Wharton County Junior College

Administrative Master Syllabus

Course Information

Course Title	Introductory Chemistry I
Course Prefix, Num. and Title	CHEM 1405 Introductory Chemistry I
Division	Math & Physical Sciences
Department	Chemistry
Course Type	Academic WCJC Core Course
Course Catalog Description	Survey course introducing chemistry. Topics may include inorganic, organic, biochemistry, food/physiological chemistry, and environmental/consumer chemistry. Designed for non-science and allied health students. Laboratory activities will reinforce lecture topics.
Pre-Requisites	TSI ELAR (Reading and Writing) requirements met or concurrent enrollment in INRW 0307 or ENGL 1301/NCBI 0300 and TSI Math requirements met
Co-Requisites	None

Semester Credit Hours

Total Semester Credit Hours (SCH): Lecture Hours: Lab/Other Hours	4:3:2
Equated Pay Hours	4.2
Lab/Other Hours Breakdown: Lab Hours	2
Lab/Other Hours Breakdown: Clinical Hours	0
Lab/Other Hours Breakdown: Practicum Hours	0
Other Hours Breakdown	0

Approval Signatures

Title	Signature	Date
Department Head:	Rocio Doherty	12/11/23
Division Chair:	Jennifer Mauch Digitally signed by Jennifer Mauch DN: cn=Jennifer Mauch, o, ou=Wharton County Junior College, email=mauchj@wcjc.edu, c=US Date: 2023.12.14 15:45:32 -06'00'	12-14-2023
VPI:		

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Additional Course Information

Topical Outline: Each offering of this course must include the following topics (be sure to include information regarding lab, practicum, and clinical or other non-lecture instruction).

Lecture Outline:
Measurement, Significant Figures, Units, Conversions
Matter, Classification and States of Matter, Chemical and Physical Changes and Properties
Atoms and Elements
The Periodic Table, Light, and Electrons in Atoms
Molecules and Compounds
Chemical Bonding
Organic Chemistry
Chemical Composition, Mass, Moles
Quantities in Chemical Reactions (Stoichiometry)
Chemical Reactions
Gases
Liquids, Solids, and Intermolecular Forces
Solutions
Acids and Bases
Energy
Radioactivity and Nuclear Chemistry

Laboratory Outline:
Syllabus, Lab Safety
1. The Scientific Method and an Introduction to Laboratory Equipment and Materials
2. Laboratory Measurements
3. Measuring Density
4. Ionic Bonding
5. Covalent Bonding
6. Hydrocarbons and Functional Groups
7. Chemical and Physical Properties/Changes
8. The Decomposition of Potassium Chlorate
9. Charles' Law
10. Solutions and Dilutions
11. pH: Acids, Bases, and Buffer Solutions
12. Nuclear Chemistry

Course Learning Outcomes:

Learning Outcomes – Upon successful completion of this course, students will:

Lecture:
1. Define concepts fundamental to understanding matter, compounds, solutions, and chemical reactions.
2. Describe the relationship between chemistry and daily life.
3. Describe the representation of compounds and reactions by the use of chemical formulas, nomenclature, and chemical equations.
4. Describe the fundamental properties of basic acid – base chemistry.
5. Describe the fundamental properties of basic nuclear and organic chemistry.
6. Demonstrate the ability to synthesize chemical information through chemical calculations.

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Laboratory:

1. Demonstrate the safe and appropriate use of basic apparatus and apply experimental methodology.
2. Conduct basic laboratory experiments and record accurate observations in laboratory notebooks.
3. Relate measurements to theoretical principles and draw logical conclusions.
4. Report information in proper technical, clearly written formal laboratory reports

Methods of Assessment:

Outcomes assessed by:
Class work, homework assignments, quizzes and/or exams, posters/graphs/charts, oral

Lab outcomes assessed by:
Data entries, lab reports, lab quizzes, homework assignments and/or lab final exam questions

Required text(s), optional text(s) and/or materials to be supplied by the student:

Textbook: *Introductory Chemistry by Kevin Revell (MacMillan) + Achieve access card;* ISBN: 978-1-31944-453-2

Scientific calculator (with log and exponential function)

Lab Manual: *Introductory Chemistry I Lab Manual*, Wharton County Junior College; ISBN: 978-1-5339-6132-7

Suggested Course Maximum:

Lecture: 36; Lab: 24

List any specific or physical requirements beyond a typical classroom required to teach the course.

Chemistry laboratory classroom required for the lab component

Course Requirements/Grading System: Describe any course specific requirements such as research papers or reading assignments and the generalized grading format for the course.

