SYLLABUS for BIOLOGY 1615
Principles of Biology Laboratory (1 credit)
Spring Semester 2015
Fee Required: $80.00 per student

Lab coordinator: **Dr. E. O'Brien**
Office: SCI 206
Phone: 435-652-7761
Email: obrien@dixie.edu

Lab Instructors: Harold Engebretsen, Kathy Engebretsen, Adam Fisher, Kelsey Gonzalez, LaRae McGregor, Amber Mortensen.

Instructor Office and Contact Information: **Office hours** (held in office unless noted)

Mr. H. Engebretsen
Office: SCI 209A
Phone: 435-652-2013
Email: engebretsen@dixie.edu
WR 10:30-11 am and 2-2:30 pm and by appointment

Mrs. K. Engebretsen
Office: SCI 209A
Phone: 435-879-4410 opt. 6
Email: kengebretsen@dixie.edu
WR 10:30-11 am and 2-2:30 pm and by appointment

Mr. A. Fisher
Office: SCI 108
Phone: 435-879-4410 opt. 11
Email: afisher@dixie.edu
T 2-5 pm and by appointment

Ms. K. Gonzalez
Office: SCI 108
Phone: 435-879-4410 opt. 25
Email: kgonzalez@dixie.edu
MWF 10:30-11 am
W 1:15-2 pm & F 12-1 pm

Mrs. L. McGregor
Office: SCI 207
Phone: 435-879-4410 opt. 14
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TW 4:15-5:15

Mrs. A. Mortensen
Office: SCI 108
Phone: 435-879-4410 ex. 15
Email: amortensen@dixie.edu
TW 9:30-10:30 am

Additional contact information:

Your instructor may provide you with additional contact information which you should add it in the space below if you download your syllabus.

Laboratory Schedule: You must be registered in one of the following Biology 1615 laboratory sections in addition to a BIOL 1610 lecture during the same semester:

DSU	CRN S*	V**	Section	Day	Time	Bldg/Room	Instructor
20670			03	Thursday	8:00-10:50	SCI 208	A. Mortensen
20673			06	Wednesday	11:00-1:50	SCI 208	K. Engebretsen
20674			07	Thursday	11:00-1:50	SCI 208	K. Engebretsen
20676			09	Tuesday	2:00-4:50	SCI 208	A. Fisher
20677			10	Wednesday	2:00-4:50	SCI 208	K. Gonzalez
23752			11	Thursday	2:00-4:50	SCI 208	H. Engebretsen
20680	27134		50	Tuesday	5:15-8:05	SCI 208	L. McGregor
20679			51	Wednesday	5:15-8:05	SCI 208	L. McGregor
20681	44013	44357	52	Thursday	5:15-8:05	SCI 208	A. Fisher

* CRN for Success Academy students, ** CRN for high school concurrent enrollment students

General Course Objectives of Lab: Students will:

1. explain and apply major concepts of a view of life, the cell, and the genetic basis of life.
2. demonstrate knowledge of the process of science including asking testable questions, using inductive and deductive reasoning in forming hypotheses and in making reliable predictions.
3. explain the methods of science and distinguish among the natural sciences and liberal arts (humanities and fine arts and social and behavioral sciences).
4. know and explain the difference between science and pseudoscience.
5. compute ratios, proportions, percentages, decimals, fractions, frequencies, and elementary statistics.

Specific Course Objectives of Lab: Students will:

1. become familiar with basic laboratory safety.
2. think analytically.
3. be able to correctly use a compound microscope and a wide-field stereoscope.
4. develop an understanding of basic concepts in biology pertaining to scientific methods, microscopy, cell structure and function, enzymatic processes, cellular respiration, cell reproduction, Mendelian genetics, molecular genetics, natural selection, population growth, and evolutionary agents.
5. demonstrate proper laboratory techniques in measuring materials, making wet mount slide preparations, pipetting, preparing gels for electrophoresis and carrying out gel electrophoresis.
6. demonstrate the ability to reason scientifically when completing the laboratory exercises and assignments.

Required Laboratory Manual: *Laboratory Manual, Principles of Biology I, (Biology 1615, for Science Majors)*, Erin E. O'Brien *et al*, 2013. The Laboratory Manual has been revised. It has been punched with three holes for a standard three-ring binder. The cost of the laboratory manual is included in the student fees and it will be provided to you in class. **You are REQUIRED to bring your laboratory manual to ALL laboratories except the week when the final laboratory exam is scheduled.** Please note that additional information needed for homework is provided only online.

