

This *General Botany Study Guide* aims to assist you in developing an effective "study plan." Here is how to acquire and adapt it to your proficiency and learning style:

1. **Obtain your *Study Guide*** along with other resources at the BIO 2500 home page, <http://www.cedarville.edu/dept/sm/silvius/2500/2500main.htm>. You should add this site to your internet "Favorites."
2. **The *Study Guide* explains** each study assignment, **emphasizes concepts** you will need to study and learn for each upcoming class discussion, and **provides overviews** to help you see each assignment in relationship to previous topics.
3. **Develop a Study Plan** -- Learning comprehension will require a commitment and consistent effort on your part. Take time to read this "[Reading and Study Plan](#)" and adapt it to your study and learning style. We will use WebCT to provide "threaded discussion areas" for each cooperative learning group (Syllabus p.5) to discuss concepts and apply them outside of class. An atmosphere of mutual encouragement must be a goal in and out of class.
4. **Develop a "Botany Journal"** by organizing a 3-ring binder (1.5-in ring diam.) and using it as follows:
 - a. **BEFORE CLASS:** Build your "Journal" around your [General Botany Study Guide](#) which contains Study Questions and Lecture/Study Outlines. Acquire them on Internet (See (1.) above.), print them out, and insert them into your Journal. Then, use them to guide your completion of each assignment (*i.e.* text reading, answering Study Questions) before class. Organize the pages in logical sequence for easy access during class. **Tip:** If you print the Study Guide on one side only of clean bond paper, you can use the back side (left half of your open "Journal") for additional notes during class or later.
 - b. **DURING CLASS:** Now, use your organization and familiarity with your Study Notes from before class to your advantage through better comprehension and participation during lecture and class discussion. Add additional notes during lecture.
 - c. **AFTER CLASS:** Review/ modify your notes soon after class to reflect your developing understanding and remaining questions.
 - d. **LABORATORY NOTES**, including all lab data, drawings, and labeled illustrations can be added to your "Journal" in a separate section or integrated with class notes by topic.

Before you access your first assignment through the Course Schedule at the BIO 2500 home page, if you are determined to excel in the mastery of terminology, concepts, and principles, consider how you could incorporate into your personal learning style the **READING AND STUDY PLAN** on the next page.

The "Rationale and Objectives" in your Syllabus, page 1, aim to foster *biological literacy*, defined below:

BIOLOGICAL LITERACY:	The quality of being able to understand biological concepts, make moral and ethical judgements about biological issues, and solve real-world problems that involve biological issues.
BOTANICAL LITERACY:	Components of biological literacy related to the sub-discipline of <i>botany</i> .

How does one develop greater "botanical literacy?" By analogy, think of your textbooks, syllabus, this *Guide*, and other study materials as the BLUEPRINT. Like a blueprint, these materials can assist you in bringing about the reality of greater biological literacy -- *i.e.*, constructing the BUILDING representing the conceptual framework you will develop. The framework is composed of boards and nails, representing the vocabulary, facts, concepts, and data which you encounter. Just as a building is more than a collection of boards and nails, so biological literacy represents more than facts and definitions, important as they are. Rather biological literacy is an orderly assembly of concepts into a framework and the ability to continually modify, build onto, and apply this framework to address new topics/problems.

According to contemporary science education theory, each person who "builds" his/her botanical literacy is advancing information through several "literacy levels" as illustrated below. Note the increasing richness of understanding of the concept of PHOTOSYNTHESIS one can attain by advancing to *structural literacy* and *multidisciplinary literacy* levels:

Table 1. Biological Literacy Begins with Nominal Literacy and Works 'Upward.'

