

EnvS 10

Sections -02 and -04

*A New Hybrid Course***LIFE ON A CHANGING PLANET**

SAN JOSE STATE UNIVERSITY

Spring 2015**Dr. Jeanine Pfeiffer**

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ONLINE WEBINAR SESSIONS ON SJSU WEBEX:

MONDAYS 3:00 – 4:15

ON CAMPUS SESSIONS IN CLARK 226:

WEDNESDAYS 3:00 – 4:15

Telephone: 707/969.7490

Office Hours: WED 12:30 – 2:30 in Clark 414R

Instructor website: <http://www.jeaninepfeiffer.com>**COURSE DESCRIPTION:**

In *Life on a Changing Planet* we will engage in a sophisticated evaluation of current biological and environmental issues using an interdisciplinary, participatory approach.

We will integrate baseline scientific concepts with current research and policy using a series of relevant case studies developed by university instructors throughout the United States. Through online tutorials and assignments we will investigate, critique, and compare scientific findings with real-life issues.

THIS IS NOT YOUR TRADITIONAL LECTURE-BASED COURSE.

THE COURSE IS DESIGNED TO ACCOMMODATE A VARIETY OF LEARNING STYLES. It is designed to maximize *fun*, with videos, animated clips, games, and case studies.

The purpose of this course is to give you, the student, the **basic skills and knowledge** necessary to **critically examine biological concepts** and their **applications to health and environmental issues**.

Living systems on our planet are in a constant state of change, both as a result of natural processes and human activities. The case studies we examine in this course will improve our understanding of life science concepts, the scientific method (as it is practiced in the lab and in the field), and the complexities involved in applying scientific theory and research results to real-life situations.

REQUIRED TEXT:

Essentials of the Living World, 4th edition, Custom. George Johnson. McGraw-Hill Publishing.

Mandatory weekly requirements: **two** LearnSmart study modules & **two** homework assignments.

**** ALL ASSIGNMENTS ARE ON THE MCGRAW-HILL CONNECT WEBSITE ****

<https://connect.mheducation.com/class/j-pfeiffer-sjsu-envs-10---section-03>

Each week we meet **online** on Mondays, and **in-person** on Wednesdays.

**** Webinars are held via SJSU WebEx, accessed via the green button on MySJSU website ****
Search for meetings that begin with "PFEIFFER ENVS 10"

GENERAL EDUCATION CONTENT OBJECTIVES AND STUDENT LEARNING OBJECTIVES

Content Objectives: This class is a Category B2 General Education course and, as such, students will develop and demonstrate the following objectives:

1. gain a basic understanding of the structures and processes of living systems;
2. learn about the scientific method and how the body of scientific knowledge advances;
3. gain experience with the testable frameworks and the qualitative and quantitative methods scientists use to collect data;
4. develop tools to critically analyze controversial scientific issues from a life scientist's perspective;
5. acquire an understanding of the interrelationships between science, economics, ethics, and policy in environmental decision-making by society;
6. develop an understanding of how and to what extent human activities are affecting the earth's living systems.

Department Learning Objectives:

Qualitative Environmental Literacy: Achieve basic to good level of research and writing in a 5-page paper

Quantitative Environmental Literacy: Articulate and test hypotheses; read and understand graphs

Additional Course Goals:

- Students should be able to use the methods of science and knowledge derived from current scientific inquiry in life or physical science to question existing explanations.
- Students should be able to demonstrate ways in which science influences and is influenced by complex societies, including political and moral issues.
- Students should be able to use the methods of science, in which quantitative, analytical reasoning techniques are used.
 - Improved grasp of complex natural science concepts using innovative, multi-media techniques.
 - Heightened ability to research scientific terms, concepts, and related articles online, and be able to discern between low- and high-quality websites and web content.
 - Improved time-management practices that support proactive, independent learning techniques.
 - Increased familiarity with online learning tools and media, and increased fluency in using online media to achieve learning goals.

Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of forty-five hours over the length of the course (normally 3 hours per unit per week with 1 of the hours used for lecture) for instruction or preparation/studying or course related activities including but not limited to internships, labs, and clinical practica.

Other course structures will have equivalent workload expectations as described in the syllabus.

This class is a 3-unit course. Do the math: 3 credit units x 3 hours/unit =

9 hours of work each week outside of class for a regular semester of thirteen weeks.

CLASSWORK VIA SJSU CANVAS AND MCGRAW-HILL CONNECT

An online course is advantageous, because it allows you to complete the work and log into the class using a computer, iPad, or Smartphone. *As long as you have access to the internet, you can review the course material from anywhere!*

EnvS 10 Online involves a mix of electronic media: online texts, tutorials, quizzes, videos, animations, case studies. The materials in ENVS 10 were carefully chosen to provide you with the *best possible* learning materials.

**** YOUR PRIMARY CLASS MATERIAL IS CONTAINED WITHIN CONNECT & CANVAS****

<https://sjsu.instructure.com>

READ the textbook chapters *first*,
WATCH the assigned videos *second*,
COMPLETE the assigned work *third*, following the dates on Page 6.
Then show up in class prepared to
DISCUSS the material and **ASK QUESTIONS**.

Throughout the course, you will also be graded on your **individual progress** (i.e., if you demonstrate increasing sophistication in your understanding as you proceed through the course) – not against a narrowly defined standard or a class average. Your grade depends on your thoughtful participation & honest effort.

I have worked hard to make this class as interesting as possible! I expect you to do the same for me. Therefore....

