 Biology for Science Majors I Laboratory

This laboratory-based course accompanies Biology 1306, Biology for Science Majors I. Laboratory activities will reinforce the fundamental principles of living organisms, including physical and chemical properties of life, organization, function, evolutionary adaptation, and classification. Study and examination of the concepts of cytology, reproduction, genetics, and scientific reasoning are included.

Co-requisite: BIOL 1306 – Biology for Science Majors I

Learning Outcomes

Upon successful completion of this laboratory-based course, students will:

1. Be able to apply scientific reasoning to investigate questions, and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
2. Use critical thinking and scientific problem-solving to make informed decisions in the laboratory.

3. Communicate effectively the results of investigations.
4. Describe the characteristics of life.
5. Explain the reasoning used by scientists.
6. Identify the basic properties of substances needed for life.
7. Compare and contrast the structures, reproduction, and characteristics of viruses, prokaryotic cells, and eukaryotic cells.
8. Describe the structure of cell membranes and the movement of molecules across a membrane.
9. Identify the substrates, products, and important chemical pathways in metabolism.
10. Identify the principles of inheritance and solve classical genetic problems.
11. Identify the chemical structures, synthesis, and regulation of nucleic acids and proteins.
12. Describe the unity and diversity of life and the evidence for evolution through natural selection.

BIOL 1406 Biology for Science Majors I (Lecture + Lab)

This lecture and lab course should combine all of the elements of BIOL 1306, Biology for Science Majors I, and BIOL 1106, Biology for Science Majors I Lab, including the learning outcomes listed for both courses.

BIOL 1307 Biology for Science Majors II

The diversity and classification of life will be studied, including animals, plants, protists, fungi, and prokaryotes. Special emphasis will be given to anatomy, physiology, ecology, and evolution of plants and animals.

Co-requisite: BIOL 1107 – Biology for Science Majors II Laboratory

Prerequisites: BIOL 1306 – Biology for Science Majors I and BIOL 1106 – Biology for Science Majors I Laboratory, or BIOL 1406 – Biology for Science Majors I (Lecture and Laboratory)

Learning Outcomes

1. Describe modern evolutionary synthesis, natural selection, Mendelian inheritance, micro and macroevolution, and speciation.
2. Describe phylogenetic relationships and classification schemes.
3. Identify the major phyla of life with an emphasis on plants and animals, including the basis for classification, structural and physiological adaptations, evolutionary history, and ecological significance.
4. Describe basic animal physiology and homeostasis as maintained by organ systems.
5. Compare different sexual and asexual life cycles noting their adaptive advantages.
6. Illustrate the relationship between major geologic change, extinctions, and evolutionary trends.

BIOL 1107 Biology for Science Majors II Laboratory

This laboratory-based course accompanies Biology 1307, Biology for Science Majors II. Laboratory activities will reinforce study of the diversity and classification of life, including animals, plants, protists, fungi, and prokaryotes. Special emphasis will be given to anatomy, physiology, ecology, and evolution of plants and animals.

Co-requisite: BIOL 1307 – Biology for Science Majors II

Learning Outcomes

Upon successful completion of this laboratory-based course, students will:

1. Be able to apply scientific reasoning to investigate questions, and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
2. Use critical thinking and scientific problem-solving to make informed decisions in the laboratory.
3. Communicate effectively the results of investigations.
4. Demonstrate knowledge of modern evolutionary synthesis, natural selection, Mendelian inheritance, micro and macroevolution, and speciation.
5. Distinguish between phylogenetic relationships and classification schemes.
6. Identify the major phyla of life with an emphasis on plants and animals, including the basis for classification, structural and physiological adaptations, evolutionary history, and ecological significance.
7. Describe basic animal physiology and homeostasis as maintained by organ systems.
8. Compare different sexual and asexual life cycles noting their adaptive advantages.
9. Illustrate the relationship between major geologic change, extinctions, and evolutionary trends

BIOL 1407 Biology for Science Majors II (Lecture + Lab)

This lecture and lab course should combine all of the elements of BIOL 1307, Biology for Science Majors II, and BIOL 1107, Biology for Science Majors II Lab, including the learning outcomes listed for both courses.

BIOL 1308 Biology for Non-Science Majors I

Provides a survey of biological principles with an emphasis on humans, including chemistry of life, cells, structure, function, and reproduction. THIS COURSE IS NOT INTENDED FOR SCIENCE MAJORS.

Co-requisite: BIOL 1108 – Biology for Non-Science Majors I Laboratory

Prerequisite: MATH 1314 – College Algebra or concurrent enrollment in higher level mathematics

Learning Outcomes

1. Distinguish between prokaryotic, eukaryotic, plant and animal cells, and identify major cell structures.
2. Identify stages of the cell cycle, mitosis (plant and animal), and meiosis.
3. Interpret results from cell physiology experiments involving movement across membranes, enzymes, photosynthesis, and cellular respiration.
4. Apply genetic principles to predict the outcome of genetic crosses and statistically analyze results.
5. Interpret the results of karyotypes, pedigrees, and biotechnology experiments.
6. Identify parts of a DNA molecule, and describe replication, transcription, and translation.
7. Analyze evidence for evolution and natural selection.

BIOL 1108 Biology for Non-Science Majors I Laboratory

This laboratory-based course accompanies BIOL 1308, Biology for Non-Science Majors I. Laboratory activities will reinforce a survey of biological principles with an emphasis on humans, including chemistry of life, cells, structure, function, and reproduction.

