

SYLLABUS

Biology 31 Microbiology 52538

Mr. Deibert

Reedley College – Fall 2012

Time: Tuesday & Thursday 5:30 – 9:45 PM

Instructor: Mr. Deibert daniel.deibert@reedleycollege.edu phone 559 305 – 7100 ext 2443
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Course description: Microbiology- classification, morphology, identification, and physiology of microorganisms.

Prerequisites: Successful completion of Biology 1 and Chemistry 1A or 3A.

Recommended: Successful completion of Biology 20 and Biology 22.

Texts: 1) Tortora, Gerard J. et al., *Microbiology, 10th edition, 2010*. Benjamin Cummings Publishing Co. Inc.

2) Johnson, Ted R. and Christine L. Case, *Symbiosis – custom laboratory program for biological sciences*. Benjamin Cummings Publishing Company Inc. 2007.

Required materials:

- 1) White Laboratory Coat.
- 2) Assorted colored pencils , 3 X 5 cards for flash cards.
- 3) 1 sharpie permanent marker
- 4) 1 pack of 15 Quiz Strip Scantrons
1 pack of 6 Scantron 882-E
- 3) 1 box microscope slides.

Course objectives:

- 1) To have a basic understanding of microbes as living organisms.
- 2) To become familiar with laboratory techniques necessary to work with microorganisms.
- 3) To understand and practice aseptic techniques.
- 4) To become familiar with microbial morphology, classification, and identification.
- 5) To understand the role of microorganisms in health and disease and the mechanisms used to control microbial populations.

Labwork: Labwork is an essential part of this course.

It is imperative that you are on time and that you are prepared for each lab.

While in the lab students must:

Maintain clean areas at all times. (this means no unnecessary books, papers, purses etc. on the desk.)

Disinfect laboratory tables at the beginning and at the end of every lab period.

Learn and use proper aseptic technique.

Wear lab coats at all times in the lab.

Tie back loose hair to keep it out of Bunsen burners.

Wear clothing that covers legs and shoes that cover toes while in the lab.

Wear safety glasses when handling dangerous chemicals. (available in the lab room)

Report spills of living organisms to instructor immediately.

NEVER have food or drinks in the laboratory.

Wash their hand thoroughly before leaving the laboratory.

Students with disabilities: If you need academic accommodation or materials in alternate media per the Americans with Disabilities Act or section 504 of the Rehabilitation Act, please contact me as soon as possible.

Notes: It is expected that you will take copious notes – both during class and while reading.

Quizzes: (ca.15points X 7 = 105)

Quizzes will cover material from the homework (reading) and lecture.

Notes may be used on some quizzes.

Exams: (100points X 3 = 300 ; final exam 100 points)

Exams will cover the chapters shown.

Notes may NOT be used on exams.

The final exam will be comprehensive

Lab Exams: (100points X 3 = 300)

Exams will cover the labs completed since the last lab exam.

Notes may NOT be used on lab exams.

Approximately half of the points for each lab exam will be for the work in your lab book.

Unknown: (50points)

During the 15th week of class you will be given a culture of an unknown bacterium. Your job is to identify the organism. Your grade will be determined as follows:

correct identification	20 points
description of your methods	10 points
drawings of the organism	10 points
further information from <u>Burgey's Manual</u>	10 points
TOTAL	50 POINTS

Current Articles: (30points X 2 = 60)

You will need to find two current articles pertaining to topics concerning microbiology and write summaries of the articles. See the attached sheet for more specific information.

Term Paper: (150points)

You will need to pick a topic concerning microbiology that you are interested in reporting on. This assignment will be both written and oral. See the attached sheet for more specific information.

Grading:

GRADING	A	90 – 100%
SCALE	B	80 – 89%
	C	70 – 79%
	D	60 – 69%

KEEP TRACK OF YOUR GRADE ON THE CHART ON THE NEXT PAGE

Tentative Lecture Schedule

Week	Day	Lecture Topic	Reading Assignment	score
1	8/14	Tu	Ch 1	Quiz 1 _____ (15)
	8/16	Th		
2	8/21	Tu	Ch 3	Quiz 2 _____ (15)
	8/23	Th	Ch 4	
3	8/28	Tu	Ch 6	ARTICLE 1 _____ (30)
	8/30	Th	Ch 6	
4	9/4	Tu	Ch 7	Exam 1 _____ (100)
	9/6	Th		
5	9/11	Tu	Ch 7	Lab Ex 1 _____ (100)
	9/13	Th	Ch 7	
6	9/18	Tu	Ch 2	Quiz 3 _____ (15)
	9/20	Th	Ch 5	
7	9/25	Tu	Ch 5	Quiz 4 _____ (15)
	9/27	Th	Ch 8	
8	10/2	Tu	Ch 9	ARTICLE 2 _____ (30)
	10/4	Th	Ch 10	
9	10/9	Tu	Ch 11	Exam 2 _____ (100)
	10/11	Th		
10	10/16	Tu	Ch 12	Lab Ex 2 _____ (100)
	10/18	Th	Ch 13	
11	10/23	Tu	Ch 13	Quiz 5 _____ (15)
	10/25	Th	Ch 14	
12	10/30	Tu	Ch 15	Exam 3 _____ (100)
	11/1	Th		
13	11/6	Tu	Ch 16	Quiz 6 _____ (15)
	11/8	Th	Ch 16	
14	11/13	Tu	Ch 17	Quiz 7 _____ (15)
	11/15	Th	Ch 17	
15	11/20	Tu	Ch 17	TERM PAPER _____ (150)
	11/22	Th	Ch 27	
16	11/27	Tu	Ch 27	Lab Ex 3 _____ (100)
	11/29	Th		
17	12/4	Tu	UNKNOWN	_____ (50)
	12/6	Th		
18	12/11	Final Examination	FINAL EXAM	_____ (100)
				TOTAL POINTS _____ (1065)

