# BSC 2010L - Integrated Principles of Biology I Laboratory
# Syllabus – Summer 2024

## Course Information

**Laboratory Locations:** B-14 Carr Hall
**Lab Coordinator:** Marcus Zokan, PhD, Department of Biology, 208 Carr Hall, 392-8130, mzokan@ufl.edu
**Office hours:** by appointment

## Course Resources

**Required Text:** Vliet, K.A., 2019. *BSC 2010L: Integrated Principles of Biology I Lab Manual, Sixth Edition*. Macmillan Learning Curriculum Solutions, Plymouth, Michigan. 242 pp.
**Optional Text:** Principles of Life, 3rd Edition, by David M. Hillis; Mary V. Price; Richard W. Hill; David W. Hall; Marta J. Laskowski. Sinauer Associates and Macmillan (publisher).

The lab manual is no longer available in printed form but is available electronically through the required Achieve access.

**MacMillan Achieve:** Achieve is an online platform that houses the assignments, quizzes, and an electronic version of the lab manual. Access to Achieve is required for this course.

**Purchasing Lab Manual and Achieve Access:** This course participates in the UF All Access program. Students will have two options to gain access to the Integrated Principles of Biology II Lab Manual and (optional) Principles of Life textbook when classes begin:

1. **Option 1** – **RECOMMENDED** – Students will have the choice to "opt-in" for a limited time to receive access to Achieve for a reduced price and pay for these materials through their student account. The following link will take you to where you can "opt-in" to receive discounted course materials once logged in with your Gatorlink credentials: https://www.bsd.ufl.edu/AllAccess/OptIn
2. **Option 2** – Purchase a standalone code through the UF bookstore. Both options provide access to the same materials

For any issues regarding All Access including difficulties with your access code, please email allaccess@bsd.ufl.edu. Technical support for the Achieve platform can be found at https://macmillan.force.com/macmillanlearning/s/achieve or (800) 936-6899.

**CANVAS: http://elearning.ufl.edu**

## Material and Supplies Fee

There is a Materials and Supplies Fee of $14.30 associated with this course. In addition, there is an Equipment Fee charge of $31.22 associated with the course.

## Lab Supplies

A dissecting kit will be needed and should contain a small probe, fine dissecting scissors, fine point forceps, scalpel with replaceable blade, and teasing needles. The campus bookstore should carry kits with all these items. **Dissection kits must be furnished by the student**.

## Course Goals and Objectives

The primary goal of this course is to establish a coherent foundation of knowledge in biology and to prepare students for comprehension in advanced biology courses and science in general. Fundamental concepts discussed include the scientific methods by which we come to know things in science, the chemical composition and processes that make up all life, genetic processes and the inheritance of traits, the mechanisms and processes of natural selection, and adaptation and evolution of life on Earth. An additional course goal is to develop critical thinking skills for development of reasoned thought and for evaluation of life experiences.

Objectives of the course will be achieved if, by its conclusion, students can:

- Describe a scientific hypothesis and identify testable predictions that logically follow
- Construct proper figures representing biological data, and interpret data represented in similar figures
- Demonstrate the proper use and function of key types of laboratory equipment, such as microscopes, spectrophotometers, thermocyclers, and gel electrophoresis arrays
- Understand the importance of statistics in scientific sampling, determine appropriate statistical tests for particular types of data, understand the meaning of statistical significance, interpret statistic results and draw appropriate conclusions from them
- Describe the relationship between genotype and phenotype and identify methods by which genotype can be determined
- Determine the mode of inheritance of genetic traits based on ratios of phenotypes
- Identify the primary organs of representative invertebrates and their associated functions
- Discuss the evidence that all living things are descended from a common ancestor
- Read, evaluate, and construct a phylogenetic tree
- Practice safety and proper techniques in the laboratory

## General Education Objectives for Biological Sciences

Biological science courses provide instruction in the basic concepts, theories and terms of the scientific method in the context of the life sciences. Courses focus on major scientific developments and their impacts on society, science and the environment, and the relevant processes that govern biological systems. Students will formulate empirically-testable hypotheses derived from the study of living things, apply logical reasoning skills through scientific criticism and argument, and apply techniques of discovery and critical thinking to evaluate outcomes of experiments.

The General Education objectives and the associated Student Learning Outcomes for Biological Sciences are achieved through inquiry-based and active-learning exercises in the laboratory, including prelab assignments, experimental design, quizzes, oral presentations, and completion of weekly lab notes and data sheets. These exercises are designed to reinforce, augment, and accompany learning objectives in the companion BSC 2010 lecture course. In particular, the BSC 2010L lab exposes students to the development and testing of specific hypotheses, collection and presentation of biological data, and analysis of statistical significance.