I expect thoughtful work. I expect students to take initiative [as opposed to being passive]. I ask all of us to exercise courtesy, respect, and tolerance when we participate in class discussion and group online chats.

In grading your class participation and exams, you will be graded on the **quality** of your work (e.g., the accuracy, creativity, ingenuity, and thoroughness of your review and analysis) – not simply on whether your answers are “right” or “wrong”. (In my teaching, I allow for a range of right answers...)

YOU ARE RESPONSIBLE FOR DEDICATING SUFFICIENT TIME TO THIS COURSE.

Don't try to cram all your work into one extended time period.
You can end up with eyestrain, repetitive stress injury, and missed deadlines.

You can re-do the Connect assignments as often as you wish.
 The instructor will only grade your *best scoring* assignment.

All mini-exams are due Sunday evening at 11:55pm.

Once the CANVAS link closes for each mini-exam you are **shut out**.

Don't wait until the last minute to finish things!!

CLASS ATTENDANCE IN WEBEX WEBINARS AND IN PERSON SESSIONS:

This hybrid course requires you to be present in **mandatory** live sessions twice weekly: once weekly online via webinar, once weekly in person on campus.

If you are unable to make a class session, you MUST inform the instructor in advance!! Otherwise you will receive a grade of “zero” for that class, which will significantly impact your grade.

In each class session, your instructor provides short overview lectures accompanied by science videos, and then leads the class in a “flipped classroom” model - much like a graduate seminar or a British tutorial - where the instructor asks students higher-level questions about the chapter material.

The instructor will ask students to describe terminology in their own words, walk us through diagrams, consider real-life applications of the material, and share which sections are still confusing or fuzzy to them.

Every student is required to engage within the class session at least twice, by asking and/or answering questions. You can raise your hand and speak your answers, or IM chat your responses into WebEx.

1. Access webinars through MySJSU page (<http://my.sjsu.edu/>) and click on the green “WebEx Sign in”. Log in with your full name. No password required. If you have a microphone on your computer, great. If not, don't sweat it. You must have Java script installed on your computer for the webinar program to download and work, and it may take a few minutes to do so.

As students respond, they are graded on a participation spreadsheet (for effort, not accuracy), AND encouraged, challenged, or assisted, depending on the tenor and sophistication of their responses. If a student is struggling, the instructor will often call on another student to “help” the first student, demonstrating that learning is a collective process.

**** A note on cellphones in class: place them in silent mode. Do not answer them. ****

QUIZZES:

Quizzes are scheduled weekly. The quizzes are very quick (5-10 questions) and completed in class.

If a significant number of students appear to be dragging, slacking off, or completing less-than-high-quality work, the instructor will be more likely to schedule a series of additional pop quizzes.

EXAMS:

Instead of a lengthy mid-term and final exam, we will have a series of **FIVE mini-exams** due Sundays at 11:55pm.

The contents of assigned readings, quizzes, video clips and webinars are all part of the exams.

You will have **at least one week to complete each exam, at your own pace.**

EXTRA CREDIT:

The instructor will award extra credit points for sharing relevant scientific articles, fantastic weblinks, outrageously cool videos, or online tutorials relating to course topics.

Additional opportunities to earn extra credit throughout the course will be provided. Awarding of the points is at the instructor's discretion, and if >1 student submits the same resource(s), points will only be awarded to the *first* student who provided the resource.

To receive the extra credit, the student must post the resource within the Extra Credit DropBox link, after checking in with the instructor via email.

GRADING:

Grading follows a strict percentage.

Actual points may vary.

McGraw Hill Connect	30%
Quizzes	10%
Class Participation	20%
Mini-Exams	40%

Grading percentage breakdown (to calculate your grade, simply convert your total points to a percentage value):

94% and above	A	83% - 80%	B-	69% - 67%	D+
93% - 90%	A-	79% - 77%	C+	66% - 64%	D
89% - 87%	B+	76% - 74%	C	63% - 60%	D-
86% - 84%	B	73% - 70%	C-	below 60%	F

I hate giving out these grades. Let's not, OK?

Course Participation Requirements:

1. Check the course Canvas website routinely for announcements and assignments.
2. Contribute high-quality work, both in your online assignments and in-class interactions.
3. Complete course assignments PRIOR to attending the relevant class session(s).
4. Get help from online tutorials, help links, and SJSU IT Support *sooner*, rather than *later*.
5. Arrive punctually online for the "live" webinar sessions, and conduct yourself professionally.
6. Ensure that you contribute at least two (2) carefully worded questions or comments during each live session. (*Our sessions are recorded electronically. Your participation will be quantitatively assessed*).
7. Watch ALL the videos listed on this syllabus (some will be shown in class; *keep track!!*).
8. Check in with the instructor at least once during the course, by cellphone, texting, or email.
9. Adhere to the SJSU Code of Academic Conduct (*see notes on page 10 of this syllabus*).

