Introduction to Human Biology **Fall, 2017**

SHASTA COLLEGE
SCIENCE, LANGUAGE ARTS, and MATHEMATICS DIVISION
FIRST CLASS HANDOUT

TITLE OF COURSE AND NUMBER

BIOL 5, Introduction to Human Biology
Prerequisite: Determination, Perseverance and a Quest for Knowledge
Course Units: 3
Class Hours/Week: 3 Hours of Lecture

INSTRUCTOR INFORMATION

Instructor	Dr. Croes
Office:	Room 1618
Office Phone:	242 – 2328
E-mail:	scroes@shastacollege.edu
Website:	http://www.drcroes.com
	This site contains important course documents and useful web links related to the subjects discussed in this class.

Office Hours:
MW 1:00 – 2:00 pm
T 9:00 – 11:00 am
F 8:00 – 9:00 am

You are welcome to schedule an appointment if you need to meet outside my office hours. Additionally, I have an open door policy so you are welcome to just drop by.

Lecture Schedule: MW 2:00 – 3:15 (room 1425)

COURSE DESCRIPTION :

A one-semester introductory course in human anatomy and physiology presented with a medical emphasis. Selected topics on eleven organ systems are covered. This course is intended to serve medical assistants, licensed vocational nursing, and fire science majors. It also complements child development and nutrition majors. BIOL 5 is a prerequisite for the LVN program. Although not required, students are encouraged to take Biol 6 which is the companion lab to Biol 5.

Please note: As a student enrolled in this course, it is YOUR responsibility to judge whether or not you have the skills to succeed. Although this course has no pre-requisites or advisories, each student must carefully assess their own skill level and required time to devote to studying. Assistance for this course as well as other science classes are available (and free of charge) at tutoring centers on campus for all students. Please be proactive and ask for assistance early!

REQUIRED MATERIALS:

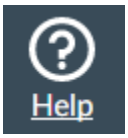
1. Introduction to the Human Body, 10th Edition, by Gerard J. Tortora and Bryan Derrickson. Publisher: John Wiley and Sons, Inc. ISBN 978111858318-0. The Shasta College bookstore is selling the 9th edition (ISBN 9780470598924) which is also fine to use.

2. Computer Requirements**:** Since a portion of the course material will be on Canvas, you will need to have an up-to-date browser and operating system. You can check information on the **Distance Education** page for hardware & software requirements. A number of the documents in this course

will be available to you in PDF form. If you do not have Adobe Acrobat Reader software on your computer, you can download it for free by going to http://get.adobe.com/reader/

Technical Support:

For technical questions about Canvas including computer access, etc., we have a great technical support team available 24 hours a day, 7 days a week by phone (844) 303-0351 or you can click on the question icon at the bottom left hand side when you are in Canvas.



SUPPLEMENTARY MATERIALS:

1. Lecture note outlines: Can down load from my website. These are not required. However, I believe that you will find them helpful. **http://drcroes.com**

2. Clinical Applications and Diagrams, printed from the Human Biology Homepage in Canvas. You will need a set of colored pencils to complete the diagrams.

This course will involve both lecture and guided discussion. A typical week will involve 10-40 pages of textbook reading, review of lecture notes, quiz and class discussions. Various homework assignments in for the form of study guides will be due on a weekly basis. There will be 6 exams given throughout the semester – 5 regular exams plus a comprehensive final exam.

COURSE OBJECTIVES

Upon completion of this course, the student will be able to do the following:

1. Describe how homeostasis is maintained in the body and Explain organ system integration and relate how this is used to maintain a relatively constant internal environment.
2. Describe the hierarchical architecture of the human body: atoms, molecules, cells, tissues, organs, organ systems, and whole organism.
3. Analyze the chemical and cellular organization associated with human tissues.
4. Describe and distinguish various roles of major classes of biomolecules in living cells.
5. Explain the general roles of metabolic enzymes, their control in metabolic reactions, and how their dysfunction contributes to disease.
6. Describe the differences of diffusion, osmosis, and active membrane transport processes and their significance to cellular function.
7. Identify the major organs and their functions of the 11 organ systems that make up the human body, including skeletal, integumentary, muscular, circulatory, digestive, respiratory, excretory, nervous, endocrine, immune, and reproductive systems.
8. Demonstrate an understanding of how organ systems of the body are integrated and regulated; e.g., explain how hormones exert their effects on target cells and how their secretion is regulated.
9. Describe the relationship between the nervous system and the endocrine system in cellular communication.
10. Demonstrate knowledge of metabolic and physiological disorders of the major organ systems that occur in disease, injury or aging of the human body systems; e.g., identification of different types of thyroid disorder due to hyper and hypothyroidism.
11. Identify the functional components of skeletal muscle in contraction and motor-unit recruitment.
12. Describe the intrinsic rhythm of the heart and relate this to a typical electrocardiogram.
13. Explain the laws of hemodynamics in blood pressure regulation.
14. Identify the digestive process from the ingestion of food, its absorption, and priority of metabolism. Calculate of Basal Metabolic Rate.

