Purpose: “This course emphasizes the history, philosophy, and major theories of chemistry as they apply to current forensic analytical techniques.” This liberal arts class entails learning, thinking about, and applying major laws, concepts, and theories of chemistry to issues confronting the practicing criminalist.

The Student Learning Outcome (SLO) “Creative and Critical Thinking” will be emphasized to satisfy general education requirements in “The World of Nature” area of knowledge.

Analytical thinking will be stimulated by problem solving activities using the scientific method. The course will also promote synthesis of knowledge gleaned from related learning units and current criminalistic practices. Some mathematical reasoning will be used to understand fundamental principles and their relationship to selected societal issues. Because writing is a wonderful tool for dissecting, synthesizing, learning and expounding on information, the student will have ample opportunities to write essays. Testing will stress problem-solving skills as well as short answer and essay writing skills.

Course material will be covered through a combination of lecture, the Socratic method and/or discussion. Chemistry and Critical Thinking will be learned by various methods including homework, group discussion, demonstrations, quizzes, and/or examinations. All essay discussion questions should be answered in paragraphs containing complete sentences; responses not satisfying this requirement will be downgraded.

Creative and Critical Thinking – This SLO will be evaluated through the online discussion board and the CSI final paper using the “Critical Thinking VALUE Rubric” below. While the delineations of points for an individual section will be specified on the applicable course syllabus, the aggregate grades on the discussion boards and CSI Final paper will constitute more than 35% of the final grade of the course.

Critical Thinking will be assessed in terms of:

- the explanation of issues,
- the evidence
- the influence of context and assumptions
- the student’s position, and
- the conclusions and related outcomes.

Prerequisite: No prerequisite.

Textbook (as specified in the instructor syllabus):
- *Investigating Chemistry*, by Johll, 3rd Ed., 2013 including LaunchPad Online Access

GRADING SCALE:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90-100</td>
<td>For “Pass-Fail”</td>
</tr>
<tr>
<td>B</td>
<td>80-89</td>
<td>Minimum passing grade is 60% of total points.</td>
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<tr>
<td>C</td>
<td>70-79</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>60-69</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>0-59</td>
<td></td>
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</tbody>
</table>

Grade calculation = student points/total points x 100

revised 1/5/16
## Critical Thinking VALUE Rubric

*Evaluators are encouraged to assign a zero to any work sample or collection of work that does not meet benchmark (cell one) level performance.*

<table>
<thead>
<tr>
<th></th>
<th><strong>Capstone</strong> 5 points</th>
<th><strong>Milestones</strong> 3-4 points</th>
<th><strong>2-3 points</strong></th>
<th><strong>Benchmark</strong> 1 point</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanation of issues</strong></td>
<td>Issue/problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.</td>
<td>Issue/problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.</td>
<td>Issue/problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/or backgrounds unknown.</td>
<td>Issue/problem to be considered critically is stated without clarification or description.</td>
</tr>
<tr>
<td><strong>Evidence</strong></td>
<td>Information is taken from source(s) with enough interpretation/evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.</td>
<td>Information is taken from source(s) with enough interpretation/evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.</td>
<td>Information is taken from source(s) with some interpretation/evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.</td>
<td>Information is taken from source(s) without any interpretation/evaluation. Viewpoints of experts are taken as fact, without question.</td>
</tr>
<tr>
<td><strong>Influence of context and assumptions</strong></td>
<td>Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.</td>
<td>Identifies own and others' assumptions and several relevant contexts when presenting a position.</td>
<td>Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).</td>
<td>Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.</td>
</tr>
<tr>
<td><strong>Student's position</strong></td>
<td>Specific position (perspective, thesis/hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/hypothesis).</td>
<td>Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/hypothesis).</td>
<td>Specific position (perspective, thesis/hypothesis) acknowledges different sides of an issue.</td>
<td>Specific position (perspective, thesis/hypothesis) is stated, but is simplistic and obvious.</td>
</tr>
<tr>
<td><strong>Conclusions and related outcomes</strong></td>
<td>Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.</td>
<td>Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.</td>
<td>Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.</td>
<td>Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.</td>
</tr>
</tbody>
</table>
Mission of the University:
Washburn University enriches the lives of students by providing opportunities for them to develop and to realize their intellectual, academic, and professional potential, leading to becoming productive and responsible citizens. We are committed to excellence in teaching, scholarly work, quality academic and professional programs, and high levels of faculty-student interaction. We develop and engage in relationships to enhance educational experiences and our community. Washburn University Board of Regents, 2010

Definition of a Credit Hour:
For every credit hour awarded for an undergraduate course, the student is typically expected to complete approximately one hour of classroom instruction, online interaction with course material, or direct faculty instruction and a minimum of two additional hours of student work each week for approximately 15 weeks for one semester or the equivalent amount of work over a different amount of time.

Notice of Non-Discrimination/Safe Educational Environment:
The University prohibits discrimination on the basis of race, color, religion, age, national origin, ancestry, disability, sex, sexual orientation, gender identity, genetic information, veteran status, or marital or parental status. The following person has been designated to handle inquiries regarding the non-discrimination policies: Dr. Pamela Foster, Equal Opportunity Director/Title IX Coordinator, Washburn University, 1700 SW College Ave, Topeka, Kansas 66621, (785) 670-1509, eodirector@washburn.edu.