ENVS 10 • Class Schedule • SPRING 2015

Date	Day	Location	Material Covered
Jan. 26	MON	ONCAMPUS	Introduction to the class
Jan. 28	WED	ONCAMPUS	Chapter 1 • The Science of Biology
Feb. 1	MON	WebEx	Chapter 1 • The Science of Biology
Feb. 3	LAST DAY TO DROP THE CLASS		
Feb. 4	WED	ONCAMPUS	Chapter 2 • The Living Cell
Feb. 9	MON	WebEx	Chapter 3 • Molecules of Life
Feb. 11	WED	ONCAMPUS	Chapter 4 • Cells
Feb. 15	EXAM #1 DUE ONLINE at 11:55pm		
Feb. 16	MON	WebEx	Chapter 5 • Energy and Life
Feb. 18	WED	ONCAMPUS	Chapter 6 • Photosynthesis
Feb. 23	MON	WebEx	Chapter 7 • How Cells Harvest Energy from Food
Feb. 25	WED	ONCAMPUS	Chapter 8 • Mitosis
Mar. 2	MON	WebEx	Chapter 9 • Meiosis
Mar. 4	WED	ONCAMPUS	REVIEW
Mar. 8	EXAM #2 DUE ONLINE at 11:55pm		
Mar. 9	MON	WebEx	Chapter 10 • Foundations of Genetics
Mar. 11	WED	ONCAMPUS	Chapter 10 • Foundations of Genetics
Mar. 16	MON	WebEx	Chapter 11 • DNA: The Genetic Material
Mar. 18	WED	ONCAMPUS	Chapter 11 • DNA: The Genetic Material
Mar. 23	MON	BREAK	----- SPRING BREAK -----
Mar. 25	WED	BREAK	----- SPRING BREAK -----
Mar. 30	MON	WebEx	Chapter 12 • How Genes Work
Apr. 1	WED	ONCAMPUS	Chapter 13 • The New Biology
Apr. 6	MON	WebEx	Chapter 14 • Evolution and Natural Selection
Apr. 8	WED	ONCAMPUS	REVIEW
Apr. 12	EXAM #3 DUE ONLINE at 11:55pm		
Apr. 13	MON	WebEx	Chapter 15 • Exploring Biological Diversity
Apr. 15	WED	ONCAMPUS	Chapter 16 • Evolution of Microbial Life
Apr. 20	MON	WebEx	Chapter 16 • Evolution of Microbial Life
Apr. 22	WED	ONCAMPUS	Chapter 17 • Evolution of Plants
Apr. 27	MON	WebEx	Chapter 17 • Evolution of Plants
Apr. 29	WED	ONCAMPUS	Chapter 18 • Evolution of Animals
May 3	EXAM #4 DUE ONLINE at 11:55pm		
May 4	MON	WebEx	Chapter 19 • Populations and Communities
May 6	WED	ONCAMPUS	Chapter 20 • Ecosystems & Chapter 21 • Behavior and Environment
May 11	MON	ONCAMPUS	Chapter 22 • Human Influences on the Living World
May 13	WED	ONCAMPUS	REVIEW
May 17	EXAM #5 DUE ONLINE at 11:55pm		

ENVS 10 • Videos & Weblinks

Chapter 1 • The Science of Biology

(B) The Scientific Method (11") <http://www.youtube.com/watch?v=GKGtkzgKfkc>
 (Setting up an experiment and) Scientific variables (8") <http://www.youtube.com/watch?v=x2606GQmDqY&feature=related>

Chapter 2 • The Living Cell

(CC) Water: Liquid Awesome (11") http://www.youtube.com/watch?v=HVT3Y3_gHGg
 Polar Covalent Bonds – The Water Love Story (9' 49")
<http://www.youtube.com/watch?v=U7-MjuWn81U>
 Water molecule structure (10' 57")
<http://www.youtube.com/watch?v=qmRrDbjO5Og>

(CC) That's Why Carbon is a Tramp (11") http://www.youtube.com/watch?v=QnQe0xW_JY4

Chapter 3 • Molecules of Life

Introduction to Organic Molecules _ SERIES OF 7 SHORT VIDEOS
<http://education-portal.com/academy/lesson/introduction-to-organic-molecules-i-functional-groups.html>

(B) Biological Molecules (15") <http://www.youtube.com/watch?v=PYH63o10iTE>
 (CC) Biological Molecules – You Are What You Eat <http://www.youtube.com/watch?v=H8WJ2KENIKO>

Chapter 4 • Cells

Parts of a Cell <http://www.youtube.com/watch?v=Hmwvj9X4GNY&feature=related> (21")
 Tour of a Cell <http://www.youtube.com/watch?v=1Z9pqST72is> (14")

(CC) Plant Cells (11") <http://www.youtube.com/watch?v=9UvIqAVCoqY>
 (CC) Animal Cells (12") <http://www.youtube.com/watch?v=cj8dDTHGJBY>
 (B) Compartmentalization (9") <http://www.youtube.com/watch?v=2rihCCBzqMc>
 Endocytosis & Exocytosis (7.5") <http://www.youtube.com/watch?v=Yzqp7GRri5I>
 (CC) In Da Club – Membranes & Transport (12") <http://www.youtube.com/watch?v=dPKvHrD1eS4>
 (B) The Cell Membrane (6") <http://www.youtube.com/watch?v=S7CJ7xZOjm0>
 (B) Transport Across Cell Membranes (14") <http://www.youtube.com/watch?v=RPAZvs4hvGA>
 Active and Passive Transport (6") <http://www.youtube.com/watch?v=kfy92hdaAH0>

Case study:

Kleptoplasty (<http://en.wikipedia.org/wiki/Kleptoplasty>)

The only known animals that practice kleptoplasty are sea slugs in the clade Sacoglossa. Several species of Sacoglossan sea slugs capture intact, functional chloroplasts from algal food sources, retaining them within specialized cells lining the mollusc's digestive diverticula. The longest known kleptoplastic association, which can last up to ten months, is found in *Elysia chlorotica*, which acquires chloroplasts by eating the alga *Vaucheria litorea*, storing the chloroplasts in the cells that line its gut. Juvenile sea slugs establish the kleptoplastic endosymbiosis when feeding on algal cells, sucking out the cell contents, and discarding everything except the chloroplasts. The chloroplasts are phagocytosed by digestive cells, filling extensively branched digestive tubules, providing their host with the products of photosynthesis.[9]

This very unusual ability has led to these sacoglossans being referred to as "solar-powered sea slugs".