LITERACY LEVEL	DESCRIPTION	DEMONSTRATED BEHAVIOR
MULTIDIMENSIONAL LITERACY	Applies knowledge to solve real-world problems	In light of a growing human population, how can PHOTOSYNTHESIS be enhanced to increase food supply?
↑		
STRUCTURAL LITERACY	Constructs appropriate meaning of concept based upon his/he own understanding/experiences	PHOTOSYNTHESIS is the principal process responsible for sustaining life on Earth.
↑		
FUNCTIONAL LITERACY	<i>Defines</i> or <i>describes</i> a term from memory	PHOTOSYNTHESIS = a process that converts light energy into chemical bond energy in plants
↑		
NOMINAL LITERACY	<i>Recognizes</i> a term as "biological"	Associates "PHOTOSYNTHESIS" with <u>botany</u> or <u>ecology</u>

As you begin your study of botany, aim for concept-learning. This "literacy ladder" can be a useful model. Your objective should be to recognize that, in instances where your literacy is at this *nominal literacy* level (*i.e.* "recognition" and no higher), you must strive to move to higher levels. This Guide is also a proven time-saver **if** you will use it to prepare for lecture-discussions and for post-lecture study and review. If you are at *nominal* or *functional literacy* levels, you must focus on moving from *recognition* and *definition* of terms to *construction* of "appropriate meaning" within your conceptual framework. To make it work, follow two suggestions on the next page:

Organize a "Botany Journal" as described in on page 1 above.

Approach Each Assignment Logically as directed. Each study assignment is intended to help you establish your "jump-on point" from where you are familiar and help you "move yourself along" to higher literacy levels as illustrated with "PHOTOSYNTHESIS" in the Literacy Table above. This is a sequence of SURVEY -> INQUIRY -> READING -> DEFINITION -> EXAMPLES -> CONCEPTUALIZE -> APPLY, and is modified from the SQ3R Method (Robinson, F.P. 1961. *Effective Study*, Harper). We call it the "S-I-R D-E-C-A Method". Each study assignment has roughly the following format, and "SIR DECA" is integrated with each part:

1. **Identify Your Assignment:** Your Syllabus, page 5, lists for each date the Study Assignment number (SA #) which you are to complete before coming to class on that day. Find that SA by number (e.g. SA #1) in your *General Botany Study Guide*, and you will find a helpful introduction, the assigned READING, and instruction which will help you SURVEY the assignment:

SURVEY your assignment before "diving in." Read the introduction in the given Study Assignment which provides a recap and/or orientation. Your Stern Botany text opens each chapter with an "Overview" and "Learning Goals;" whereas. Molles Ecology text provides end-of-chapter "Summary Concepts" which are excellent. Here, you should determine your general level of biological literacy.

2. **Stir Up Your Mind:** Molles' Ecology presents **Concepts** to *highlight specific learning tasks*. Most study assignments (SA's) provide **Study Questions**. You should now move into a questioning mode:

INQUIRY -- Carefully read any text "concepts" and the SA. What questions come to mind that must be answered to understand each concept? Also, take time to read the **STUDY or DISCUSSION QUESTIONS** in your *Study Guide*. This approach will create "mental magnets" in your mind.

READING -- Instead of "passive plodding", you are now ready to read with the purpose of answering the questions you formulated. Pray for an alert, "magnetic", inquiring mind.

DEFINITION -- Botany has an extensive vocabulary which must be mastered. Having read the assignment, you may want to list key words and define them in meaningful terms. Some vocabulary will receive more emphasis than others--note the degree of emphasis in the *General Botany Study Guide* under **STUDY or DISCUSSION QUESTIONS**. A **STUDY OUTLINE** may be included.

EXAMPLES -- From the context, list examples to assist in relating each vocabulary word to your personal experience. Definitions + Examples promote *functional literacy*.

3. **Build Your Conceptual Framework** to gain *structural literacy* and make practical application to the real world (*multidisciplinary literacy*) as follows:

CONCEPTUALIZE -- Having good definition and examples (*functional literacy*) will assist you in associating a vocabulary word with some regular pattern of objects or events. Then, **STUDY or DISCUSSION QUESTIONS** test your readiness to see relationships between or among concepts as they relate to a particular phenomenon, model, or theory. If provided, use the **STUDY OUTLINE** which emphasizes the conceptual framework.

APPLY your new understanding as you answer **QUESTIONS**. Some of the study assignments are intended to stimulate you to apply the concepts in problem-solving situations either individually or in a **COOPERATIVE LEARNING GROUP** situation. The combination of individual study and group discussion should help you relate new concepts to your interests and previous knowledge gained from this course or in other science courses.

4. **Attend Lecture** with satisfaction that you have tried to prepare for further discussion of the content. Instructions for the TAKE-AT-HOME QUIZZES are provided in the *Study Guide*.