15. Describe the role of the kidney in regulating water and electrolyte balance, and general homeostatic functions.
16. Demonstrate an understanding of the scientific method, experimental design, and the philosophy of science. Apply the scientific method and philosophy of science by designing components of and carrying out physiological experiments.

STUDENT LEARNING OUTCOMES

Upon successful completion of the course, a student should be able to:

1. Explain the basic anatomical features and physiological functions of the 11 organ systems within the human body.
2. Compare and contrast normal physiological processes and be able to recognize the relationship between pathogenic progression and altered physiological responses.
3. Evaluate the health of the human body by analyzing and correctly interpreting physiological data.

COURSE SUBJECT MATTER OUTLINE

Primarily follows the chapter order in the textbook. A more detailed student **study guide** will be provided for each chapter covered, which will include specific topics and concepts that students must know.

Chapter 1 – Anatomical organization, overview of eleven organ systems, anatomical terminology.
Chapter 2 – Ions, organic molecules, pH, protein structure, introduction to enzymes.
Chapter 3 – The cell, eukaryotic cell organelles, cell membrane, active and passive transport.
Chapter 4 – Tissues – epithelial, connective, nervous, muscle, cell types, recognition of tissues.
Chapter 5 – Integumentary system – epidermis, dermis, glands, hair, common skin disorders.
Chapter 6 – Skeleton – bone identification (axial & appendicular skeleton), bone formation, types of bone, types of joints.
Chapter 8 – Muscles – Types of muscle, histology, skeletal muscle contraction characteristics, muscle metabolism, identification of major muscles.
Chapter 9 – Nervous system – organization, neurons, synaptic transmission, neural transmitters.
Chapter 10 – CNS – spinal nerves, reflexes, brain anatomy and function, cranial nerves.
Chapter 11 – Autonomic nervous system, sympathetic & parasympathetic responses.
Chapter 12 – Somatic and special senses, emphasis on vision and hearing.
Chapter 13 – Endocrine system, hypothalamus/pituitary hormones, hormone action, discussion of selected glands and the hormones produced, selected disorders.
Chapter 14 – Blood – blood components, cell types, blood clotting, blood types.
Chapter 15 – Cardiovascular (Heart) – cardiac anatomy, blood flow, intrinsic conduction system, cardiac cycle, regulation of the heart.
Chapter 16 – Cardiovascular (Blood Vessels) – identification of major arteries and veins, concepts of circulation, and blood pressure.
Chapter 17 – Lymphatic System/ Immunity – overview of lymphatic system, inflammation, innate immunity, active immunity, cell types, antibodies.
Chapter 18 – Respiratory System – general anatomy, ventilation, volumes, gas exchange, control.
Chapter 19 – Digestive System – anatomy, nutrient absorption, digestive hormones/enzymes.
Chapter 21 – Urinary System – general anatomy, nephron function, urine formation.
Chapter 23 – Reproduction – male and female anatomy, hormones, menstrual cycle. fertilization.

COURSE REQUIREMENTS AND METHODS OF EVALUATION:

Your final grade for this course is based on the combined scores of lecture and lab. **Keep all graded material until you receive a final grade for the course.**

1. Lecture Examinations

Six lecture exams will be given, each worth 100 points. Format of questions will include short answer, multiple choice, matching, fill-in. **The 6th lecture exam is a comprehensive final**. Of the six exams, **the lowest score will be dropped.** Thus, **the comprehensive final exam is optional** and is offered to those who would like an opportunity to increase their grade by replacing a lower exam score received on a previous lecture test with the grade received on the final.