Chapter 5 • Energy and Life*Enzymes*

Learn Biology; Cells – Enzymes (2") <http://www.youtube.com/watch?v=feik6wOXFA0>
 Enzymes – A Fun Introduction (5") <http://www.youtube.com/watch?v=XTUm-75-PL4&feature=related>
 Enzyme Video for SJII Biology (2") <http://www.youtube.com/watch?v=MpcnkBE6FS0>
 BBC – GCSE Bitesize Enzymes activity (4") <http://www.youtube.com/watch?v=0XjyAkeQJag&feature=related>
 Enzyme Basics (Enzymedica) (10") <http://www.youtube.com/watch?v=AFbPHIh13g&feature=related>
 Biology Lecture – 27 – Enzymes (8") http://www.youtube.com/watch?v=L_D1PX6oOog
 (BB048) Enzymes (12") <http://www.youtube.com/watch?v=ok9esggzN18>
 Bio Rad GTCA Song (Enzymes) (3") <http://www.youtube.com/watch?v=ID6KY1QBR5s&feature=related>

Chapter 6 • Photosynthesis

Photosynthesis – Biology in a few minutes (6.5") <http://www.youtube.com/watch?v=BeUmj8d6Mag>
 (CC) Photosynthesis (13")
http://www.youtube.com/watch?v=sQK3Yr4Sc_k&list=EC3EED4C1D684D3ADF&index=8&feature=plpp_video
 Bozeman – Photosynthesis (12") <http://www.youtube.com/watch?v=g78utclQrJ4&feature=related>
 Bozeman – Photosynthesis & Respiration (16") <http://www.youtube.com/watch?v=0IJMRsTcwcg&feature=plcp>
 Transpiration in Plants (6") <http://www.youtube.com/watch?v=U4rzLhz4HHk&feature=related>
 The Light Reactions - A Musical Lecture (9") http://www.youtube.com/watch?v=Q_1mxZdF2TY
 Glycolysis! A Rap Lecture (4")
http://www.youtube.com/watch?annotation_id=annotation_666188&feature=iv&src_vid=Q_1mxZdF2TY&v=EfGlnwfu9U

Animations

Photosynthesis 101: presented by Dr. Undergrad (8") <http://www.youtube.com/watch?v=pTOch6CbSIQ&feature=fvwrel>
 Photosynthesis Light Reactions http://www.youtube.com/watch?v=hj_WKgnL6MI
 Photosynthetic electron transport and ATP synthesis
<http://www.youtube.com/watch?v=-37Rrw1vEsw&feature=related>
 Light-dependent reactions of photosynthesis (1.5")
http://www.youtube.com/watch?v=BK_cjd6Evcw&playnext=1&list=PLF7CCA03A6F5C8AB7&feature=results_main

Chapter 7 • How Cells Harvest Energy from Food

(CC) ATP & Respiration – Biology #7 (13") http://www.youtube.com/watch?v=00jbG_cfGuQ
 (B) Cellular Respiration (14") <http://www.youtube.com/watch?v=Gh2P5CmCC0M>
 BioMedia Associates - How Cells Obtain Energy (14")
<http://www.youtube.com/watch?v=i8c5JcnFaJ0&feature=related>
 Cellular Respiration – Energy in a Cell <http://www.youtube.com/watch?v=qviLDKDJNKM>
 Cellular Respiration (1) – Introduction & Glycolysis (9")
<http://www.youtube.com/watch?v=gTv9y5dol-A&feature=related>
 Cellular Respiration (2) – Krebs Cycle
<http://www.youtube.com/watch?v=ncEHa-ZwX3M&feature=relmfu>
 Cellular Respiration (3) – Electron Transport & Phosphorylation
http://www.youtube.com/watch?v=hqF5JOXi_K8&feature=iv&annotation_id=annotation_637449
 Fermentation
http://www.youtube.com/watch?v=bOCNiRcjVQg&playnext=1&list=PLE09AF9E28BEB50F9&feature=results_video

Chapter 8 • Mitosis

Mitosis- CC (11") <http://www.youtube.com/watch?v=L0k-enzoeOM>
 Mitosis-B (14") <http://www.youtube.com/watch?v=1cVZBV9tD-A>
 (Thinkwell) Mitosis, The Phases 1:2 <http://www.youtube.com/watch?v=HnThXwKtnSE&feature=relmfu>
 (Thinkwell) Mitosis, The Phases 2:2 <http://www.youtube.com/watch?v=KRKFMbBizos&feature=relmfu>

Animation

NDSU Mitosis (6") <http://www.youtube.com/watch?v=C6hn3sA0ip0>

MsStokesBio (3") <http://www.youtube.com/watch?v=3kpR5RSJ7SA>

What happens to the organelles during cell division?

<http://scienceline.ucsb.edu/getkey.php?key=1426>

What is special about muscle and nerve cells?