## General Education Student Learning Outcomes

The general education student learning outcomes (SLOs) describe the knowledge, skills and attitudes that students are expected to acquire while completing a general education course at the University of Florida. The SLOs fall into three categories: **content**, **communication** and **critical thinking**.

**Every general education course must address all three SLOs.** Note that the subject area objectives (detailed above) describe the context within which the SLOs are achieved.

| Category | Institutional Definition | Institutional SLO |
|---|---|---|
| **CONTENT** | Content is knowledge of the concepts, principles, terminology and methodologies used within the discipline. | Students demonstrate competence in the terminology, concepts, methodologies and theories used within the discipline. |
| **COMMUNICATION** | Communication is the development and expression of ideas in written and oral forms. | Students communicate knowledge, ideas, and reasoning clearly and effectively in written or oral forms appropriate to the discipline. |
| **CRITICAL THINKING** | Critical thinking is characterized by the comprehensive analysis of issues, ideas, and evidence before accepting or formulating an opinion or conclusion. | Students analyze information carefully and logically from multiple perspectives, using discipline specific methods, and develop reasoned solutions to problems. |

To assess student performance in meeting these student learning outcomes for this course, students are evaluated by a variety of instruments throughout the course: weekly quizzes over previous laboratory exercises used to assess comprehension and reasoning, prelab assessments, weekly lab notes and datasheets emphasizing development of hypotheses, experimental design, collection of data, selection of proper statistics tests and interpretation of statistical results. The Communication SLO is assessed in graded written assessments and in oral presentations in the lab. Student Learning Outcomes are further assessed in BSC 2010, the companion lecture course. In combination, BSC 2010 and BSC 2010L provide assessments of all categories of the General Education Student Learning Outcomes.

A minimum grade of C is required for general education credit.

## Expectations

Each student is solely responsible for reading and following the instructions, guidelines and schedules in this syllabus. Not having read the information in this syllabus will not constitute an excuse for missing an assignment, exam or other assessment.

## Attendance

Policies on class attendance, make-up assignments, and excused absences are detailed below. Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found in the online catalog at:
https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/ .

## Reading Assignments

You should review fully each laboratory assignment *prior* to the laboratory period. In most cases you will be unable to complete the observations and experiments fully and efficiently during the lab period unless you know exactly what is to be done before you walk into the laboratory. Reading assignments are included in this syllabus. Weekly quizzes are based partially on the reading assignments.

## Assignments

You are responsible for reading the laboratory schedule (included in this syllabus) and completing all assignments through Achieve. Prelabs are due before lab begins, and submitting these after lab begins will be considered late work. Lab notes will be due at the end of the lab session (unless otherwise noted). **It is your responsibility to bring a device (laptop, tablet, smartphone, etc.) that is charged and capable of being used to complete the lab notes (and quizzes) during class.** It is your responsibility to ensure that your device is capable of being used to answer all questions in Achieve during the lab period. Using a smartphone is not recommended, as some lab notes and quizzes are more suited for larger screens.

## Quizzes

Most laboratory sessions will begin with a quiz on Achieve over the previous lab. It is the responsibility of the student to bring a device (laptop, tablet, smartphone, etc.) that is charged and capable of being used to take the quiz. Additionally, it is the responsibility of the student to ensure that they fully understand the lab material from the previous week in preparation for the quiz. Quizzes must be taken in the laboratory, without the use of external resources, and under the supervision of a TA. Failure to do this will result in a zero for the quiz and a potential honor code violation.

## Grading

Your BSC 2011L grade will be based on total points from quizzes, pre-lab and in lab assignments. Pre-labs will cover material for the upcoming lab whereas quizzes cover material from the previous lab exercise and lecture. Specific assignments are detailed in a point breakdown sheet provided with this syllabus.

**Final letter grades will be assigned based on percentage of the total points earned.** Minimum grade cutoffs are listed below. For example, if you receive 94% of the possible points, you will earn an A grade. These grade cutoffs may be lowered at the discretion of the lab coordinator. However, changes to letter grade cutoffs should not be expected or requested.

**Final scores will NOT be rounded up (e.g., 93.99% is not 94%).** Being just below a higher grade category can be frustrating, so make sure you put in the necessary work to earn the grade you want.

Note that the current UF policy for assigning grade points is available at the following undergraduate catalog web page: https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/ .