2. Lecture Quizzes

Sixteen lecture quizzes counted, each worth 5 points. Quizzes will be given throughout the semester and may be given at the beginning, during or end of each lecture. The number of quizzes given will vary with a total of 15 quizzes to be counted toward your grade. Of these, **only your 15 highest scores will be applied.** This will provide an opportunity to drop one or more low quiz scores. Quizzes will be based on lecture material and readings consisting of a similar format as lecture exams. All quizzes will be taken in class and there are not makeups. If you miss a quiz because of absence or because you were not there when it is handed out due to being late or leaving early, you may not re-take it. Exceptions will be made for jury duty and school activities so long as you get clearance from me prior to the absence/quiz.

3. Study Guides

Sixteen study guides counted, each worth 5 points. Complete the study guide in Canvas after you have learned the information from the lecture note outline. There may be a few questions that you will need to do additional research in your textbook or via the internet. The study guides are set up like a quiz in order to keep track of your points for doing the study guide. It is not a "quiz" so it is alright if you would like to use your notes, book, or each other. You can attempt the study guide as many times as you like to earn up to **5 points** for this assignment. Your highest score will be recorded in the grade book. The study guide for a particular unit will be **due on the following Monday by 11:59 pm after we complete that unit**. For example: If we complete the chapter 1 outline on Wednesday then the study guide will be due on Monday of the following week. The correct answers will show on the next day and be available until the exam. This is a great study tool for you to assess your understanding after you have spent the time to learn the information found in the lecture note outline and text book.

4. Clinical Application Questions and Diagrams

Selected **clinical application questions and diagrams** will be given at the beginning for each chapter covered in class. Once we have finished the chapter, the clinical oriented case studies, questions, and diagrams for that chapter are to be completed and turned in at the **beginning of the next class meeting**. **Late work will not be accepted**. **If absent you can take pictures of each of the pages of the assignment and email it to me**. However, it is due at the same time as the rest of the class. A key to the **clinical application questions and diagrams** will be posted on my website at the end of class on the day the assignment is due. **Clinical application questions and diagrams are given in order to test your understanding of the lecture material, help you prepare for lecture exams/quizzes, and increase your overall knowledge of human biology**. The portions of the assignment that direct you to color the diagrams are required to be colored for you to receive credit. If you complete and turn in (on time) all but one of the clinical application questions and diagrams, you will receive 10 bonus points toward your grade. **Note: if you miss 2 or more of these assignments then you will not receive any bonus points.** It is your responsibility to check the grade sheet for verification that I have received and graded your assignment.

5. Examination Make-ups:

Exams will be given at the times noted in the course schedule. However, the schedule is tentative and exams may be rescheduled at the instructor's discretion. Make-up lecture exams may be permitted, at the discretion of the instructor, when clear documented reasons are provided. **A make-up exam score will be automatically reduced by 8%.** If you are unable to take the Final Exam at the scheduled date and time, contact your instructor at least two weeks in advance to schedule an alternate test date.

Summary of Evaluation Methods:

5 Lecture Exams counted	100	points each =	500
16 Lecture Quizzes counted	5	points each =	80
16 Study Guides	5	points each =	80
Clinical Applications/Diagrams	10	bonus points =	NA
Attendance	5	bonus points =	NA
		Total Points =	660

Grade percentages will be as follows:

A = 90-100%	C = 70-79.9%	F = less than 59.9%
B = 80-89.9%	D = 60-69.9%	

DROPPING THE CLASS:

Success in the course is dependent upon participating in class discussion and completing assignments/exams. Please be aware the instructor may drop a student after the no record drop deadline (approximately 20% of the term) and before the "W" drop deadline (approximately 75% of the term) for excessive absences. **It is the student's responsibility to sign the attendance sheet for each class if available**. A student can be dropped from the course if the first day of class is missed. More than three unexcused absences in lecture may, at the discretion of the instructor, result in the student being dropped from the course with a grade of "W". However, **IT IS ALWAYS THE STUDENT'S RESPONSIBILITY TO OFFICIALLY DROP OR WITHDRAW FROM THE CLASS.**

ATTENDANCE/LATENESS: The *Shasta College Course Catalog* states that "students are expected to attend all classes." Success in the course is dependent upon attendance; attending a class means arriving on time, coming back to class promptly from breaks, and staying for the entire class period. Any missed class sessions may affect your performance.

Please be aware the instructor may drop a student after the no record drop deadline (approximately 20% of the term) and before the "W" drop deadline (approximately 75% of the term) for excessive absences. Lecture attendance is mandatory and attendance will be taken at random. **It is the student's responsibility to sign the attendance sheet for each class if available**. A student can be dropped from the course if the first day of class is missed. More than three unexcused absences in lecture may, at the discretion of the instructor, result in the student being dropped from the course with a grade of "W". However, **IT IS ALWAYS THE STUDENT'S RESPONSIBILITY TO OFFICIALLY DROP OR WITHDRAW FROM THE CLASS.**

Students who have a perfect record of attendance (0-1 missed class) will automatically have **5 points** added to their total score for the semester. Students are allowed to miss one lecture class without affecting their bonus points.