<http://www.muellercenter.rpi.edu/musclegrowth.php>

Breast Cancer

(Understanding Disease) Animation (4") <http://www.youtube.com/watch?v=GSuSHeiSrPI>

How cancer develops (2") <http://www.youtube.com/watch?v=A1Fkdt-2veM&feature=related>

Breast Cancer Pathology (8") <http://www.youtube.com/watch?v=hswn7HILkls&feature=relmfu>

How to recognize breast cancer symptoms (3") <http://www.youtube.com/watch?v=yTHyMNBkbOY&feature=fvwr>

Breast Ultrasound (6") <http://www.youtube.com/watch?v=0C1CtdhvhE&feature=relmfu>

Chapter 9 • Meiosis

(CC) Meiosis (12") <http://www.youtube.com/watch?v=qCLmR9-YY7o>

(B) Meiosis (9") http://www.youtube.com/watch?v=rB_8dTuh73c

(B) Mitosis vs. Mitosis Simulation (11") <http://www.youtube.com/watch?v=zGVBAHAsjJM>

Meiosis – Independent Assortment (4") <http://www.youtube.com/watch?v=-Zzp3mLlycM>

Thinkwell Mitosis vs. Meiosis (10") <http://www.youtube.com/watch?v=IzfJSxa-uA&feature=related>

Meiosis Square Dance (3") <http://www.youtube.com/watch?v=iCL6d0OwKt8>

Chapter 10 • Foundations of Genetics

Basic Genetics (series of animated tutorials) <http://learn.genetics.utah.edu/units/basics/tour/>

18 things you should know about genetics (3") <http://www.youtube.com/watch?v=bVk0twJYL6Y>

(B) Mendelian Genetics (16") <http://www.youtube.com/watch?v=NWggZUnJdAY>

(b) Advanced Genetics (12") <http://www.youtube.com/watch?v=YoEgUqHOcbc>

(CC) Heredity (10") <http://www.youtube.com/watch?v=CBezq1ffUEA>

(Univ. of AZ) The Biology Project – Mendelian Genetics Tutorial (Monohybrid Cross, Dihybrid Cross, Sex-Linked Inheritance)

http://www.biology.arizona.edu/mendelian_genetics/mendelian_genetics.html

Genetics 101: Part 1: What are Genes? (4") http://www.youtube.com/watch?v=ubq4eu_TDFc

Genetics 101: Part 2 What are SNPs? (2") <http://www.youtube.com/watch?v=tjXpiWKMMyA>

From Genes to Protein (2") <http://www.youtube.com/watch?v=exxLKLd3nSI>

Transcription Translation (7") <http://www.youtube.com/watch?v=JQ2gAFwPJM>

Genetics 101: Part 3: Where do your genes come from? (4") <http://www.youtube.com/watch?v=Yg89GY61DE>

Genetics 101 Part 4: What are phenotypes? (2") <http://www.youtube.com/watch?v=kLpr6t4-eLI>

Genetics 101 Part 5: Why no Y? (1") <http://www.youtube.com/watch?v=QCm2x9OAB18>

(B) Genotypes and phenotypes (13") <http://www.youtube.com/watch?v=OaovnS7BAoc>

Quantitative Genetics

(B) Probability in Genetics – Mult. & Addition (11") http://www.youtube.com/watch?v=y4Ne9DXk_Jc

(B) A Beginner's Guide to Punnett Squares (12") <http://www.youtube.com/watch?v=Y1PCwxUDTI8>

(P) Solving Genetic Problems (10") <http://www.youtube.com/watch?v=Qcndb25Rnyo>

(B) Linked Genes (18") http://www.youtube.com/watch?v=-_UcDhzjOio

Genetics tutorial (series of difficult mini-quizzes)

http://www.biology.arizona.edu/mendelian_genetics/mendelian_genetics.html

Pedigree Charts

Pedigree Analysis – Part 1 (9") <http://www.youtube.com/watch?v=HbIHjsn5cHo>

Pedigree Analysis – Part 2 (9") http://www.youtube.com/watch?v=ej2hf8Cu_zQ

Pedigree Analysis Practice (15") <http://www.youtube.com/watch?v=2930XAuGXCI>

Additional informational websites:

Intro to Genetics <http://library.thinkquest.org/C004367/be1.shtml>

Mendels' experiments (30") <http://biology-animations.blogspot.com/2008/02/gregor-mendel-video.html>

Chapter 11 • DNA: The Genetic Material

(CC) DNA Structure and Replication (13") <http://www.youtube.com/watch?v=8kK2zwjRV0M>

(CC) DNA, Hot Pockets, & The Longest Word Ever (14") <http://www.youtube.com/watch?v=itsb2SgR-RO>

(B) DNA and RNA – Part 1 (13") <http://www.youtube.com/watch?v=qoERVSWMkGk>

(B) DNA and RNA – Part 2 (10") <http://www.youtube.com/watch?v=W4mYwsr9gGE>

(B) What is DNA? (11") <http://www.youtube.com/watch?v=q6PP-C4udkA>

(B) DNA Replication (10") http://www.youtube.com/watch?v=FBmO_rmXxlw

Digitized cellular animations:

DNA Learning Center - Basic (2") <http://www.youtube.com/watch?v=5MfSYntYvg>

[DNA Learning Center - Advanced (2") <http://www.youtube.com/watch?v=SMtWvDbfHLo>]

NDALC – DNA Replication (8") http://www.youtube.com/watch?v=yqESR7E4b_8

More detailed animations:

DNA replication (7") <http://www.youtube.com/watch?v=qn-JW-M89fo>

Protein synthesis (DNA transcription, translation and folding) 2" http://www.youtube.com/watch?v=erOP76_qLWA