Co-requisite: BIOL 1308 – Biology for Non-Science Majors I

Learning Outcomes

Upon successful completion of this laboratory-based course, students will:

1. Be able to apply scientific reasoning to investigate questions, and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
2. Use critical thinking and scientific problem-solving to make informed decisions in the laboratory.
3. Communicate effectively the results of investigations.
4. Distinguish between prokaryotic, eukaryotic, plant and animal cells, and identify major cell structures.
5. Identify stages of the cell cycle, mitosis (plant and animal), and meiosis.
6. Interpret results from cell physiology experiments involving movement across membranes, enzymes, photosynthesis, and cellular respiration.
7. Apply genetic principles to predict the outcome of genetic crosses and statistically analyze results.
8. Interpret the results of karyotypes, pedigrees, and biotechnology experiments.
9. Identify parts of a DNA molecule, and describe replication, transcription, and translation.
10. Analyze evidence for evolution and natural selection.

BIOL 1408 Biology for Non-Science Major I (Lecture+ Lab)

This lecture and lab course should combine all of the elements of BIOL 1308, Biology for Non-Science Majors I, and BIOL 1108, Biology for Non-Science Majors I Lab, including the learning outcomes listed for both courses.

BIOL 1309 Biology for Non-Science Major II

This course will provide a survey of biological principles with an emphasis on humans, including evolution, ecology, plant and animal diversity, and physiology. THIS COURSE IS NOT INTENDED FOR SCIENCE MAJORS.

Co-requisite: BIOL 1109 – Biology for Non-Science Majors II Laboratory

Prerequisites: BIOL 1308 – Biology for Non-Science Majors I and BIOL 1108 – Biology for Non-Science Majors I Laboratory, or BIOL 1408 – Biology for Non-Science Majors I (Lecture and Laboratory)

Learning Outcomes

1. Describe modern evolutionary synthesis, natural selection, Mendelian inheritance, micro and macroevolution, and speciation.
2. Describe phylogenetic relationships and classification schemes.
3. Identify the major phyla of life with an emphasis on plants and animals, including the basis for classification, structural and physiological adaptations, evolutionary history, and ecological significance.
4. Describe basic animal physiology and homeostasis as maintained by organ systems.
5. Compare different sexual and asexual life cycles noting their adaptive advantages.
6. Illustrate the relationship between major geologic change, extinctions, and evolutionary trends.

BIOL 1109 Biology for Non-Science Majors II Laboratory

This laboratory-based course accompanies BIOL 1309, Biology for Non-Science Majors II. Laboratory activities will reinforce a survey of biological principles with an emphasis on humans, including evolution, ecology, plant and animal diversity, and physiology.

Co-requisite: BIOL 1309 – Biology for Non-Science Majors II

Learning Outcomes

Upon successful completion of this laboratory-based course, students will:

1. Be able to apply scientific reasoning to investigate questions, and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
2. Use critical thinking and scientific problem-solving to make informed decisions in the laboratory.
3. Communicate effectively the results of investigations.
4. Describe modern evolutionary synthesis, natural selection, Mendelian inheritance, micro and macroevolution, and speciation.
5. Describe phylogenetic relationships and classification schemes.
6. Identify the major phyla of life with an emphasis on plants and animals, including the basis for classification, structural and physiological adaptations, evolutionary history, and ecological significance.
7. Describe basic animal physiology and homeostasis as maintained by organ systems.
8. Compare different sexual and asexual life cycles noting their adaptive advantages.
9. Illustrate the relationship between major geologic change, extinctions, and evolutionary trends.

BIOL 1409 Biology for Non-Science Majors II (Lecture + Lab)

This lecture and lab course should combine all of the elements of BIOL 1309, Biology for Non-Science Majors II, and BIOL 1109, Biology for Non-Science Majors II Lab, including the learning outcomes listed for both courses.

BIOL 1311 General Botany

Fundamental biological concepts relevant to plant physiology, life cycle, growth and development, structure and function, and cellular and molecular metabolism. The role of plants in the environment, evolution, and phylogeny of major plant groups, algae, and fungi. (This course is intended for science majors.)

Co-requisite: BIOL 1111 – General Botany Laboratory

Prerequisite: MATH 1314 – College Algebra or concurrent enrollment in higher level mathematics

Learning Outcomes

Upon successful completion of this course, students will:

1. Compare and contrast the structures, reproduction, and characteristics of plants, algae, and fungi.
2. Describe the characteristics of life and the basic properties of substances needed for life.
3. Identify the principles of inheritance and solve classical genetic problems.
4. Describe phylogenetic relationships and classification schemes.

5. Identify the major phyla of life with an emphasis on plants, including the basis for classification, structural and physiological adaptations, evolutionary history, and ecological significance.
6. Identify the chemical structures, synthesis, and regulation of nucleic acids and proteins.
7. Identify the substrates, products, and important chemical pathways in photosynthesis and respiration.
8. Describe the unity and diversity of plants and the evidence for evolution through natural selection.
9. Compare different sexual and asexual life cycles noting their adaptive advantages.
10. Describe the reasoning processes applied to scientific investigations and thinking.

BIOL 1111 General Botany Laboratory

This laboratory-based course accompanies Biology 1307, General Botany. Laboratory activities will reinforce fundamental biological concepts relevant to plant physiology, life cycle, growth and development, structure and function, and cellular and molecular metabolism. The role of plants in the environment, evolution, and phylogeny of major plant groups, algae, and fungi. (This course is intended for science majors.)