GUESTS AND CHILDREN: Only authorized persons are allowed in the classrooms. College liability coverage does not extend to guests or children and thus they are not allowed in the classroom. If a student needs assistance with childcare during class time, please contact the EOPS office. EOPS may be able to help with long-term day care; however, it does not provide day-care service on a drop-in basis.

COLLEGE POLICIES

Academic Honesty: According to the *Shasta College Student Handbook* and the *Shasta College Catalog,* there are a number of unauthorized behaviors that violate the campus academic honesty policy. Each student should become familiar with the policy.
Failure to acknowledge the work of other scholars constitutes an egregious breach of ethics and is a violation of civil law. You must, in all cases, do your own work, acknowledge sources, and document them appropriately. Otherwise, disciplinary sanctions will be applied. If you have any questions about plagiarism, please do not hesitate to contact me.
In other words, cheating of any sort will not be tolerated and will result in an "F" for the assignment, quiz, or exam, and the case may be reported to the Dean of Students.

Student Conduct and Discipline: In accordance with the Student Code of Conduct (Board Policy 5500), students are expected to obey all California State laws and all Federal laws that pertain to behavior on a college campus. Shasta College's jurisdiction and discipline shall be limited to conduct that occurs on Shasta College premises or that is related to school activities. Any student found to have committed misconduct is subject to the disciplinary sanctions outlined in Board Policy 5520.

This is a college classroom. You are expected to arrive on time and stay for the entire class period. Late arrivals and early departures are disruptive for the entire class. Three late arrivals/early departures will count as one absence.

Behaviors that impede the teaching/learning process, including private conversations, phone or pager calls, and texting are not acceptable. Please turn off all cell phones and pagers during class. I reserve the right to administratively withdraw any student who presents behavioral issues that impede the learning environment. As a courtesy to your fellow students and instructor, please turn off all cellphones for the duration of class. If you respond to a phone in class, you will be asked to leave the class for the remainder of the meeting; furthermore, you will not receive participation credit for the day. If there is some pressing issue that requires you to have your phone on, please set your phone to vibrate, inform the instructor, and leave the class if you have to take a call.

Academic accommodations imposed by a disability: If you feel that you will need academic accommodations in this class due to limits imposed by a disability then contact the office of Disabled Students Programs and Services (DSPS) (242-7790) to make the necessary arrangements. It is the student's responsibility to provide documentation that verifies the disability and the type of limitations that may result. The DSPS office has been delegated the authority to, 1) evaluate that documentation and determine if it is sufficient to justify accommodations, 2) determine which accommodations are appropriate, and 3) facilitate the provision of approved accommodations.

Full Non-Discrimination Statement: The Shasta-Tehama Trinity Joint Community College District ("Shasta College") does not discriminate against any person on the basis of race, color, national origin, sex, religious preference, age, disability (physical and mental), pregnancy (including pregnancy, childbirth, and medical conditions related to pregnancy or childbirth), gender identity, sexual orientation, genetics, military or veteran status or any other characteristic protected by applicable law in admission and access to, or treatment in employment, educational programs or activities at any of its campuses. Shasta College also prohibits harassment on any of these bases, including sexual harassment, as well as sexual assault, domestic violence, dating violence, and stalking.