DNA transcription and protein assembly (3") <http://www.youtube.com/watch?v=983lh20rGY>

From RNA to protein synthesis <http://www.youtube.com/watch?v=NJxobgkPEAo>

(NDSU) Transcription (3") <http://www.youtube.com/watch?v=WsofH466lqk>

(NDSU) mRNA translation (3.5") <http://www.youtube.com/watch?v=5bLEDd-PSTQ>

** DNA transcription: lost in translation, a tiny story of gene expression (3") <http://www.youtube.com/watch?v=Dyl6AbmNMj4>

Protein Transcription: Synthesis (2") <http://www.youtube.com/watch?v=YJZlvGI7Jnc>

DNA Replication Cartoon (4.5") <http://www.youtube.com/watch?v=cDIKrLjRIY>

(B) Mutations (7") <http://www.youtube.com/watch?v=eDbK0cxKKsk&feature=relmfu>

Genetic mutation (9") <http://www.youtube.com/watch?v=5h-4mU8pyFc>

Great Pacific Media - DNA Mutations (6") <http://www.youtube.com/watch?v=efstlgoynlk>

Point mutations (6") http://www.youtube.com/watch?v=_tvP6iJEVHO

How DNA mutations lead to cancer (2") <http://www.youtube.com/watch?v=C503LjrUGKc&list=PL6EF6AB939D875F3D>

Chapter 12 • How Genes Work

(CC) Evolutionary Development: Chicken Teeth (11") http://www.youtube.com/watch?v=9sjwlxQ_6LI

(B) Gene Regulation (10") <http://www.youtube.com/watch?v=3S3ZOmleAj0>

Animations

Gene Expression (2") http://www.youtube.com/watch?v=OEWOZS_JTgk

How Genes are Regulation: Transcription factors (3") <http://www.youtube.com/watch?v=MkUgkDLp2iE>

Control of Gene Expression in Eukaryotes (3") <http://www.youtube.com/watch?v=jrKZCh6BXIQ>

Chapter 13 • The New Biology

(B) Molecular Biology (14.5") <http://www.youtube.com/watch?v=yYIZgS-L5Sc>

DNA Sequencing Animation (5") <http://www.youtube.com/watch?v=WX8V1SWQbFw>

DNA fingerprinting animation (5") <http://www.youtube.com/watch?v=ZxWXCT9wVol>

Greenpeace Genetic Engineering (5") <http://www.youtube.com/watch?v=1H9WZGKQeYg>

Cloning 101 (6") http://www.youtube.com/watch?v=qOB9Bn1WW_4

Taboos of Science (5") http://www.youtube.com/watch?v=3_dEsw1Ff1U

Chapter 14 • Evolution and Natural Selection

(CC) Population Genetics (11") <http://www.youtube.com/watch?v=WhFKPaRnTdQ>
 (B) Solving Hardy Weinberg Problems (11") <http://www.youtube.com/watch?v=xPkOAnK20kw>
 (CC) Speciation: Of Ligers and Men (11") <http://www.youtube.com/watch?v=2oKlKmrblOu>
 (B) Speciation and Reproductive isolation (12") <http://www.youtube.com/watch?v=rlnvovijmo&feature=related>
 (B) Genetic Drift (11") http://www.youtube.com/watch?v=mjQ_yN5znyk
 Genetic drift, founders effect, bottlenecking (3") <http://www.youtube.com/watch?v=Q6JEA2oINts>
 The basics of reproductive isolation: <http://www.youtube.com/watch?v=2bPX0f120nc>

(CC) Natural Selection (13") http://www.youtube.com/watch?v=aTftyFboC_M
 (B) Natural Selection (10") http://www.youtube.com/watch?v=R6La6_klr9g
 Harry Potter & Magical Modes of Selection (5.5") http://www.youtube.com/watch?v=hUOq7Ou_LUI
 (CC) Evolution: It's a Thing (12") <http://www.youtube.com/watch?v=P3GagfbA2vo>
 (B) Evidence of Evolution (9") <http://www.youtube.com/watch?v=cC8k25b1oQ8>

Homology vs. Analogy (2") <http://www.youtube.com/watch?v=VKEM4oFTU6Q>

Chapter 15 • Exploring Biological Diversity

(CC) The History of Life on Earth (13.5") <http://www.youtube.com/watch?v=sjE-Pkjp3u4>
 (B) The Three Domains of Life (7") <http://www.youtube.com/watch?v=wGVgIcTpZkk>
 (B) Phylogenetics (13") <http://www.youtube.com/watch?v=fQwI90bkJI4>
 TEDxUniv. Of Gothenburg – Kerstin Johannesson – Oceans of Biodiversity
<http://www.youtube.com/watch?v=Mh3oiHnjv-A>
 (TED) Juan Enriquez – The Life Code that will reshape the future (22") <http://www.youtube.com/watch?v=5KdOPY1Iqiw>
 Understanding phylogenetic trees (5'32") <http://www.youtube.com/watch?v=xwuhmMllspo>

(CC) Taxonomy: Life's Filing Systems (12") http://www.youtube.com/watch?v=F38BmgPcZ_I
 (CC) Taxonomy: Life's Filing System (12") http://www.youtube.com/watch?v=F38BmgPcZ_I
 Evolution – Tree of Life Animation w/ Music (5') <http://www.youtube.com/watch?v=3LJ16jpCeeM>
 EOL – Encyclopedia of Life Intro (4") <http://www.youtube.com/watch?v=g-p5F3Lq40>
 The Encyclopedia of Life website www.eol.org

Chapter 16 • Evolution of Microbial Life

(B) Archaea (7") <http://www.youtube.com/watch?v=W25nl9kpxtU>
 (B) Bacteria (11") <http://www.youtube.com/watch?v=h-z9-9OOWC4>
 (CC) Old & Odd: Archaea, Bacteria & Protists (12") <http://www.youtube.com/watch?v=vAR47-g6tIA>
 Introduction to Bacteria (15") <http://www.youtube.com/watch?v=2iysq1kkTSk>
 (B) Protists (5") <http://www.youtube.com/watch?v=8def3Rw4ti4>

Wikipedia Extremophiles: <https://en.wikipedia.org/wiki/Extremophile> (acidophiles, anerobes, halophiles, etc.)