Co-requisite: BIOL 1311 – General Botany

Learning Outcomes

Upon successful completion of this laboratory-based course, students will:

1. Be able to apply scientific reasoning to investigate questions, and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
2. Use critical thinking and scientific problem-solving to make informed decisions in the laboratory.
3. Communicate effectively the results of investigations.
4. Compare and contrast the structures, reproduction, and characteristics of plants, algae, and fungi.
5. Describe the characteristics of life and the basic properties of substances needed for life.
6. Identify the principles of inheritance and solve classical genetic problems.
7. Describe phylogenetic relationships and classification schemes.
8. Identify the major phyla of life with an emphasis on plants, including the basis for classification, structural and physiological adaptations, evolutionary history, and ecological significance.
9. Identify the chemical structures, synthesis, and regulation of nucleic acids and proteins.
10. Identify the substrates, products, and important chemical pathways in photosynthesis and respiration.
11. Describe the unity and diversity of plants and the evidence for evolution through natural selection.
12. Compare different sexual and asexual life cycles noting their adaptive advantages.
13. Describe the reasoning processes applied to scientific investigations and thinking.

BIOL 1411 General Botany (Lecture + Lab)

This lecture and lab course should combine all of the elements of BIOL 1311, General Botany, and BIOL 1111, General Botany Lab, including the learning outcomes listed for both courses.

BIOL 1313 General Zoology

Fundamental biological concepts relevant to animals, including systematics, evolution, structure and function, cellular and molecular metabolism, reproduction, development, diversity, phylogeny, and ecology. (This course is intended for science majors.)

Co-requisite: BIOL 1113 – General Zoology Laboratory

Learning Outcomes

Upon successful completion of this course, students will:

1. Compare and contrast the structures, reproduction, and characteristics of animals.
2. Describe the characteristics of life and the basic properties of substances needed for life.
3. Identify the principles of inheritance and solve classical genetic problems.
4. Describe phylogenetic relationships and classification schemes.
5. Identify the major phyla of life with an emphasis on animals, including the basis for classification, structural and physiological adaptations, evolutionary history, and ecological significance.
6. Identify the chemical structures, synthesis, and regulation of nucleic acids and proteins.
7. Identify the substrates, products, and important chemical pathways in respiration.
8. Describe the unity and diversity of animals and the evidence for evolution through natural selection.
9. Describe the reasoning processes applied to scientific investigations and thinking.
10. Describe basic animal physiology and homeostasis as maintained by organ systems.
11. Describe modern evolutionary synthesis, natural selection, Mendelian inheritance, micro and macroevolution, and speciation.
12. Describe the structure of cell membranes and the movement of molecules across a membrane.

BIOL 1113 General Zoology Laboratory

This laboratory-based course accompanies Biology 1307, General Botany. Laboratory activities will reinforce fundamental biological concepts relevant to animals, including systematics, evolution, structure and function, cellular and molecular metabolism, reproduction, development, diversity, phylogeny, and ecology. (This course is intended for science majors.)

Co-requisite: BIOL 1313 – General Zoology

Learning Outcomes

Upon successful completion of this laboratory-based course, students will:

1. Be able to apply scientific reasoning to investigate questions, and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
2. Use critical thinking and scientific problem-solving to make informed decisions in the laboratory.
3. Communicate effectively the results of investigations.
4. Compare and contrast the structures, reproduction, and characteristics of animals.
5. Describe the characteristics of life and the basic properties of substances needed for life.
6. Identify the principles of inheritance and solve classical genetic problems.
7. Describe phylogenetic relationships and classification schemes.
8. Identify the major phyla of life with an emphasis on animals, including the basis for classification, structural and physiological adaptations, evolutionary history, and ecological significance.
9. Identify the chemical structures, synthesis, and regulation of nucleic acids and proteins.
10. Identify the substrates, products, and important chemical pathways in respiration.
11. Describe the unity and diversity of animals and the evidence for evolution through natural selection.
12. Describe the reasoning processes applied to scientific investigations and thinking.
13. Describe basic animal physiology and homeostasis as maintained by organ systems.
14. Describe modern evolutionary synthesis, natural selection, Mendelian inheritance, micro and macroevolution, and speciation.
15. Describe the structure of cell membranes and the movement of molecules across a membrane.

BIOL 1413 General Zoology (Lecture + Lab)

This lecture and lab course should combine all of the elements of BIOL 1313, General Zoology, and BIOL 1113, General Zoology Lab, including the learning outcomes listed for both courses.

BIOL 2306 Environmental Biology

Principles of environmental systems and ecology, including biogeochemical cycles, energy transformations, abiotic interactions, symbiotic relationships, natural resources and their management, lifestyle analysis, evolutionary trends, hazards and risks, and approaches to ecological research.

Co-requisite: BIOL 2106 – Environmental Biology Laboratory

Prerequisites: BIOL 1306 – Biology for Science Majors I and BIOL 1106 – Biology for Science Majors I Laboratory or BIOL 1406 - Biology for Science Majors I (lecture and laboratory); and BIOL 1307 – Biology for Science Majors II and BIOL 1107 – Biology for Science Majors II Laboratory; or BIOL 1407 - Biology for Science Majors II (lecture and laboratory)

OR

BIOL 1311 – General Botany and BIOL 1111 – General Botany Laboratory; and BIOL 1313 General Zoology and BIOL 1113 General Zoology Laboratory

Learning Outcomes

Upon successful completion of this course, students will:

1. Explain the structure and impact of biogeochemical cycles.
2. Describe energy transformations across trophic levels.
3. Illustrate abiotic/biotic interactions and symbiotic relationships.
4. Identify various types of natural resources, human impact on these resources, and common resource management practices.
5. Quantify and analyze the impact of lifestyle on the environment.
6. Depict evolutionary trends and adaptations to environmental changes.
7. Describe environmental hazards and risks and the social, economic, and political ramifications.
8. Describe ecological and statistical techniques and approaches used in the study of environmental biology.

BIOL 2106 Environmental Biology Laboratory

This laboratory-based course accompanies Biology 2306, Environmental Biology. Laboratory activities will reinforce principles of environmental systems and ecology, including biogeochemical cycles, energy transformations, abiotic interactions, symbiotic relationships, natural resources and their management, lifestyle analysis, evolutionary trends, hazards and risks, and approaches to ecological research.