**Extra Credit:** There is no extra credit available in this course.

**Special Treatment:** Please do not request individual special treatment regarding grading at the end of the semester; **we do not adjust grades for individuals for any reason**. Plan to do well on all assignments from the beginning of the semester; if you are having difficulty in the class, please let your instructors know *earlier* rather than later.

| Letter Grade | Point Range (%) |
|---|---|
| A | ≥ 94.0% |
| A– | ≥ 90.0% |
| B+ | ≥ 87.0% |
| B | ≥ 84.0% |
| B– | ≥ 80.0% |
| C+ | ≥ 77.0% |
| C | ≥ 74.0% |
| C– | ≥ 70.0% |
| D+ | ≥ 67.0% |
| D | ≥ 64.0% |
| D- | ≥ 60.0% |
| E | < 60.0% |

## Lab Policies

**A. Attendance**

You are expected to attend the lab section for which you are registered. If you miss your lab, notify your instructor immediately by e-mail. You must have a **valid, documented excuse** for missing your regular lab section to be allowed to make up a lab without penalty (doctors note or documentation from the Dean of Students office https://care.dso.ufl.edu/instructor-notifications/). **The validity of excuses for missed labs or assignments will be determined by your TA.** If you do not have documentation for missing your lab, you *may be* given the opportunity to makeup assignments of graded materials **at the discretion of your TA**. This work may done outside of the laboratory and will be penalized 20% of the total points. **If you know in advance that you are unable to make your regular section, contact your lab TA earlier in the week to arrange attending another section.** *Missed labs generally must be made up within the same week*.

**Illness**

If you are ill with an infection that may be contagious by casual contact (e.g., a cold or flu), you should not attend class. Furthermore, if you have a fever associated with any illness, you should not attend class until you have been free of fever for at least 24 hours. The TA reserves the right to ask any student to leave the classroom at any time if there is a reasonable likelihood that the student's presence in the classroom places other students at substantial risk of infection. If you miss three (3) or more lab days due to illness, you should apply for a medical withdrawal.

**Assignment deadlines**

Graded assignments are due according to the schedule in this syllabus and in Achieve. Prelab assignments are due before lab, quizzes are taken at the beginning of lab, and lab notes and other assignments are generally due at the end of lab. Extensions may be granted by a TA if work cannot be completed during a lab period. Any work received after due dates and times will be considered late work and subject to penalty. NOTE: Students who attend a lab session other than their officially registered section may need to work with their TA to remove any unwarranted penalties. If there is an issue with you completing your assignments on time, contact your instructor immediately. Do not wait until the last minute!

**Late work and Makeup Work**

Late work will be penalized 10% of the total points per day (weekends, *i.e.*, Friday to Monday, are counted as two days and U.F.-recognized holidays are not counted). NOTE: The weekends preceding and following the Semester Break holidays will be counted. **Makeup work must be completed within 10 days of the missed lab** except in cases of extended absence or it will be subject to late penalties. Waiting to the end of the semester to complete makeup work is not acceptable. **It is the student's responsibility to contact their TA regarding makeup work.**

**Participation**

Students may be allowed to turn in assignments on which they did not participate in the collection of data, *at the discretion of the lab instructor*.

**Lab cleanliness**

No food or drink is permitted in the labs and students are expected to leave the lab as clean and orderly as it was when they arrived for class. Students are responsible for cleaning the glassware they use, disposing of all waste appropriately, and cleaning their work area with ethanol and paper towels.

**Lab attire**

Students are not allowed to wear sandals or open-toed shoes in the laboratories.
*Masks are optional at UF. However, masks are always acceptable for those who wish to wear them. Thank you for supporting your fellow Gators as they balance health, comfort, and other considerations in their decision to wear or not to wear a mask.*

## Accommodations for Students with Disabilities

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. Click here to get started with the Disability Resource Center. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

## Campus Resources

**Health and Wellness**

*U Matter, We Care*: If you or someone you know is in distress, please contact umatter@ufl.edu , 352-392-1575, or visit U Matter, We Care website to refer or report a concern and a team member will reach out to the student in distress.

*Counseling and Wellness Center*: Visit the Counseling and Wellness Center website or call 352-392-1575 for information on crisis services as well as non-crisis services.

*Student Health Care Center*: Call 352-392-1161 for 24/7 information to help you find the care you need, or visit the Student Health Care Center website.

*University Police Department*: Visit UF Police Department website or call 352-392-1111 (or 9-1-1 for emergencies).

*UF Health Shands Emergency Room / Trauma Center:* For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; Visit the UF Health Emergency Room and Trauma Center website.

*GatorWell Health Promotion Services*: For prevention services focused on optimal wellbeing, including Wellness Coaching for Academic Success, visit the GatorWell website or call 352-273-4450.