Required Laboratory Coat:

In many exercises, you will be working with materials where protective clothing is recommended, if not required, by OSHA regulations. Therefore, you are required to wear a lab coat for all lab exercises (available for purchase at the DSC Bookstore). Substitutes are allowed with the permission of your instructor. A few extra lab coats of various sizes are also available in the laboratory for student's to borrow in an emergency. These lab coats will be required for several classes after BIOL 1615 so we recommend you keep it at the end of the semester.

Laboratory Schedule:

T-W-R	Jan 13-15	Introduction; Exercise One: Use and Care of the Microscope; a CSI Murder Mystery.
T-W-R	Jan 20-22	Exercise Two: The Process of Science
T-W-R	Jan 27-29	Exercise Three: Biochemistry and PCR
T-W-R	Feb 3-5	Exercise Four: Observations of Cells, Tissues, and Organs: Classification of Organisms
T-W-R	Feb 10-12	Exercise Five: Diffusion, Osmosis, and Transport Across Membranes.
T-W-R	Feb 17-19	Exercise Six: Enzymes and Metabolism
T-W-R	Feb 24-26	Exercise Seven: Cellular Respiration
T-W-R	Mar 3-5	Exercise Eight: Photosynthesis
T-W-R	**Mar 10-12**	**Spring Break –no labs**
T-W-R	Mar 17-19	Exercise Nine: Mitosis, Meiosis, and Organismal Reproduction.
T-W-R	Mar 24-26	Exercise Ten: Mendelian Genetics and Human Genetics (*Alu* lab uses material from Exercise Three)
T-W-R	Mar 31-Apr 2	Exercise Eleven: Protein Synthesis and pGLO^{TM} Bacterial Transformation
T-W-R	Apr 7-9	Exercise Twelve: An Introduction to Natural Selection and Evolutionary Agents
T-W-R	Apr 14-16	Exercise Thirteen: Evolutionary relationships and biochemistry
T-W	Apr 21-22	Final Exam Reviews
R-T-W	**Apr 23, 28 & 29**	**FINAL LABORATORY EXAMINATION.**

Attendance: The thirteen Biology 1615 labs are sequential, in a deliberate arrangement. If you are absent from even one lab and do not make up the work, you not only lose the points you may have received, but you may not be prepared for the next lab and you will have missed material that will be covered on the final exam.

Grading Policy:

The grade you earn in this laboratory will be based upon 460 total points to be distributed as follows:

12 lab assignments @ 30 points each	=	360 points
One comprehensive lab final	=	100 points
TOTAL		460 points*

The 30 points of credit in each lab will be distributed as follows (the very first lab will have a modified point breakdown):

1) A maximum of fifteen (15) points will be earned for correctly answering questions about each lab in an online prelab assignment (there is a substitute assignment for the first week). The prelabs emphasize vocabulary and main concepts that you will also use in lecture. Practice pre-labs can also be found at the start of every lab exercise to help you prepare for the online assignments.

2) A maximum of ten (10) points will be earned for each student's participation during the laboratory period. These points will not be received if you are careless in your work, if you disregard instructions, verbal or written, if you don't participate in the assigned work, or otherwise fail to contribute to the lab.

3) A maximum of five (05) points will be earned prior to the conclusion of the lab period for your summary or discussion as assigned by your instructor. This is another good document to use in preparing for quizzes.

You may expect the following grade as determined by your total points earned.

A	= 93-100%	427-460 points
A-	= 90-92.9%	414-427 points
B+	= 87-89.9%	400-414 points
B	= 83-86.9%	382-400 points
B-	= 80-82.9%	368-382 points
C+	= 77-79.9%	354-368 points
C	= 73-76.9%	336-354 points
C-	= 70-72.9%	322-336 points*
D+	= 67-69.9%	308-322 points*
D	= 63-66.9%	290-308 points*
D-	= 60-62.9%	276-290 points*
F	= <60%	<276 points*

*Please note: a grade of C or higher is required by the biology degrees. Your grade requirements may vary depending on your major and degree.

Grades will NEVER be based on "the curve." As instructors, we reserve the right to lower the percentages or total points, but will not raise them for any grade or for any student.

Comprehensive Final Laboratory Exam:

The comprehensive lab final exam is scheduled on the dates outlined in this syllabus. There will be **NO MAKEUP OR SUBSTITUTE LAB EXAM**. If there is an **EMERGENCY** prior to the time the last lab exam is scheduled, you may be given permission to take the exam in another section (unless that class is at maximum capacity). It is your responsibility to coordinate this by obtaining permission from your regular lab instructor and the instructor from whom you take the exam. Obviously, such permission must be granted **BEFORE** showing up for the exam.