Co-requisite: BIOL 2306 – Environmental Biology

Learning Outcomes

Upon successful completion of this laboratory-based course, students will:

1. Be able to apply scientific reasoning to investigate questions, and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
2. Use critical thinking and scientific problem-solving to make informed decisions in the laboratory.
3. Communicate effectively the results of investigations.
4. Explain the structure and impact of biogeochemical cycles.
5. Describe energy transformations across trophic levels.

6. Illustrate abiotic/biotic interactions and symbiotic relationships.
7. Identify various types of natural resources, human impact on these resources, and common resource management practices.
8. Quantify and analyze the impact of lifestyle on the environment.
9. Depict evolutionary trends and adaptations to environmental changes.
10. Describe environmental hazards and risks and the social, economic, and political ramifications.
11. Describe ecological and statistical techniques and approaches used in the study of environmental biology.

BIOL 2406 Environmental Biology (Lecture + Lab)

This lecture and lab course should combine all of the elements of BIOL 2306, Environmental Biology, and BIOL 2106, Environmental Biology Lab, including the learning outcomes listed for both courses.

BIOL 2321 Microbiology for Science Majors

Principles of microbiology, including metabolism, structure, function, genetics, and phylogeny of microbes. The course will also examine the interactions of microbes with each other, hosts, and the environment.

Co-requisite: BIOL 2121 – Microbiology for Science Majors Laboratory

Prerequisites: CHEM 1311 – General Chemistry I and CHEM 1111 – General Chemistry I Laboratory

AND

BIOL 1306 – Biology for Science Majors I and BIOL 1106 – Biology for Science Majors I Laboratory; and BIOL 1307 – Biology for Science Majors II and BIOL 1107 – Biology for Science Majors II Laboratory

OR

BIOL 1311 – General Botany and BIOL 1111 – General Botany Laboratory; and BIOL 1313 General Zoology and BIOL 1113 General Zoology Laboratory

Learning Outcomes

Upon successful completion of this course, students will:

1. Provide examples of the impact of microorganisms on agriculture, environment, ecosystem, energy, and human health including biofilms.
2. Identify unique structures, capabilities, genetic information flow of microorganisms.
3. Compare the life cycles and structures of different types of viruses.
4. Discuss how microscopy has revealed the structure and function of microorganisms.

5. Give examples of the range of metabolic diversity exhibited by microorganisms, impact of metabolic characteristics on growth, and control of growth.
6. Describe evidence for the evolution of cells, organelles, and major metabolic pathways from early prokaryotes and how phylogenetic trees reflect evolutionary relationships.
7. Describe the causes and consequences of mutations on microbial evolution and the generation of diversity as well as human impacts on adaptation.
8. Classify interactions of microorganisms on human and non-human hosts as neutral, detrimental, or beneficial.

BIOL 2121 Microbiology for Science Majors Laboratory

This laboratory-based course accompanies Biology 2321, Microbiology for Science Majors. Laboratory activities will reinforce principles of microbiology, including metabolism, structure, function, genetics, and phylogeny of microbes. The course will also examine the interactions of microbes with each other, hosts, and the environment.

Co-requisite: BIOL 2321 – Microbiology for Science Majors

Learning Outcomes

Upon successful completion of this laboratory-based course, students will:

1. Be able to apply scientific reasoning to investigate questions, and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
2. Use critical thinking and scientific problem-solving to make informed decisions in the laboratory.
3. Communicate effectively the results of investigations.
4. Provide examples of the impact of microorganisms on agriculture, environment, ecosystem, energy, and human health including biofilms.
5. Identify unique structures, capabilities, genetic information flow of microorganisms.
6. Compare the life cycles and structures of different types of viruses.
7. Discuss how microscopy has revealed the structure and function of microorganisms.
8. Give examples of the range of metabolic diversity exhibited by microorganisms, impact of metabolic characteristics on growth, and control of growth.
9. Describe evidence for the evolution of cells, organelles, and major metabolic pathways from early prokaryotes and how phylogenetic trees reflect evolutionary relationships.
10. Describe the causes and consequences of mutations on microbial evolution and the generation of diversity as well as human impacts on adaptation.
11. Classify interactions of microorganisms on human and non-human hosts as neutral, detrimental, or beneficial.

BIOL 2421 Microbiology for Science Majors (Lecture + Lab)

This lecture and lab course should combine all of the elements of BIOL 2321, Microbiology for Science Majors, and BIOL 2121, Microbiology for Science Majors Lab, including the learning outcomes listed for both courses.

Chemistry (CHEM)

CHEM 2323 Organic Chemistry I

Fundamental principles of organic chemistry will be studied, including the structure, bonding, properties, and reactivity of organic molecules; and properties and behavior of organic compounds and their derivatives. Emphasis is placed on organic synthesis and mechanisms. Includes study of covalent and ionic bonding, nomenclature, stereochemistry, structure and reactivity, reaction mechanisms, functional groups, and synthesis of simple molecules. THIS COURSE IS INTENDED FOR STUDENTS IN SCIENCE OR PRE-PROFESSIONAL PROGRAMS.

Co-requisite: CHEM 2123—Organic Chemistry I Laboratory

Prerequisite: CHEM 1312—General Chemistry II and CHEM 1112—General Chemistry II Laboratory, or CHEM 1412—General Chemistry II (Lecture and Laboratory)

Learning Outcomes

Upon successful completion of this course, students will:

1. Classify organic compounds by structure, molecular orbitals, hybridization, resonance, tautomerism, polarity, chirality, conformation, and functionality.
2. Identify organic molecules using appropriate organic nomenclature.
3. Describe the principle reactions for syntheses of molecules, ions, and radicals.
4. Describe organic reactions in terms of radical and ionic mechanisms.
5. Use spectroscopic data to determine the structure of organic molecules.
6. Formulate appropriate reaction conditions for the synthesis of simple organic molecules.