Human Biology, Fall Semester Lecture Schedule, 2017

*This schedule is **tentative** and subject to amendment.*

Week	Lecture Topic	Text	Clinical Applications
1 (8/14)	Introduction; Body Organization; Homeostasis	Ch 1	Medical Terminology
2 (8/21)	Chemical Composition of the Body Cell Structure and Function *Last day to drop without record 8/25*	Ch 2 Ch 3	Cancer
3 (8/28)	Cell Structure and Function (continued) Membrane Transport	Ch 3	See Study Guide
4 (9/4)	**Exam 1 – Ch 1, 2, 3** Integumentary System	Ch 5	Lupus Erythematosus Skin Cancer; decubitius ulcers
5 (9/11)	The Skeletal System	Ch 6	Osteoporosis; Rickets; Bunion Kyphosis; Lordosis; Scoliosis
6 (9/18)	The Muscular System . Mechanisms of Contraction.	Ch 8	Myasthenia Gravis Muscular Dystrophy; Anabolic Steroids; Fibromyalgia
7 (9/25)	**Exam 2 – Ch 5, 6, 8** Nervous Tissue	Ch 9	
8 (10/2)	Central and Peripheral Nervous System	Ch 10	Shingles; ALS; Alzheimer's; Parkinson Disease;
9 (10/9)	Somatic Senses and Special Senses	Ch 12	Cataracts; Glaucoma; Deafness
10 (10/16)	**Exam 3 –Ch 9, 10, 12** The Endocrine System	Ch 13	Diabetes Mellitus and Insipidus; Hyper- and Hypothyroidism
11 (10/23)	Cardiovascular System: Blood	Ch 14	Anemia; Leukemia
12 (10/30)	Cardiovascular System: Heart and Vessels	Ch 15 Ch 16	Coronary Artery Disease; Myocardial Ischemia and Infarct Hypertension; Aneurysm
13 (11/6)	The Respiratory System The Lymphatic System and Immunity **Exam 4 – Ch 13, 14, 15, 16, 18**	Ch 18 Ch 17	Asthma; Emphysema; COPD AIDS; Mononucleosis
14 (11/13)	The Digestive System *Last day to withdraw from a class (W) 11/14*	Ch 19	Hepatitis; Appendicitis
11/20	**Thanksgiving:** Vacation with Human Biology Book		
15 (11/27)	The Urinary System	Ch 21	Renal Failure
16 (12/4)	The Reproductive System	Ch 23	Testicular Cancer; Prostate Disorders, Breast Cancer: Endometriosis
17 (12/11)	**Exam 5 – Ch 19, 21, 23, 17 Monday** **Exam 6, Optional Comprehensive Lecture Exam, Wednesday**		

TIPS FOR GETTING GOOD GRADES:

Lecture:

1. Read the chapter BEFORE lecture and come to class with questions on material that you did not understand.
2. In order to test your understanding, answer the "study guide and clinical case study questions" that are given in class along with the end of the chapter questions. I sometimes take test questions from these sources
3. Study handouts before tests—the material from these is on lecture tests.

Lab:

1. Read labs ahead of time, do questions on labs before lab when possible.
2. Use lab time to do lab exercises concentrating on terms listed in course objectives--these terms make up ~85 % of the lab tests.
3. Re-read labs before lab test, so that you understand the main point of the lab exercises, this can be done at home.

Most importantly: **Always do you best and never give up! Persistence** and **Perseverance** are key character traits to mastering physiology and anything else you want to succeed in. You are capable of comprehending this information and I am here to help you succeed. Do not hesitate to ask questions when you do not understand a concept.

Two phrases to keep in mind are:

"**Argue for you limitations and they are yours**"

"**Today Decides Tomorrow**"

Characteristics of an "A" versus "C" Students

"A" Students . . .	**"C" Students . . .**
1. Never miss class. Attending class is their highest academic priority.	1. Periodically miss class and/or are often late. They place other priorities ahead of attending class.
2. Show initiative. Their desire to excel makes them do more work than is required.	2. Seldom show initiative. They never do more than is required and sometimes do less.
3. Are well-organized. They know when assignments and tests are scheduled.	3. Are poorly organized and not usually prepared for tests/quizzes.
4. Write well and easy to understand. Their communication work is well-organized, covers all relevant problems and is easy to read.	4. Do not write particularly well. Their written work may require a second reading by the professor to comprehend Meaning.
5. Are visibly interested during class and display interest in the subject matter. They often volunteer thoughtful comments and ask interesting questions.	5. Participate in class with indifference or boredom. They show little interest in the course material Their questions reflect a superficial understanding of the course material.
6. Ask questions in class or after class if the material is not clear.	6. Seldom ask questions when they do not understand.

7. Are always prepared for class. They always respond when called on.	7. Are not always prepared for class. They may not have fully completed the assignment, have completed it in a careless manner, or hand in their assignments late.
8. Learn concepts rather than memorize details so they are better able to connect past learning with present material.	8. Memorize details rather than learn concepts. Since they usually cram for tests, they perform relatively better on short quizzes than on longer, more comprehensive tests.
9. Maintain a fixed study schedule. They regularly prepare for each class no matter what the assignment. They average 3-4 hours of study for every hour in class. Do not allow for Interruptions – once the books are open no phone calls, TV, or visiting.	9. Study only under pressure. When no assignment is due, they do not review or study ahead. They average 2 hours of study for every hour in class. They tend to cram for exams.