Harassment & Discrimination
The University is required by federal laws to address complaints of discrimination and harassment. Faculty are considered responsible employees and as responsible employees, are required to report an incident of discrimination, sexual harassment, or sexual violence to Dr. Pam Foster. A faculty member is only required to report the name of the complainant, but may report more information at his or her discretion. A class assignment WILL NOT trigger an investigation or a report to Dr. Foster. Students and employees may file complaints with the Equal Opportunity Director/Title IX Coordinator, Dr. Pam Foster. http://www.washburn.edu/statements-disclosures/equal-opportunity/how-to-file-a-complaint.html or with Washburn University Police at (785) 670-1509.

Confidential Resources
On campus: University Counseling Services offers free, confidential counseling to students on any topic, including experiences with sexual assault or relationship violence: http://washburn.edu/current-students/services/counseling/index.html. Student Health Services offers confidential urgent care: http://washburn.edu/current-students/services/health-services/index.html.

Student Services - Disability Services:
The Student Services Office is responsible for assisting in arranging accommodations and for identifying resources on campus for persons with disabilities. Qualified students with disabilities must register with the office to be eligible for services. The office MUST have appropriate documentation on file in order to provide services. Accommodations may include in-class note takers, test readers and/or scribes, adaptive computer technology, brailled materials. Requests for accommodations should be submitted at least two months before services should begin; however, if you need an accommodation this semester, please contact the Student Services Office immediately. Students may voluntarily identify themselves to the instructor for a referral to the Student Services Office. See contact information under On-Campus Resources below.

Academic Misconduct Policy:
All students are expected to conduct themselves appropriately and ethically in their academic work. Inappropriate and unethical behavior includes (but is not limited to) giving or receiving unauthorized aid on examinations or in the preparation of papers or other assignments, or knowingly misrepresenting the source of academic work. Washburn University’s Academic Impropriety Policy describes academically unethical behavior in greater detail and explains the actions that may be taken when such behavior occurs. For guidelines regarding protection of copyright, consult http://www.washburn.edu/copyright. For a complete copy of the Academic Impropriety Policy, contact the office of the Vice President for Academic Affairs, Bradbury Thompson Alumni Center Suite 200, or go on-line to: http://www.washburn.edu/academic-impropriety.
Withdrawal Policy:
During fall and spring semesters, students may go online and withdraw from full semester courses through the second week of class with no recorded grade. From the third through the eleventh week a “W” is recorded for any dropped course. After the eleventh week, there are NO withdrawals, and a grade will be assigned for the course. These deadlines will be different for short-term, out-of-sequence, or summer courses. To view the deadline dates for your courses visit the “Last Day” Deadlines web page at: https://www2-prod.washburn.edu/self-service/coursedates.php Depending on the timing of the request to withdraw from a course, students may be eligible for a full or partial refund. Information regarding tuition refunds is available at http://www.washburn.edu/current-students/business-office/tuition-refunds.html Depending on the timing of the request to withdraw from a course, students may be responsible for repaying all or a portion of their financial aid. Students who do not attend their courses and fail to officially withdraw themselves will receive a grade of “F” and may also be required to repay all or a portion of their financial aid based on their non-attendance. For further information, contact the Financial Aid Office at (785) 670-1151 or e-mail financialaid@washburn.edu.

Attendance/Administrative Withdrawal:
Although it is the student’s responsibility to initiate course withdrawals, an instructor, after due notice to the student, may request withdrawal of the student from a course because of nonattendance through the same date as the last day a student may withdraw from a course. This would NOT absolve the student of financial responsibility for tuition/fees for the course in question. The inclusion of this information in the course syllabus is considered due notice.

Official E-Mail Address:
Your Washburn University e-mail address will be the official address used by the University for relaying important messages regarding academic and financial information and the University will consider this your official notification for important information. It may also be used by your instructors to provide specific course information. If you prefer to use an alternate e-mail address to receive official University notices you can set a forwarding address in the Outlook Web App by following the steps below.

Outlook Web App: Set Forwarding Address
1. Go to http://outlook.washburn.edu
2. Sign in
3. Click the Gear in the upper right
4. Choose Options
5. Select Forward your email from the list on the left
6. In the lower portion of the screen, enter the email address to which you want to forward all your email.
7. Click the start forwarding button

It is your responsibility to ensure that your official e-mail box does not exceed your message quota resulting in the inability of e-mail messages to be accepted into your mailbox.

On-Campus Resources:
- Center for Student Success: Mabee Library, Room 201, (785) 670-1942, advising@washburn.edu
- Student One Stop (S.O.S.): Morgan Hall Welcome Center, (785) 670-2162, sos@washburn.edu, www.washburn.edu/sos
- Student Services (Disability and Veterans) Morgan Hall Room 105, (785) 670-1629, studentservices@washburn.edu, http://www.washburn.edu/student-services