CHEM 2123 Organic Chemistry I Laboratory

This laboratory-based course accompanies CHEM 2323, Organic Chemistry I. Laboratory activities will reinforce fundamental principles of organic chemistry, including the structure, bonding, properties, and reactivity of organic molecules; and properties and behavior of organic compounds and their derivatives. Emphasis is placed on organic synthesis and mechanisms. Includes study of covalent and ionic bonding, nomenclature, stereochemistry, structure and reactivity, reaction mechanisms, functional groups, and synthesis of simple molecules.

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Co-requisite: CHEM 2323—Organic Chemistry I

Learning Outcomes

Upon successful completion of this laboratory-based course, students will:

1. Perform chemical experiments, analysis procedures, and waste disposal in a safe and responsible manner.
2. Be able to apply scientific reasoning to investigate questions, and utilize scientific tools such as glassware and analytical instruments to collect and analyze data.
3. Communicate effectively the results of investigations.
4. Classify organic compounds by structure, molecular orbitals, hybridization, resonance, tautomerism, polarity, chirality, conformation, and functionality.
5. Identify organic molecules using appropriate organic nomenclature.
6. Describe the principle reactions for syntheses of molecules, ions, and radicals.
7. Describe organic reactions in terms of radical and ionic mechanisms.
8. Use spectroscopic data to determine the structure of organic molecules.
9. Formulate appropriate reaction conditions for the synthesis of simple organic molecules.

CHEM 2423 Organic Chemistry I (Lecture + Lab)

This lecture and lab course should combine all of the elements of CHEM 2323, Organic Chemistry I, and CHEM 2123, Organic Chemistry I Lab, including the learning outcomes listed for both courses.

CHEM 2325 Organic Chemistry II

Advanced principles of organic chemistry will be studied, including the structure, properties, and reactivity of aliphatic and aromatic organic molecules; and properties and behavior of organic compounds and their derivatives. Emphasis is placed on organic synthesis and mechanisms. Includes study of covalent and ionic bonding, nomenclature, stereochemistry, structure and reactivity, reaction mechanisms, functional groups, and synthesis of simple molecules. THIS COURSE IS INTENDED FOR STUDENTS IN SCIENCE OR PRE-PROFESSIONAL PROGRAMS.

Co-requisite: CHEM 2125—Organic Chemistry II Laboratory

Prerequisite: CHEM 2323—Organic Chemistry I and CHEM 2123—Organic Chemistry I Laboratory, or CHEM 2423—Organic Chemistry I (Lecture and Laboratory)

Learning Outcomes

Upon successful completion of this course, students will:

1. Correlate molecular structure with physical and chemical properties of aliphatic and aromatic organic molecules.
2. Predict the mechanism and outcome of aliphatic and aromatic substitution and elimination reactions, given the conditions and starting materials.
3. Predict the chirality of reaction products based on enantiomeric and diastereomeric relationships.
4. Describe reaction mechanisms in terms of energetics, reaction kinetics, and thermodynamics.
5. Use spectroscopic techniques to characterize organic molecules and subgroups.

CHEM 2125 Organic Chemistry II Laboratory

This laboratory-based course accompanies CHEM 2325, Organic Chemistry II. Laboratory activities reinforce advanced principles of organic chemistry, including the structure, properties, and reactivity of aliphatic and aromatic organic molecules; and properties and behavior of organic compounds and their derivatives. Emphasis is placed on organic synthesis and mechanisms. Includes study of covalent and ionic bonding, nomenclature, stereochemistry, structure and reactivity, reaction mechanisms, functional groups, and synthesis of simple molecules.

Co-requisite: CHEM 2325—Organic Chemistry II

Learning Outcomes

Upon successful completion of this laboratory-based course, students will:

1. Perform chemical experiments, analysis procedures, and waste disposal in a safe and responsible manner.
2. Be able to apply scientific reasoning to investigate questions, and utilize scientific glassware and analytical instruments to collect and analyze data.
3. Communicate effectively the results of investigations.
4. Correlate molecular structure with physical and chemical properties of aliphatic and aromatic organic molecules.
5. Predict the mechanism and outcome of aliphatic and aromatic substitution and elimination reactions, given the conditions and starting materials.
6. Predict the chirality of reaction products based on enantiomeric and diastereomeric relationships.
7. Describe reaction mechanisms in terms of energetics, reaction kinetics, and thermodynamics.
8. Use spectroscopic techniques to characterize organic molecules and subgroups.

CHEM 2425 Organic Chemistry II (Lecture + Lab)

This lecture and lab course should combine all of the elements of CHEM 2325, Organic Chemistry II, and CHEM 2125, Organic Chemistry II Lab, including the learning outcomes listed for both courses.

Computer Science (COSC)

COSC 1336 Programming Fundamentals I (3 SCH version)

COSC 1436 Programming Fundamentals I (4 SCH version)

This course introduces the fundamental concepts of structured and object-oriented programming, and provides a comprehensive introduction to programming for computer science and technology majors. Topics include software development methodology, data types, control structures, functions, arrays, and the mechanics of running, testing, and debugging. This course assumes computer literacy. (This course is included in the Field of Study Curriculum for Computer Science.)

Learning Outcomes

Upon successful completion of this course, students will:

1. Describe how data are represented, manipulated, and stored in a computer.
2. Categorize different programming languages and their uses.
3. Understand and use the fundamental concepts of data types, structured programming, object-oriented programming, algorithmic design, and user interface design.
4. Demonstrate a fundamental understanding of software development methodologies, including modular design, pseudo code, flowcharting, structure charts, data types, control structures, functions, arrays, objects and classes, and event handling.
5. Develop projects exhibiting the ability to develop logical algorithms from specifications and requirements statements; demonstrate appropriate design, coding, testing, and documenting computer programs that implement the requirements.
6. Demonstrate an ability to apply computer programming concepts to new problems or situations.