Seven Characteristics of Good Learners

1. **Good learners are curious** – They wonder about all sorts of things, often about things way beyond their areas of expertise. They love the discovery part of learning. Finding out about something they didn't know satisfies them for the moment, but their curiosity is addictive.
2. **Good learners pursue understanding diligently** – A few things may come easily to learners but most knowledge arrives after effort, and good learners are willing to put in the time. They search out information—sometimes aspiring to find out everything that is known about something. They read, analyze, and evaluate the information they've found. They talk with others, read more, study more, and carry around what they don't understand; thinking about it before they go to sleep, at the gym, on the way to work, and sometimes when they should be listening to others. Good learners are persistent. They don't give up easily.
3. **Good learners recognize that a lot of learning isn't fun** – That doesn't change how much they love learning. When understanding finally comes, when they get it, when all the pieces fit together, that is one special thrill. But the journey to understanding generally isn't all that exciting. Some learning tasks require boring repetition; others a mind-numbing attention to detail; still others periods of intense mental focus. Backs hurt, bottoms get tired, the clutter on the desk expands, the coffee tastes stale—no, most learning isn't fun.
4. **Failure frightens good learners, but they know it's beneficial** – It's a part of learning that offers special opportunities that aren't there when success comes quickly and without failure. In the presence of repeated failure and seeming futility, good learners carry on, confident that they'll figure it out. When faced with a motor that resists repair, my live-in mechanic announces he has yet to meet a motor that can't be fixed. Sometimes it ends up looking like a grudge match, man against the machine, with the man undeterred by how many different fixes don't work. He's frustrated but determined to find the one that will, all the while learning from those that don't.
5. **Good learners make knowledge their own** – This is about making the new knowledge fit with what the learner already knows, not making it mean whatever the learner wants. Good

learners change their knowledge structures in order to accommodate what they are learning. They use the new knowledge to tear down what's poorly constructed, to finish what's only partially built, and to create new additions. In the process, they build a bigger and better knowledge structure. It's not enough to just take in new knowledge. It has to make sense, to connect in meaningful ways with what the learner already knows.

6. **Good learners never run out of questions** – There's always more to know. Good learners are never satisfied with how much they know about anything. They are pulled around by questions—the ones they still can't answer, or can only answer part way, or the ones without very good answers. Those questions follow them around like day follows night with the answer bringing daylight but the next question revealing the darkness.
7. **Good learners share what they've learned** – Knowledge is inert. Unless it's passed on, knowledge is lost. Good learners are teachers committed to sharing with others what they've learned. They write about it, and talk about it. Good learners can explain what they know in ways that make sense to others. They aren't trapped by specialized language. They can translate, paraphrase, and find examples that make what they know meaningful to other learners. They are connected to the knowledge passed on to them and committed to leaving what they've learned with others.

SCIENCE LEARNING CENTER

Life Science Building – 1600 Room 1626 530-242-2325
www.shastacollege.edu/ScienceLearningCenter

The Science Learning Center offers a comfortable study environment and a variety of resources to assist students in any of the Science classes. There are computer programs that cover specific topics, old tests, Text books for most courses and the Solution Manuals that go with them. Microscopes and slides are available for reviewing some labs.

FREE TUTORING is done by students who have successfully completed the course; often with the same instructor Tutors must have a "B" or better in the courses they tutor. They can help you initiate good study habits and organizational skills to maximize your study time. They can also help to clarify any confusing concepts. When there is interest, we run study groups that are led by tutors.

OTHER RESOURCES AVAILABLE

- **Copy Machine** A copy machine is available in the computer area of the Learning Center for .10 per copy.
- **Office Supplies** For your use, we have a paper cutter, stapler, scissors, and tape. Colored pencils are also available.
- **Calculators** We have both basic scientific and graphing calculators. They can be checked out for use in the center and for test-taking. We hold your driver's license.
- **Computers** We have four internet connected computers with Microsoft Office suite installed. Printing is available off the computer for .10 cents a page. We also have 2 Laptops for check-out to use in the center.

STUDYING IN THE SLC

There is room available for students to study alone or in groups. We have one small room where students can isolate to minimize distractions. You are allowed to eat in the SLC.
The **Science Learning Center** is a friendly, helpful, encouraging environment, which could become your home away from home. Come in and check it out. Margaret Savage, SLC Coordinator.

DAYS/HOURS: Open Monday thru Friday. Call for current hours, 242-2325