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**CHE 113: Forensic Science**

**COURSE INFORMATION**

*Course Website at* [*http://supa.syr.edu/Subjects/Chemistry/syllabi/*](http://supa.syr.edu/Subjects/Chemistry/syllabi/)

**Course Description and Prerequisite Skills**

Chemistry 113, Introduction to Forensic Science, is focused upon the application of scientific methods and techniques to crime and law. Recent advances in scientific methods and principles have had an enormous impact upon science, law enforcement and the entire criminal justice system. In this course, scientific methods specifically relevant to crime detection and analysis will be presented. No prior chemistry instruction is required or assumed but the course should appeal to those who have had high school chemistry. Emphasis is placed upon understanding the science underlying the techniques used in evaluating physical evidence. Topics included are blood analysis, organic and inorganic evidence analysis, fingerprints, hair analysis, DNA, drug chemistry, forensic medicine, forensic anthropology, toxicology, fiber comparisons, soil comparisons, and fire and engineering investigations, among others.

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| IR Heroin | **Introduction to Forensic Science: The Science of Criminalistics**  *James T. Spencer, Syracuse University* |  |

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**CHE 113 LAB**

Rules and Regulations

1. You will work in pairs in the laboratory, but you are required and responsible for doing your own laboratory write-up.

2. Students are expected to complete their lab on their assigned day and hand-in the laboratory write-up at the end of the laboratory that same day. If a student wants to switch days one week, permission must be obtained from one of the instructors at least one week before the scheduled lab.

3. Each student is expected to present at the start of the laboratory, during this time the experimental set-up and safety procedures for each lab is discussed by the instructors. Students who show up late will be penalized.

4. Late labs will be penalized. After five days you will receive a zero for the lab.

5. Each person is responsible for wiping down his/her work area with a damp sponge or paper towel and washing all glassware with soap and water at the end of each lab period.

6. If you are in violation of any safety guidelines, you will be asked to remedy the situation only once. The next time you will be asked to leave lab for that day. There will be no make-up labs.

Safety Guidelines

1. Safety glasses must be worn at all times while in lab. You will be given one warning. If it happens a second time you will be asked to leave lab and you will receive a zero for the lab.

2. Do not wear contacts in lab. Wear your glasses.

3. If glassware breaks and/or chemicals spill, inform the instructor. Do not try and clean the spill and/or glass yourself without contacting the instructor FIRST.

4. If you cut/burn yourself and/or spill anything on your clothing and/or skin in lab, inform the instructor immediately.

5. Long hair must be tied back.

6. Avoid wearing loose clothing and jewelry.

7. Wash your hands before leaving lab and going to the bathroom.

8. Do not sit on the lab benches.

9. Do not eat or drink in lab at any time.

10. No open-toed shoes, sandals or shorts may be worn in lab at any time.

11. Use the disposable gloves provided when required and change them frequently.

**LABORATORY SAFETY NOTES**

**Chemistry 113**

**Safety is the MOST important issue that you will deal with this semester. Take the laboratory and its risks seriously. Understanding these risks and minimizing them is the best way to avoid accidents. If you follow these guidelines and stay alert to possible hazards, your experience in this course should be a safe and productive one.**

**SAFETY GLASSES MUST ALWAYS BE WORN IN LAB!!**

**Hazards** - The main potential hazards in the laboratory are fire and exposure to toxic and/or reactive substances. Though toxicity and reactivity of compounds varies tremendously, an excellent policy is to handle EVERY chemical with respect and caution. Be aware that you may be exposed to chemicals in several ways: inhalation, skin contact (some chemicals go right through the skin), and ingestion.

In case an accident occurs, report it immediately! Do not try to hide anything out of embarrassment - you will be making the situation worse, endangering yourself and others. Let the instructors decide on the proper course of action. Those not involved should clear the area.

The following is taken in part from “The Organic Chem Lab Survival Manual”, by James W. Zubrick. Please excuse the jokes he uses, I will not claim any responsibility for them.

**SAFETY FIRST, LAST, AND ALWAYS**

Disobeying safety rules is not at all like flouting many other rules. You can get seriously hurt. No appeal. No bargaining for another 12 points so you can get into medical school. Perhaps as a patient, but certainly not as a student.

1. SAFETY FIRST! When in doubt, ask the instructor!

2. Always wear your goggles. Eye injuries are extremely serious, but they can be mitigated or often prevented if you keep your goggles on at all times. There are several types of eye protection available, some acceptable, some not, according to the local, state, and federal laws. I like the clear plastic jobbers that leave an unbroken red line on your face when you remove them. Sure they fog up a bit, but the protection is superb. Also, think about getting chemicals, or chemical fumes trapped under your contact lenses. Then don't wear them to lab. Ever.

3. Touch not thyself. Not a biblical injunction, but a bit of advice. You may have gotten chemicals on your hands, in a concentration that is not noticeable. Sure enough, up go the goggles for an eye wipe with the fingers. Enough said.

4. There is no "away". Getting rid of chemicals is a very big problem. (Throw all waste in appropriately labeled jars)

5. Bring a friend. If you have a serious accident when you are all by yourself, you might be unable to get help before you fall over.

6. Don't fool around. Chemistry is a serious business. Don't be careless or clown around the lab. You can hurt yourself or other people. Try not to be somber about it; just serious.

7. Drive defensively. Work in the lab as if someone else were going to have an accident that might affect you. Keep the goggles on because someone else is going to point a loaded, boiling test tube at you. Someone else is going to spill hot, concentrated acid on your body. Get the idea?

8. Eating, drinking, smoking in the lab. Are you kidding? Eat in a chem lab?? Drink in a chem lab??? Smoke, and blow yourself up!!!!

9. Keep it clean. Work neatly. You don't have to make a fetish out of it, but try to be neat. Clean up spills. Turn off burners or water or electrical equipment when not in use.

10. Where it's at. Learn the location and proper use of the fire extinguishers, fire blankets, safety showers, and eyewashes.

11. Make the best-dressed list. No open-toed shoes or sandals. No loose-fitting cuffs on pants or shirts. Keep the midsection covered. Tie back that long hair. A small investment in a lab coat can pay off, projecting that professional touch. It gives a lot of protection.

**ACCIDENTS WILL NOT HAPPEN**

That's the attitude you should hold while working in the laboratory. You are NOT going to do anything, or get anything done to you, that will require medical attention. If you do get cut, and the cut is not serious, wash the area with water. If there's serious bleeding, apply direct pressure with a clean, preferably sterile dressing. For a minor burn, let cold water run over the burned area. For chemical burns to the eyes or skin, flush area with lots of water. In every case get to see a physician.

If you have an accident, tell your instructor immediately. Get help! This is no time to worry about your grade in lab. If you put your grades ahead of your personal safety, be sure to see a psychiatrist after the internist finishes.