Tentative Laboratory Schedule

Week	Day	Lab Exercise	Reading Assignment (lab book page number)
1	8/14	Tu	Syllabus- handouts: microscopy
	8/16	Th	Microscopy and Aseptic Transfer 23
2	8/21	Tu	Viewing Live Organisms 33
	8/23	Th	Microscopic Measurements Handout
3	8/28	Tu	Simple Staining and Media Making 43
	8/30	Th	Negative Staining 49
4	9/4	Tu	Gram Stain 53
	9/6	Th	Acid Fast and Endospore Stains 59 , 65
5	9/11	Tu	LABORATORY EXAM #1
	9/13	Th	Environmental Microorganisms 83
6	9/18	Tu	Aseptic Transfer of Bacteria 91
	9/20	Th	Isolation of Bacteria by Dilution And Streak Plate Techniques 101 , 375
7	9/25	Tu	Carbohydrate Metabolism 113
	9/27	Th	Fermentation of Carbohydrates 119
8	10/2	Tu	Differential/Selective Media 109
	10/4	Th	DNA Spooling & Isolation Handout
9	10/9	Tu	Protein Metabolism I & II 127 , 133
	10/11	Th	Respiration- nitrate/cat/Entero/Oxidase 139 , 143
10	10/16	Tu	LABORATORY EXAM #2
	10/18	Th	Oxygen Requirements and And pH/Osmotic Pressure 153 , 363
11	10/23	Tu	Physical Methods of Control: Heat 177
	10/25	Th	Ultraviolet Radiation 185
12	10/30	Tu	Disinfectants and Antiseptics 191
	11/1	Th	Chemical Methods of Control: Antimicrobial Drugs 195
13	11/6	Tu	Hand Washing 203
	11/8	Th	Yeasts and Molds 253 , 259
14	11/13	Tu	Protozoans 275
	11/15	Th	Flora of the Mouth, Throat, & Skin 331 , 335 , 339
15	11/20	Tu	Unknowns
	11/22	Th	THANKSGIVING
16	11/27	Tu	Unknowns
	12/29	Th	LABORATORY EXAM #3
17	12/4	Tu	Unknowns
	12/6	Th	Unknowns
18	12/11	FINAL EXAM	

TERM PAPER

(paper –100 points, presentation – 50 points)

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For this assignment you must select a topic that concerns microbiology. You must research the topic, type a formal paper on the topic and present your topic orally in class.

The most important thing is to select a topic that interests you. Microbiology is a very broad subject; the possibilities for your paper are endless. For this class however, you must choose one of the following medically important topics:

Staphylococcus aureus

Herpes virus

Candida albicans

Meningitis

Polio

Tetanus

Botulism

Gangrene

Malaria

Plague

Streptococcus

Diphtheria

Whooping cough

Tuberculosis

Pneumonia

Influenza

Common cold

Valley fever

Food poisoning

Clostridium difficile

Typhoid fever

Giardiasis

Entamoeba histolytica

Gonorrhea and Syphilis

Be sure to pick a topic that interests you! It makes it much easier to write your paper.

Research your topic. Read at least 5 different articles about your topic from a variety of sources. At least one must be an article written within the last year. Take notes and keep track of your citations for your paper. Become an expert in your topic.

Prepare your paper using your information. Your paper should be at least 6 typed, double spaced pages. Footnotes are not necessary; citations should be in standard format. Use a cover sheet with your name, class, and the date. Do not put your essay in a cover or folder. Your paper will not be returned to you.

Present your topic to the class. You may not read your paper. You may use 3X5 cards. You may make a power point presentation. You should limit your talk to 10 minutes. Be prepared to answer questions from your audience.

PICK YOUR TOPIC

BIBLIOGRAPHY

ROUGH DRAFT

PRESENTATION

week 5 –September 13

week 11 – October 25

week 14 – November 15

November 27

CURRENT ARTICLES

(2 articles – 30 points each)

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For this assignment you will read an article related to microbiology from a *journal* and from a *secondary source*. The article should be no more than 1 year old. You will then write a short summary of each article and turn it in with a photocopy of the article.

At least one of the two articles you read needs to be from a journal. Journals are periodicals that report direct findings. The author is usually the person or persons that have actually done the research that is being reported. If you are unsure about whether a periodical is a journal, look for one that has the word “journal” in it. Some that may be accessed on line are Journal of Medical Microbiology or Journal of Microbiology Immunology and Infection. While many Journals require paying for an account, there should be articles that you can view for free without subscribing. You need to read more than just an abstract in order to write your summary.

- 1) Browse through the journal you select and find an article that looks interesting.
- 2) Read the article.
- 3) Write a one page summary.

Use 1.5 spacing

Use size 12 font

Put your article citation at the beginning of your summary.

- 4) Attach a copy of the actual article.

Here are the due dates for your articles:

FIRST ARTICLE

week 3 – August 30

SECOND ARTICLE

week 8 – October 4