(TED) Bonnie Bassler - The Secret, Social Lives of Bacteria (19") <http://www.youtube.com/watch?v=KXWurAmtf78>
 (TED) How Bacteria "Talk" Part 1 (10") <http://www.youtube.com/watch?v=nw2os1s0Hjw>
 (TED) How Bacteria "Talk" Part 2 (8") http://www.youtube.com/watch?v=ruP_Ap7DhwQ

** Bacteria Bites (8") <http://www.youtube.com/watch?v=ZTPOrlfmyx8>

Introduction to viruses (6") <http://www.youtube.com/watch?v=UEKS4w9bfJg>
 (B) Viruses (8") http://www.youtube.com/watch?v=L8oHs7G_syl

Viruses and prions: living or nonliving? (3") <http://www.youtube.com/watch?v=9Xxm5-XThdA>
 Bacteriophage T4 assembly (5.5")
http://www.youtube.com/watch?v=Ofd_IgEymto&list=PLU3l_uSBnxBAXTJiSl1xukW4yHkhliGNE
 Phytoplankton-Bacteriophage (3") http://www.youtube.com/watch?v=LiPZq2K_Tos
 The lytic and lysogenic cycle (6") <http://www.youtube.com/watch?v=L55WOD6PZhw>
 Prions: what are they? (2") <http://www.youtube.com/watch?v=tfv3xAw0XOE>
 (CC) Prions: the real zombie makers (5") <http://www.youtube.com/watch?v=Cubu-k7kSvw>

(NPR) Flu attack! How a virus invades your body (4") <http://www.youtube.com/watch?v=Rpj0emEGShQ>
 Influenza animation (4") <http://www.youtube.com/watch?v=YSgkoldBNkl>

(HHMI) Retrovirus reverse transcription (5") <http://www.youtube.com/watch?v=eS1GODinO8w>
 HIV replication (5") <http://www.youtube.com/watch?v=RO8MP3wMvqg>
 The Life Cycle of the Hepatitis C Virus (5.5") <http://www.youtube.com/watch?v=Y8h2wzwdzZs>

(CC) Fungi: Death Becomes Them (12") <http://www.youtube.com/watch?v=m4DUZhnNo4s>
 (B) Fungi (9") <http://www.youtube.com/watch?v=dj9m7Oc36wM>
 An Introduction to the Kingdom Fungi (8") <http://www.youtube.com/watch?v=YyUWa84bGgA>

Chapter 17 • Evolution of Plants

(CC) The Sex Lives of Nonvascular Plants: Alternation of Generations (10") <http://www.youtube.com/watch?v=iWaX97p6y9U>
 Mosses – Bryophyte Life Cycle (10' 16") <http://www.youtube.com/watch?v=xbSZbd02UEg>
 Bryophytes (11'29") <http://www.youtube.com/watch?v=Nmdv0sCuFv0>
 Moss Reproduction (1") <http://www.youtube.com/watch?v=jcWYAnmm-QE>
 *The Life Cycle of Bryophytes PPT (6") http://www.youtube.com/watch?v=vb_dxIntmmo
 Bryophyte Life Cycle on Whiteboard (9") <http://www.youtube.com/watch?v=ZLrcfaeiFHM>

*Life Cycle of a Fern – Stop Animation (3") <http://www.youtube.com/watch?v=6QK5Hug9HUs>
 Ferns – Pteridophyte life cycle (12.5") <http://www.youtube.com/watch?v=c4YtOT0Z6Ek>
 Life Cycle of a Fern Animation (2'20") <http://www.youtube.com/watch?v=eZ40LDWt678>
 Pteridophyte Life Cycle on Whiteboard (7") <http://www.youtube.com/watch?v=r83W-1hE1mo>

(CC) Vascular Plants = Winning! (12") <http://www.youtube.com/watch?v=h9oDTMXM7M8>
 (B) Plants (8") http://www.youtube.com/watch?v=X4L3r_XJW0I
 (B) Plant Structure (14") http://www.youtube.com/watch?v=6u5amW_aPBw

*Angiosperms and Gymnosperms (5") <http://www.youtube.com/watch?v=-yrifledzw4>
 (B) Plants (8") http://www.youtube.com/watch?v=X4L3r_XJW0I
 Gymnosperm animation (1.5") <http://www.youtube.com/watch?v=D9byVQxvMXs>
 Gymnosperms PPT (4.5") <http://www.youtube.com/watch?v=RtwQxXK3i0g>
 Angiosperms PPT (6") <http://www.youtube.com/watch?v=u4bueZjOfdw>
 (Penguin Prof) Alternation of Generations (17.5") <http://www.youtube.com/watch?v=uJNnZtE00ko>
 (CC) The Plants & The bees: Plant Reproduction (10") <http://www.youtube.com/watch?v=ExaQ8shhkW8>
 Animation - Double fertilization in angiosperms (4") <http://www.youtube.com/watch?v=bUjVHUf4d1I>