Engineering (ENGR)

ENGR 2304 Programming for Engineers

Programming principles and techniques for matrix and array operations, equation solving, and numeric simulations applied to engineering problems and visualization of engineering information; platforms include spreadsheets, symbolic algebra packages, engineering analysis software, and laboratory control software.

Learning Outcomes

Upon successful completion of this course, students will:

1. Demonstrate fundamental knowledge of matrix and array operations for equation solving.
2. Identify the strengths and weaknesses of the conventional programming languages.
3. Demonstrate qualitative and quantitative understanding of the use of spreadsheets and their built-in features to solve a variety of engineering problems.
4. Describe methods for the design of programs that control equipment or analyze data.
5. Write computer programs to solve engineering problems and perform engineering simulations using common software tools, such as Matlab, LabView, MathCAD, and Mathematica.
6. Graphically present engineering data, results, and conclusions.

Engineering courses recommended for addition to the ACGM.

ENGR XXXX Chemical Engineering Thermodynamics I [A new course created by the faculty work group.]

Fundamental concepts of energy and thermodynamics (e.g., temperature, thermodynamic equilibrium, and heat) will be introduced; the course emphasizes techniques in the application of the fundamentals of thermodynamics to various processes as they frequently occur in chemical and biomolecular engineering. Provides the basic skills and tools necessary in designing and analyzing real-life engineering systems. Serves as preparation for other advanced courses in thermodynamics, energy conversion, heat transfer, etc.

Prerequisite: MATH 2415 – Calculus III

Learning Outcomes

Upon successful completion of this course, students will:

1. Demonstrate an ability to apply knowledge of math, engineering, and science to perform energy calculations of engineering systems and analyze the feasibility of the processes undergone by the systems.
2. Describe basic thermodynamic properties and their interrelationships.
3. Describe basic states of matter (solid, liquid, gas).

4. Define units of pressure, temperature, density, mass, and moles, SI and English system, and use conversions.
5. Use thermodynamic tables and diagrams and apply equations of state, such as the Ideal Gas Law.
6. Demonstrate understanding of the differences between steady-state and transient processes, open and closed systems.
7. Describe the meaning of specific volume, enthalpy, and internal energy and how to obtain them from thermodynamic tables and diagrams.
8. Apply first- and second-law analysis to thermodynamic processes and cycles.
9. Analyze systems, process feasibility, and efficiency for open and closed systems.
10. Define the meaning of isentropic processes; obtain entropy from thermodynamic tables and diagrams.

ENGR XXXX Elementary Chemical Engineering [A new course created by the faculty work group.]

This course is the foundation for nearly all future chemical engineering courses and analysis. A strong foundation in mathematics, physics, and chemistry is required for application to the solution of problems in industrial chemistry. Students will receive an introduction to chemical engineering calculations, unit equations, process stoichiometry, material and energy balances, and states of matter, and will apply the laws of conservation of mass and energy to reacting and non-reacting, simple and complex chemical systems.

Prerequisites: ENGR 1201 – Introduction to Engineering, CHEM 1312 – General Chemistry II and CHEM 1112 – General Chemistry II Laboratory (or CHEM 1412 – General Chemistry II (Lecture and Laboratory), MATH 2414 – Calculus II, PHYS 2425 – University Physics I

Learning Outcomes

Upon successful completion of this course, students will:

1. Demonstrate the ability to apply to chemical engineering problems the various systems of units used in engineering practice.
2. Define and relate process variables.
3. Describe qualitatively the basic unit operations of chemical processes and the principles of operation for each.
4. Use a systematic approach to solve chemical engineering problems by identifying variables, drawing a process flow chart from a written description, applying degrees of freedom analysis, and formulating mathematical expressions.
5. Define and apply material balances for reacting and non-reacting systems.
6. Define and apply energy balances for reacting and non-reacting systems.
7. Demonstrate an ability to present and report basic engineering information.

Physics (PHYS)

PHYS 1301 College Physics I

Fundamental principles of physics, using algebra and trigonometry; the principles and applications of classical mechanics and thermodynamics, including harmonic motion, physical systems, Newton's Laws of Motion, and gravitation; with emphasis on problem solving.

Co-requisite: PHYS 1101 – College Physics I Laboratory

Prerequisites: MATH 1314 – College Algebra and MATH 1316 – Plane Trigonometry

Learning Outcomes

Upon successful completion of this course, students will:

1. Demonstrate knowledge of basic physical units and their relationships.
2. Determine the components of linear motion (displacement, velocity, and acceleration), and especially motion under conditions of constant acceleration.
3. Apply Newton's laws to physical problems including gravity.
4. Solve problems using principles of energy.
5. Use principles of impulse and momentum to solve problems.
6. Determine the location of the center of mass and center of rotation for rigid bodies in motion.
7. Solve problems involving rotational and linear motion.
8. Define equilibrium, including the different types of equilibrium.
9. Discuss simple harmonic motion and its application to real-world problems.
10. Solve problems using the principles of heat and thermodynamics.
11. Solve basic fluid mechanics problems.

PHYS 1101 College Physics I Laboratory

This laboratory-based course accompanies PHYS 1301, College Physics I. Laboratory activities will reinforce fundamental principles of physics, using algebra and trigonometry; the principles and applications of classical mechanics and thermodynamics, including harmonic motion, physical systems, Newton's Laws of Motion, and gravitation; emphasis will be on problem solving.