Recognizing the importance of this exam, do not schedule an airplane flight to Hawaii or a trip to Disneyland that will conflict, even if it's a family vacation or reunion. Do not schedule work during your

scheduled exam. These things are not emergencies. Do not pretend to have an emergency as you could have your grade changed to an F and even face expulsion. Setting up the exams takes several hours and inconveniences many faculty and students on campus who would use the laboratory spaces during exam times. Any extension of when the lab final must be set-up should be for a VERY good reason.

Past performance of students has shown that whatever questions are used on the final lab exam, the average score is frequently no more than equal to a "C" grade (70 to 75 points out of a maximum of 100 points). This emphasizes the importance of doing your work as well as you can each week, on each exercise, along with earning the 30 extra credit points.

The exam will be comprehensive, with questions on every exercise. The questions will not be difficult, but **there's so much to remember**. Therefore, you are encouraged to **STUDY** and, above all, do conscientious work in the lab.

Extra Credit:

Each student may earn a maximum of 30 points extra credit. No student may exceed these maximum 30 points. Earning extra credit could mean receiving a higher grade at the end of the Semester. More importantly for your education and grade, you must demonstrate your ability in each and every lab exercise as well as on the final lab examination. **HOWEVER, DON'T COUNT EXCLUSIVELY ON THIS EXTRA CREDIT TO GET YOU THROUGH THIS COURSE.**

The following extra credit may be earned by students. All these assignments are appropriate to the course, but no time is available in the lab for doing this work. They are out-of-class assignments. You may submit any or all of them, but to earn the maximum credit for each, instructions must be followed, questions must be answered CORRECTLY and assignments turned into the instructor **by the assigned dates**. Late extra credit work WILL NOT BE ACCEPTED.

1) Human Karyotype. With Exercise Ten, maximum credit 05 points.

2) Genetics problems. Also assigned at Exercise Ten, maximum credit 10 points.

3) Listening to DVD entitled "What Darwin Never Knew." Completed any time during Semester, but submitted no later than 4:00 p.m. on the last day of your class. Maximum credit 10 points.

    a. Two copies of the 112 minute DVD entitled "What Darwin Never Knew" are available in the DSC Library. If you do this assignment, you are required to listen to the DVD, after which you will defend YOUR opinion, pro or con, on the subject.

    b. You must use a minimum of TWO peer-reviewed references in your paper to support your opinion. Websites are NOT acceptable, but journals that post articles on-line are acceptable, if they are **PEER REVIEWED**. If you are unsure about a reference, check with your instructor (please note that your textbook and Wikipedia do not count). Please keep in mind the plagiarism rules (copying words from someone else) as outlined later in this syllabus.

    c. You will submit **one typed page (double spaced, 12 pt Times New Roman, 1" margins)**, supporting your opinion using facts from your references. Be sure to cite your references using the APA format including internal citations. Above all, avoid plagiarism (the copying

of text in part or in whole from another source regardless of credit given to the original author).

4) You can earn 1 point of extra credit for finding a typo in the lab manual that no one else in your lab section has found.

5) Journal articles. The instructions can be found with your "Background Material" files on Canvas. Maximum credit 10 points per paper.

Participation Points:

A science laboratory must remain clean and uncluttered from trash, even dropping or putting scraps of paper and other "garbage" on the floor, table, or sinks can cause problems for many of our exercises. The proper and correct use of equipment is also expected. Science equipment and supplies are expensive and, as instructors, we will be assuring that all students use them correctly (this is an important part of laboratory instruction and learning), including putting equipment and supplies away **in the designated places**.

Any student, or group, who does not adhere to these instructions on cleanliness and neatness, and who uses equipment incorrectly or carelessly, even to improperly putting the equipment or supplies away, will not receive the ten points outlined in the footnote on the previous page. In addition, the instructor has the option of penalizing you with minus points for more serious infractions.

Instructor Expectations:

You are expected to be on time to your scheduled laboratory and be ready to participate in the laboratory work or suffer the consequences (penalty credit). You are also **REQUIRED** to scan or preview the lab **BEFORE** you begin the work.

About cell phones, smart phones, pagers, PDAs, iPods, tablets, text messaging, and similar electronic gadgets and equipment: A laboratory is not an appropriate place for these electronic instruments or gadgets unless they are being used for class purposes. Emergencies are sometimes encountered. If you must bring a cell phone or pager to lab, let your instructor know and **TURN THE CONTROL TO VIBRATE, NOT TO RING.** Remember that a cell phone vibrating on a table makes excessive noise.

