

CHEM 5100 - General Description (7/9/20)

This course is required for all graduate students who intend to enroll in a laboratory-based course offered by the Chemistry department at Missouri S&T. It is delivered in an **on-line asynchronous format** (see below). A passing grade C or better in CHEM 5100 is required to be enrolled in any Chemistry laboratory-based course.

An OSHA (Occupational Safety and Health Administration) mandate stipulates that adequate training concerning the safety equipment, health risks, and the handling of hazardous materials shall be provided for everyone working in a laboratory environment. This mandate alone is justification for this course. Nevertheless, the training provided will be useful not only in your college chemistry laboratory courses but also throughout your professional careers and in your own personal lives. LABORATORY SAFETY and HANDLING HAZARDOUS MATERIALS are major issues for all those working in a laboratory environment. With this course we hope to provide you with a good background in both subjects. However, as the course title implies, it is only an introductory course as reflected by the time allotted for the course (1 credit hour). While some topics will be treated quite thoroughly, unfortunately some others will only be briefly touched upon. It is expected that a student taking an advanced laboratory class or working in an industrial laboratory will receive additional training. The college chemistry laboratory is not a particularly dangerous place to be. Over the years most of the hazardous chemicals have been phased-out of experiments, and the quantities used today are greatly reduced. For more than 20 years the chemistry department at Missouri S&T has not had a single serious injury or accident. However, the risk of something serious happening is ever present since, in the USA alone, there is an accidental fatality every eight minutes and a disabling injury every four seconds.

COURSE DELIVERY: The course is planned to be studied and completed in a two week period. In week 1 modules 1 - 6 will be studied and mastered and in week 2 modules 7 - 12 will be studied and mastered. The modules will be provided in CANVAS in the course materials section of CHEM 5100. Timing details are given on the last page. The module titles are listed below:

1 - Introduction | 2 - Life's Hazards and Risk Assessment | 3 - The Question of Liability | 4 - Regulations and Regulatory Agencies | 5 - Hazards in the Laboratory | 6 - Safety Rules and Recommended Practices | 7 - Protective Equipment | 8 - Protective and Emergency Facilities | 9 - Responding to Emergencies | 10 - Reporting Incidents and Accidents | 11 - Industrial Hygiene and Toxicology | 12 - Material Safety Data Sheets.

Each week it is intended that the modules are studied sequentially starting with module 1 - introduction in week 1 and module 7 – Protective Equipment in week 2. Each module is made up of a series of PowerPoint slides and in some cases videos are also included. Where necessary the slides and videos are accompanied by complementary narration. At the end of each module the student will be presented with a quiz of no more than 10 questions drawn from the material presented in the module. Successfully answering the questions in the quiz will demonstrate that the student has mastered the material in the module and this fact will be reported and recorded in CANVAS thus permitting the next module to be made available to the student. Mastery is demonstrated by a score of 80% or more on the quiz. Repeat quizzes can be requested until mastery is demonstrated. Advancing to the next module requires mastery of the previous module being recorded in CANVAS.

EXAMS: At the end of each week the student will be provided with an opportunity to complete a comprehensive exam on all modules covered to date, i.e., Comprehensive Exam 1 on modules 1 - 6 and Comprehensive Exam 2 on modules 1 - 12. The exams are made up of 50 true/false and/or multiple choice questions based on all the material presented in the 12 modules, including the videos and narration. Each correct answer has a value of 1 point yielding a potential maximum score from the two exams of 100 points.

BOTH EXAMS ARE OPEN BOOK EXAMS. In matters of safety in the laboratory it is important to be sure an answer to a question is correct and not based on your best recollection.

HOMEWORK: No homework will be assigned beyond mastering the modules as described.

ATTENDANCE: Attendance is mandatory and is measured by completion of all modules by the end of course.

GRADES: The grade you receive for this course will be based on the sum of the scores you achieve on the two exams. An “A” is received for a total score between 90 and 100 points, a “B” requires 80 and 89 points, and a “C” requires 65 and 79 points.

Time Table				
Section 101	Midnight			
8/23/2020	Midnight			Enrollment completed
8/23/2020	Midnight			Student materials available on CANVAS
8/24/2020	Midnight	8/28/2020	Midnight	Modules 1 - 6 to be studied and mastered
8/28/2020	Midnight	8/30/2020	Midnight	Comprehensive test 1
8/30/2020	Midnight	9/4/2020	Midnight	Modules 7 - 12 to be studied and mastered
9/4/2020	Midnight	9/6/2020	Midnight	Comprehensive test 2
9/7/2020	Noon			Students and Chemistry department notified
				They have passing grade in CHEM 5100