Co-requisite: PHYS 1301—College Physics I

Learning Outcomes

Upon successful completion of this laboratory-based course, students will:

1. Develop techniques to set up and perform experiments, collect data from those experiments, and formulate conclusions from an experiment.
2. Demonstrate the collections, analysis, and reporting of data using the scientific method.
3. Communicate effectively the results of investigations.
4. Demonstrate knowledge of basic physical units and their relationships.
5. Determine the components of linear motion (displacement, velocity, and acceleration), and especially motion under conditions of constant acceleration.
6. Apply Newton's laws to physical problems including gravity.
7. Solve problems using principles of energy.
8. Use principles of impulse and momentum to solve problems.
9. Determine the location of the center of mass and center of rotation for rigid bodies in motion.
10. Solve problems involving rotational and linear motion.
11. Define equilibrium, including the different types of equilibrium.
12. Discuss simple harmonic motion and its application to real-world problems.
13. Solve problems using the principles of heat and thermodynamics.
14. Solve basic fluid mechanics problems.

PHYS 1401 College Physics I (Lecture + Lab)

This lecture and lab course should combine all of the elements of PHYS 1301, College Physics I, and PHYS 1101, College Physics I Lab, including the learning outcomes listed for both courses.

PHYS 1302 College Physics II

Fundamental principles of physics, using algebra and trigonometry; the principles and applications of electricity and magnetism, including circuits, electrostatics, electromagnetism, waves, sound, light, and optics; with emphasis on problem solving.

Co-requisite: PHYS 1102 – College Physics II Laboratory

Prerequisites: PHYS 1301 – College Physics I and PHYS 1101 – College Physics I Laboratory, or PHYS 1401 – College Physics I (lecture and laboratory)

Learning Outcomes

Upon successful completion of this course, students will:

1. Solve problems involving the inter-relationship of fundamental charged particles, and electrical forces, fields, and currents.
2. Apply Kirchhoff's Rules to analysis of circuits with potential sources, capacitance, and resistance, including parallel and series capacitance and resistance.
3. Describe the effects of static charge on nearby materials in terms of Coulomb's Law.

4. Solve problems involving the effects of magnetic fields on moving charges or currents, and the relationship of magnetic fields to the currents which produce them.
5. Use Faraday's and Lenz's laws to determine electromotive forces.
6. Describe the components of a wave and relate those components to mechanical vibrations, sound, and decibel level.
7. Articulate the principles of reflection, refraction, diffraction, interference, and superposition of waves.
8. Describe the characteristics of light and the electromagnetic spectrum.
9. Solve practical problems involving optics, lenses, mirrors, and optical instruments.

PHYS 1102 College Physics II Laboratory

This laboratory-based course accompanies PHYS 1302, College Physics II. Laboratory activities will reinforce fundamental principles of physics, using algebra and trigonometry; the principles and applications of electricity and magnetism, including circuits, electrostatics, electromagnetism, waves, sound, light, and optics; with emphasis on problem solving.

Co-requisite: PHYS 1302 – College Physics II

Learning Outcomes

Upon successful completion of this laboratory-based course, students will:

1. Develop techniques to set up and perform experiments, collect data from those experiments, and formulate conclusions from an experiment.
2. Demonstrate the collections, analysis, and reporting of data using the scientific method.
3. Communicate effectively the results of investigations.
4. Solve problems involving the inter-relationship of fundamental charged particles, and electrical forces, fields, and currents.
5. Apply Kirchhoff's Rules to analysis of circuits with potential sources, capacitance, and resistance, including parallel and series capacitance and resistance.
6. Describe the effects of static charge on nearby materials in terms of Coulomb's Law.
7. Solve problems involving the effects of magnetic fields on moving charges or currents, and the relationship of magnetic fields to the currents which produce them.
8. Use Faraday's and Lenz's laws to determine electromotive forces.
9. Describe the components of a wave and relate those components to mechanical vibrations, sound, and decibel level.
10. Articulate the principles of reflection, refraction, diffraction, interference, and superposition of waves.
11. Describe the characteristics of light and the electromagnetic spectrum.
12. Solve practical problems involving optics, lenses, mirrors, and optical instruments.

PHYS 1402 College Physics I (Lecture + Lab)

This lecture and lab course should combine all of the elements of PHYS 1302, College Physics II, and PHYS 1102, College Physics II Lab, including the learning outcomes listed for both courses.

Materials from the Developmental Education and ESOL Groups

Developmental Education

Addition to introduction:

Developmental educators should consider the application of Cross-Disciplinary Standards, as appropriate, in their courses and interventions (see "Texas College and Career Readiness Standards," pp. a59-a65, at:

<http://www.theccb.state.tx.us/files/dmfile/CCRS081009FINALUTRevisions.pdf>)

Intermediate Algebra

A study of relations and functions, inequalities, algebraic expressions and equations (absolute value, polynomial, radical, rational), with a special emphasis on linear and quadratic expressions and equations.

Learning Outcomes

Upon successful completion of this course, students will:

1. Define, represent, and perform operations on real and complex numbers.
2. Recognize, understand, and analyze features of a function.
3. Recognize and use algebraic (field) properties, concepts, procedures (including factoring), and algorithms to combine, transform, and evaluate absolute value, polynomial, radical, and rational expressions.
4. Identify and solve absolute value, polynomial, radical, and rational equations.
5. Identify and solve absolute value and linear inequalities.
6. Model, interpret and justify mathematical ideas and concepts using multiple representations.
7. Connect and use multiple strands of mathematics in situations and problems, as well as in the study of other disciplines.

Developmental Reading

Development of reading and higher order thinking skills necessary for college readiness.