Too many students have answered their phones and carried on conversations during the lab. Not only is this behavior extremely rude to the instructor, it is disruptive to students who are trying to pay attention to detail. **The instructor will not tolerate making or receiving calls on cell phones or pagers.** Unapproved disruptions, whether from cell phones or pagers, or any other devices or equipment, may result in participation point penalties from student performance, at the discretion of the instructor. For more details, please see the disruptive behavior policy at:
http://www.dixie.edu/humanres/policy/sec3/334.html

Makeup Labs:

If you miss a lab due to a legitimate reason, with permission of both instructors on a space available basis, you may make up the lab you missed **ONLY DURING THAT WEEK of the missed lab.** If you need to make up a lab you must notify your regular instructor (email is the best way normally) and also

receive permission from the instructor from whom you make up the lab (all instructor contact information can be found on the first page of the syllabus). Please make arrangements, if at all possible, prior to the lab you wish to attend. Obviously, if you miss the last lab of the week, **there is absolutely no way you can make up the work** (this applies to all Friday labs). The supplies and equipment for these labs take many hours for preparation of materials, set up and put away, and **special requests other than for scheduled labs simply cannot be accommodated**.

The form "Request for Student to Make-up Lab" must be completed and signed by both instructors and returned to your regular instructor. It is your responsibility to make sure that all work from a make-up lab is passed on to your regular instructor. This form is available in the "Background Material" folder on Canvas.

The maximum number of students permitted in each lab is 24 and instructors cannot exceed this number at any time because of fire codes. An instructor will deny you the make-up request if the class is at maximum capacity.

Copies of Videocassettes and DVDs Shown in Labs Available for YOUR use:

Videocassettes and DVDs containing important information on some exercises will be shown during the labs. If you have access to a standard VCR or DVD, a copy may be checked out on Monday through Thursday for a period not exceeding 24 hours. On weekends or semester breaks checkout can be made no later than 5:00 p.m. and only on Friday. These copies for use on weekends or semester breaks must be returned no later than 8:00 a.m. on the day following the break.

The videocassettes and DVD copies can be checked out in room SCI 207, the Natural Science Museum, where they should be returned. Dr. Barnum is in charge and will check out and receive the copies. If you are interested in checking out a copy, complete a form with your signature, signifying you are responsible for the videocassette or DVD copy. You will also be certifying that you will return the copy no later than the confirmed date and time. Grade and potentially monetary penalties will be imposed for copies that are damaged, lost, or otherwise not returned. If you check out a videocassette, be sure to re-wind the tape before it is returned.

Following is a list of the videocassettes and DVDs:

The Structure of the Cell	Diffusion and Osmosis
Regulation of Body Chemistry (about enzymes)	Cell Division
Protein Synthesis	The Living Cell: DNA

Academic integrity:

I believe that most students are honest, and I don't want to punish everyone for the few that aren't. However, we will not tolerate cheating, and if we discover that it has occurred, a zero grade will be given for that assignment or exam, and you will not be allowed to make it up. In addition, the next equivalent assignment will also receive a zero unless it is the end of the semester, in which case, the highest grade on an equivalent assignment will become a zero. If the incident involves an extra credit assignment all extra credit points will be lost and there will be no opportunity to earn any after the infraction. Repeated or aggravated offenses will result in failing the course. Any time you take credit for work you did not do, you are cheating. This includes (but is not limited to) getting the answers to homework problems or essays from someone else, copying information from a library or internet source and presenting it as if it were your own words (plagiarism), looking at someone else's answers on an

exam, and asking someone who has already taken a quiz or exam about what questions it contains. We have tried to design assignments and exams to minimize the temptation to cheat, but it is not my job to prevent you from cheating. If you cheat and are not caught, it doesn't mean that you "beat the system." It means you violated the Student Code and if the violation is discovered later, there are still serious consequences including having your degree revoked. See “Student Code” http://www.dixie.edu/humanres/policy/sec5/533.html#appeals.

SPECIAL DISCLAIMER:

A Syllabus coordinating the requirements of many instructors is almost impossible. Therefore, if an instructor makes any changes from those given in this Syllabus, that instructor must give written notice of the exception. For instance, an instructor may change the opportunities for earning extra credit. However, no student is permitted to exceed the maximum 30 points.

ADDITIONAL INFORMATION FOR ALL STUDENTS

Click on this link - http://www.dixie.edu/reg/syllabus/ - for comprehensive information on the Semester Dates, the Final Exam Schedule, and University resources such as the library, Disability Resource Center, IT Student Help Desk, Online Writing Lab, Testing Center, Tutoring Center, and Writing Center. In addition, please review DSU policies and statements with regards to Academic Integrity, Disruptive Behavior and Absences related to university functions.