**Academic Resources**

*E-learning technical support*: Contact the UF Computing Help Desk at 352-392-4357 or via e-mail at helpdesk@ufl.edu .

*Career Connections Center*: Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.

*Library Support*: Various ways to receive assistance with respect to using the libraries or finding resources.

*Teaching Center*: Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring.

*Writing Studio:* 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.

*Student Complaints On-Campus*: Visit the Student Honor Code and Student Conduct Code webpage for more information.

*On-Line Students Complaints*: View the Distance Learning Student Complaint Process.

## Online Course Evaluations

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/ . Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/ . Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/ .

## Academic Honesty

All UF students are bound by The Honor Pledge which states:
"*We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code."* On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied."
In addition, on all work submitted for credit the following pledge is either required or implied: "*On my honor, I have neither given nor received unauthorized aid in doing this assignment*." The Honor Code (http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

## In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor. A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session. Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

# BSC 2010L Laboratory Schedule – Summer 2024

Laboratory topics and reading assignments for this course are listed below. This is the expected schedule; the dates and coverage of specific topics are subject to change. A summary of each topic and the point values assigned to each assignment are provided below this table.

| Week | Week of | Laboratory Topic | Assignments |
|---|---|---|---|
| **1** | 13 May | **Introduction; Science and Statistical Inference** | 1. Read **Chapters 1 & 2**<br>2. Statistics Pre-lab (10 pt)<br>3. Statistics Lab Notes (15 pt) |
| **2** | 20 May | **Enzyme Kinetics** | 1. Read **Chapters 4, 5 & 12**<br>2. Enzymes Pre-lab (10 pt)<br>3. Quiz 1 (10 pt)<br>4. Enzymes Lab Notes (20 pt) |
| **3** | 27 May | **Yeast Fermentation** | 1. Read **Chapter 6**<br>2. Quiz 2 (10 pt)<br>3. Yeast Fermentation Lab Notes (5 pt) |
| **4** | 3 Jun | **Enzymes & Fermentation Inquiry** | 1. Read **Chapter 7**<br>2. Enzymes & Fermentation Pre-lab (10 pt)<br>3. Quiz 3 (10 pt)<br>4. Enzymes & Fermentation Lab Notes (15 pt) |
| **5** | 10 Jun | **Invertebrate Dissections** | 1. Read **Chapter 15**<br>2. Invertebrate Dissections Pre-lab (5 pt)<br>3. Quiz 4 (10 pt)<br>4. Invertebrate Dissections Lab Notes (15 pt) |
| **6** | 17 Jun | ****** NO LABS ****** | |
| **7** | 24 Jun | ****** NO LABS ****** | |
| **8** | 1 Jul | ****** NO LABS ****** | |
| **9** | 8 Jul | **Experimental Genetics 1** | 1. Read **Chapters 8 & 9**<br>2. Experimental Genetics 1 Pre-lab (10 pt)<br>3. Quiz 5 (10 pt)<br>4. Experimental Genetics 1 Lab Notes (15 pt) |
| **10** | 15 Jul | **PTC PCR** | 1. Read **Chapter 11**<br>2. Quiz 7 (10 pt)<br>3. PTC PCR Lab Notes - answer questions 1 and 2 |
| **11** | 22 Jul | **Experimental Genetics 2** | 1. Review **Chapter 9**<br>2. Quiz 6 (10 pt)<br>3. Experimental Genetics 2 Lab Notes (10 pt) |
| **12** | 29 Jul | **Population Genetics** | 1. Review **Chapter 11**<br>2. Quiz 8 (10 pt)<br>3. PTC PCR Lab Notes - complete (5 pt)<br>4. Population Genetics Lab Notes (15 pt) |
| **13** | 5 Aug | **Cladistics** | 1. Read **Chapter 17**<br>2. Cladistics Pre-lab (15 pt)<br>3. Quiz 9A (10 pt)<br>4. Cladistics Lab Notes (10 pt)<br>4. Quiz 9B (5 pt) |