Learning Outcomes

Upon the successful completion of this course, students will:

1. Locate explicit textual information, draw complex inferences, and analyze and evaluate the information within and across multiple texts of varying lengths.
2. Comprehend and use vocabulary effectively in speaking, reading, and writing.
3. Describe, analyze, and evaluate information within and across a range of texts.
4. Identify and analyze the audience, purpose, and message across a variety of texts.
5. Describe and apply insights gained from reading a variety of texts.

Developmental Writing

Development of college-level writing focusing on idea generation, drafting, organization, revision, and utilization of standard English.

Learning Outcomes

Upon the successful completion of this course, students will:

1. Compose a variety of texts that demonstrate clear focus, the logical development of ideas, and the use of appropriate language that advances the writer's purpose.
2. Determine and use effective approaches and rhetorical strategies for given writing situations.
3. Generate ideas and gather information relevant to the topic and purpose, incorporating the ideas and words of other writers in student writing using established strategies.
4. Evaluate relevance and quality of ideas and information to formulate and develop a claim.
5. Develop and use effective revision strategies to strengthen the writer's ability to compose college-level writing assignments.
6. Edit writing to conform to the conventions of standard English.

Developmental Integrated Reading and Writing

Integration of critical reading and academic writing skills. The course fulfills TSI requirements for reading and/or writing.

Learning Outcomes

Upon the successful completion of this course, students will:

1. Locate explicit textual information, draw complex inferences, and analyze and evaluate the information within and across multiple texts of varying lengths.
2. Comprehend and use vocabulary effectively in speaking, reading, and writing.
3. Identify and analyze the audience, purpose, and message across a variety of texts.
4. Describe and apply insights gained from reading and writing a variety of texts.
5. Compose a variety of texts that demonstrate reading comprehension, clear focus, logical development of ideas, and use of appropriate language that advance the writer's purpose.
6. Determine and use effective approaches and rhetorical strategies for given reading and writing situations.
7. Generate ideas and gather information relevant to the topic and purpose, incorporating the ideas and words of other writers in student writing using established strategies.
8. Evaluate relevance and quality of ideas and information in recognizing, formulating, and developing a claim.
9. Develop and use effective reading and revision strategies to strengthen the writer's ability to compose college-level writing assignments.
10. Recognize and apply the conventions of standard English in reading and writing.

Writing for Non-Native Speakers (title change for Developmental Composition for Non-Native Speakers)

Focuses on strategies and techniques of writing and composition. Open only to non-native speakers.

Learning Outcomes

Upon the successful completion of this course, students will:

1. Write a clear, well-organized, multi-paragraph essay using a logical sequence in a prescribed rhetorical mode.
2. Demonstrate ability to use the writing process by generating ideas, drafting, revising, and editing.
3. Demonstrate functional vocabulary knowledge in a variety of contexts at a level appropriate for college level courses.
4. Write coherent and cohesive sentences in a variety of common patterns.
5. Recognize and use proper English mechanics.
6. Demonstrate proficiency in basic skills related to research-based academic writing, such as paraphrasing, summarizing, quoting, and citing sources according to prescribed style guidelines.

ESOL Oral Communication

Develops listening and speaking skills in speakers of languages other than English and prepares them to function in educational, vocational and/or personal English-speaking contexts.

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Learning Outcomes

Upon the successful completion of this course, students will:

1. Demonstrate understanding of authentic oral texts (e.g., lectures, news casts, pod casts) that contain sophisticated vocabulary and structures by successfully completing comprehension tasks, such as answering questions, note-taking, outlining, paraphrasing, summarizing, or evaluating the content, etc. [comprehension tasks such as identifying main, supporting ideas, and implied meaning are subsumed.]
2. Plan and deliver formal oral presentations using appropriate vocabulary and syntax, recognizable organization, clear pronunciation, non-verbal cues, and appropriate volume and intonation, and respond appropriately to questions.
3. Speak with fluency, using complex and accurate language, clear pronunciation and prosodic elements (e.g., intonation, rhythm, word and sentence stress) and demonstrate the ability to use a range of formal and informal language appropriate to context.
4. Participate in discussions in formal and informal settings using active listening skills and making appropriate and extended comments.
5. Assess own language production and use appropriate self-monitoring strategies such as re-phrasing, re-directing, asking for clarification, and circumlocution.
6. Analyze and evaluate oral expression by listening critically for elements that reflect an awareness of situation, audience, purpose, and diverse points of view.
7. Demonstrate knowledge of a wide range of cultural conventions and references in oral and nonverbal communication.

ESOL Reading and Vocabulary

Develops English reading proficiency and vocabulary for academic, career, or personal purposes in speakers of languages other than English and prepares them to function in a multicultural, multilingual society.

Learning Outcomes

Upon the successful completion of this course, students will:

1. Comprehend, identify, and summarize texts, including main idea, supporting details, audience, and purpose of text.
2. Interpret and critically analyze author's bias, purpose, and perspective in academic materials.
3. Make inferences and draw conclusions from a variety of college level texts.
4. Respond critically, orally and in writing, to various kinds of college level texts.
5. Understand and use academic vocabulary and linguistically complex structures across a variety of disciplines and genres.
6. Increase knowledge of cultural and historical references to American society in written materials.

Grammar for Non-Native Speakers (title change for Developmental ESOL Writing and Grammar)

Focuses on Standard English grammar usage for academic purposes. Open only to nonnative speakers.

Learning Outcomes

Upon the successful completion of this course, students will:

1. Use of verb tenses and voice.
2. Use of simple, compound, and complex sentences structures including phrases and clauses.
3. Appropriate use of parts of speech (nouns, pronouns, verbs, adjectives, adverbs, prepositions, interjections, conjunctions) and determiners (quantifiers, articles, demonstratives, possessives).
4. Appropriate use of word choice, word form, and word order.