Lecture average:	
Exam average (3 or 4 exams)	30–55%
Other (homework, quizzes, projects, etc.)	0–25%
Laboratory average: (based on Laboratory average below)	25%
Final Exam average: (includes at least 50% comprehensive material)	20–25%
	100% course total

Laboratory average*:	
Formal Laboratory Report	20%
Other (lab reports, exercises, quizzes, etc.)	70%
Lab final	10%
	100% lab total

*Department Policy: A student must earn a 60% laboratory grade or greater in order to pass the course.

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The overall course grade is assigned as specified by the college:
A = 90–100
B = 80–89
C = 70–79
D = 60–69
F = below 60

Curriculum Checklist:

☐**Administrative General Education Course** (from ACGM, but not in WCJC Core) – No additional documents needed.

☒**Administrative WCJC Core Course** – Attach the Core Curriculum Review Forms

- ☒Critical Thinking
- ☒Communication
- ☒Empirical & Quantitative Skills
- ☒Teamwork
- ☐Social Responsibility
- ☐Personal Responsibility

☐**WECM Course** – If needed, revise the Program SCANS Matrix and Competencies Checklist

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Core Curriculum Review Form

Foundational Component Area: Core 030: Life & Physical Science

Course Prefix & Suffix: CHEM 1405

Core Objective:

Critical Thinking Skills—to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information

Student Learning Outcome Supporting Core Objective:

For each core objective, there must be at least two different methods of assessment.

SLO Status	Student Learning Outcome (SLO)	Learning Activity	Assessment
State Mandated	(Lecture SLO #6) Demonstrate the ability to synthesize chemical information through chemical calculations.	Calculation of density	Formal lab report and lab final exam
State Mandated	(Lab SLO #3) Relate measurements to theoretical principles and draw logical conclusions.	Determination of stoichiometric coefficients	Formal lab report and lab final exam
Choose a SLO status.	Insert SLO (from Administrative Master Syllabi)	Provide a brief name and description of the sample learning activity.	Provide a brief name and description of the sample quiz, exam, rubric, assignment, etc. for assessing the objective.

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Core Curriculum Review Form

Foundational Component Area: Core 030: Life & Physical Science

Course Prefix & Suffix: CHEM 1405

Core Objective:

Communication Skills—to include effective development, interpretation and expression of ideas through written, oral and visual communication

Student Learning Outcome Supporting Core Objective:

For each core objective, there must be at least two different methods of assessment.

SLO Status	Student Learning Outcome (SLO)	Learning Activity	Assessment
State Mandated	(Lab SLO #4) Report information in proper technical, clearly written formal laboratory reports.	Typed formal lab reports and class presentation or project	Formal lab reports and class presentation and/or project
State Mandated	(Lecture SLO #3) Describe the representation of compounds and reactions by the use of chemical formulas, nomenclature, and chemical equations.	Typed formal lab report and class presentation of project or exam or discussion board	Formal lab reports and class presentation and/or project or exam or discussion board
Choose a SLO status.	Insert SLO (from Administrative Master Syllabi)	Provide a brief name and description of the sample learning activity.	Provide a brief name and description of the sample quiz, exam, rubric, assignment, etc. for assessing the objective.

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Core Curriculum Review Form

Foundational Component Area: Core 030: Life & Physical Science

Course Prefix & Suffix: CHEM 1405

Core Objective:

Empirical and Quantitative Skills—to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions

Student Learning Outcome Supporting Core Objective:

For each core objective, there must be at least two different methods of assessment.

SLO Status	Student Learning Outcome (SLO)	Learning Activity	Assessment
State Mandated	(Lecture SLO #6) Demonstrate the ability to synthesize chemical information through chemical calculations.	Perform common calculations in lab	Lab reports and lab final
State Mandated	Relate measurements to theoretical principles and draw logical conclusions. (SLO #9)	Formal lab report calculations	Formal lab reports and lab final
Choose a SLO status.	Insert SLO (from Administrative Master Syllabi)	Provide a brief name and description of the sample learning activity.	Provide a brief name and description of the sample quiz, exam, rubric, assignment, etc. for assessing the objective.

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Core Curriculum Review Form

Foundational Component Area: Core 030: Life & Physical Science

Course Prefix & Suffix: CHEM 1405

Core Objective:

Teamwork—to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal

Student Learning Outcome Supporting Core Objective:

For each core objective, there must be at least two different methods of assessment.

SLO Status	Student Learning Outcome (SLO)	Learning Activity	Assessment
State Mandated	(Lab SLO #4) Report information in proper technical, clearly written formal lab reports.	Lab experiments completed in groups of at least two students	Rubric for Discussion section of lab report and students complete peer evaluations
Choose a SLO status.	Insert SLO (from Administrative Master Syllabi)	Provide a brief name and description of the sample learning activity.	Provide a brief name and description of the sample quiz, exam, rubric, assignment, etc. for assessing the objective.
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