## BSC 2010L Laboratory Assignment and Point Breakdown Sheet – Summer 2024

| WEEK | ASSIGNMENTS | POINTS |
|---|---|---|
| 1 | **Statistics Prelab** – due before lab | **___/10** |
| | **Statistics Lab Notes** – due at end of lab | **___/15** |
| 2 | **Enzymes Prelab** – due before lab | **___/10** |
| | **Quiz 1 Statistics** – taken at beginning of lab | **___/10** |
| | **Enzymes Lab Notes** – due at end of lab | **___/20** |
| 3 | **Quiz 2 Enzymes** – taken at beginning of lab | **___/10** |
| | **Yeast Fermentation Lab Notes** – due at end of lab | **___/5** |
| 4 | **Enzymes & Fermentation Prelab** – due before lab | **___/10** |
| | **Quiz 3 Yeast Fermentation** – taken at beginning of lab | **___/10** |
| | **Enzymes & Fermentation Lab Notes** – due at end of lab | **___/15** |
| 5 | **Invertebrate Dissection Prelab** – due before lab | **___/5** |
| | **Quiz 4 Enzymes & Fermentation** – taken at beginning of lab | **___/10** |
| | **Invertebrate Dissection Lab Notes** – due at end of lab | **___/15** |
| 6 | ****** NO LABS ****** | |
| 7 | ****** NO LABS ****** | |
| 8 | ****** NO LABS ****** | |
| 9 | **Experimental Genetics 1 Prelab** – due before lab | **___/10** |
| | **Quiz 5 Invertebrate Dissection** – taken at beginning of lab | **___/10** |
| | **Experimental Genetics 1 Lab Notes** – due at beginning of next lab | **___/15** |
| 10 | **Quiz 6 Experimental Genetics 1** – taken at beginning of lab | **___/10** |
| | **Experimental Genetics 2 Lab Notes** – due at end of lab | **___/10** |
| 11 | **Quiz 7 Experimental Genetics 2** – taken at beginning of lab | **___/10** |
| | **PTC PCR Lab Notes** – due at end of next lab | **___/5** |
| 12 | **Quiz 8 PTC PCR** – taken at beginning of lab | **___/10** |
| | **Population Genetics Lab Notes** – due at end of lab | **___/15** |
| 13 | **Cladistics Prelab** – due before lab | **___/15** |
| | **Quiz 9A Population Genetics** – taken at beginning of lab | **___/10** |
| | **Cladistics Lab Notes** – due at end of lab | **___/10** |
| | **Quiz 9B Cladistics** – taken before end of lab | **___/5** |
| | **TOTAL POINTS:** | **___/280** |

# BSC Laboratory Safety

Work in the Biology laboratory may expose students to **inherently dangerous activities**. Students in the BSC laboratories may be exposed to chemicals (e.g., formaldehyde, organic solvents, acids, and other caustic chemicals), chemical fumes, laboratory equipment and supplies (e.g., scalpels, razor blades, glass slides, coverslips, and electrical equipment), toxic or irritating properties of living and dead animals, and other materials necessary to laboratory activities. Other possible hazards include broken glass on the floor or counters, combustible materials, and slippery spills.

1. Smoking, eating, and drinking are expressly forbidden and NOT allowed in the laboratory.
2. Locate the placement of safety equipment and supplies in the laboratory: safety shower, eye wash station, fire extinguisher, and first aid kit. Memorize these locations. You should understand the use of this equipment. Also note the locations of exits. Each laboratory has a chemical exposure manual. These include material safety data sheets on all hazardous chemicals or compounds to which you might be exposed in the BSC laboratory.
3. Students should follow instructions carefully, especially when hazardous conditions occur or hazardous materials are being used.
4. Students should dress appropriately in the lab. Gloves and protective aprons will be made available in the labs. Students may elect to supply their own gloves and protective aprons or laboratory coats. Only shoes that provide complete foot covering are allowed in the lab.
5. You should be familiar with fire procedures. Leave the building immediately should a major fire occur or if the fire alarm sounds. Notify the appropriate authorities -- don't assume someone else remembered to do it. Meet with other students and your instructor outside the building before leaving so that an accurate headcount may be made.
6. The safe use of specific equipment and tools (e.g., microscopes, slides, scalpels, and pipettes) will be demonstrated by the instructor during the laboratory sessions. Be sure you understand this usage and ask questions if you do not.
7. Never pipette by mouth. Always use a suction bulb or pipette aid.
8. Notify your T.A. IMMEDIATELY of any spills, breakages, or equipment malfunction.
9. Students should report all hazardous conditions to the instructor immediately.
10. All organisms, living or dead, should be treated with care and respect. Avoid direct handling when possible.
11. Students should clean up any supplies used and should return materials where they belong as instructed. Any material spilled should be cleaned appropriately. Report any hazardous spills or breakages.
12. Broken glass and sharp metal waste should be placed only in those receptacles marked for such disposal -- do not put these materials in normal trash receptacles.
13. Work areas must be left clean and dry prior to leaving the lab. Chemicals and reagents must be returned to their proper places.
14. You should always wash your hands before leaving the laboratory, even if you have not knowingly come in contact with any chemicals or biological fluids.