Chapter 18 • Evolution of Animals

(CC) Simple Animals: Sponges, Jellies & Octopuses (12") <http://www.youtube.com/watch?v=tlfsHPpkSPs>
 (CC) Complex Animals: Annelids & Arthropods (13") <http://www.youtube.com/watch?v=YQb7Xq0enTI>
 (CC) Comparative Anatomy: What Makes Us Animals (9") <http://www.youtube.com/watch?v=7ABSJKS0hic>

Chapter 19 • Populations and Communities

(CC) Population Ecology: The Texas Mosquito Mystery (12") <http://www.youtube.com/watch?v=RBOsqmBQBQk>
 (CC) Community Ecology: Feel the Love (11.5") <http://www.youtube.com/watch?v=GxE1SSqbSn4>
 (CC) Community Ecology II: Predators (10")
http://www.youtube.com/watch?v=mFDiiSqGB7M&list=PL8dPuualjXtNdTKZkV_GiIYXpV9w4WxbX&index=5

Mahalo Biology: Keystone vs. Indicator Species (2.5') <http://www.youtube.com/watch?v=xRfdDE6scWA>

Australian Population Diagrams (interactive website; can see data over 30-year time span)
<http://www.abs.gov.au/websitedbs/d3310114.nsf/home/Population%20Pyramid%20-%20Australia>

Chapter 20 • Ecosystems

Ecosystem Definition: Abiotic & Biotic Factors <http://www.youtube.com/watch?v=y-wpbhnom70>

Biodiversity definition <http://www.youtube.com/watch?v=EPfzJ9qaPcw>

Trophic levels and Producer vs. Consumer http://www.youtube.com/watch?v=qUZkWZ12A8s&feature=mfu_in_order&list=UL

(CC) Ecological Succession; Change is Good (10") <http://www.youtube.com/watch?v=jZKIHe2LDP8>

(CC) Ecosystem Ecology: Links in the Chain (10") <http://www.youtube.com/watch?v=v6ubvEJ3KGM>

(CC) Conservation & Restoration Ecology (10") <http://www.youtube.com/watch?v=Kaeyr5-O2eU>

(CC) The Hydrologic and Carbon Cycles: Always Recycle! (10")

http://www.youtube.com/watch?v=2D7hZpiYICA&list=PL8dPuualjXtNdTKZkV_GilYXpV9w4WxbX&index=8

(CC) Nitrogen & Phosphorus Cycles: Always Recycle! (9") http://www.youtube.com/watch?v=leHy-Y_8nRs&list=PL8dPuualjXtNdTKZkV_GilYXpV9w4WxbX&index=9

FILMS - EDUCATIONAL VIDEO CLIPS: Short films on geochemical cycles

Nitrogen fixation cycle (10"): <http://www.youtube.com/watch?v=AqE-0VPHWbM>

Nitrogen cycle video (1.5"): <http://www.youtube.com/watch?v=Hghru007dDs>

Carbon cycle video (4.5"): <http://www.youtube.com/watch?v=U3SZKJVKRxQ>

Water cycle animation - terms (1.5"): <http://www.youtube.com/watch?v=UDyPkJQxkas&feature=related>

Water cycle animation-Skippy (2.5"): <http://www.youtube.com/watch?v=kSvXxYvGSGQ&feature=related>

Phosphorus lecture (1"): <http://www.youtube.com/watch?v=3iwl24oVpH4&feature=related>

Phosphorus cycle (LitE): http://www.wadsworthmedia.com/biology/starr_udl11_tour/phos_anim.html

Sulfur cycle w/ diagram (1.5"): http://www.sciencejones.com/Bio/sulfur_cycle.html

(same video available at: http://academic.cengage.com/biology/discipline_content/animations/sulfur_cycle.html)

Chapter 21 • Behavior and the Environment

(CC) Animal Behavior (11") <http://www.youtube.com/watch?v=EyyDq19Mi3A>

(B) Animal Behavior (10") <http://www.youtube.com/watch?v=6hREwakXmAo>

Chapter 22 • Human Influences on the Living World

(CC) Ecology – Rules for Living on Earth (10.5") <http://www.youtube.com/watch?v=izRvPaAWgyw>

350.org on Climate Change (animation) <http://www.youtube.com/watch?v=s5kg1oOq9tY>

FILM: **ACID TEST: The global challenge of ocean acidification – NRDC**

Narrated by Sigourney Weaver, 2012 (21'34")

<http://www.nrdc.org/oceans/acidification/aboutthefilm.asp>

For students who would like the equivalent of an “honors” course, you are welcome to contact the instructor and complete extra assignments, guaranteeing you an A+ in the class.

REQUIRED TEXT FOR THE HONORS SECTION:

The Best American Science and Nature Writing 2013. Siddhartha Mukherjee, Editor.

Tim Folger, Series Editor. Houghton Mifflin Harcourt.

GETTING HELP & TECHNICAL ISSUES:

Support is available for you as you begin using Canvas. You can find detailed tutorials discussing the different components of Canvas at the following links: <http://guides.instructure.com/> and <http://www.sjsu.edu/at/ec/canvas/>.

For issues that you encounter in Canvas, please click on the word **Help** in the upper right corner of the screen. If you can't find the answer in the "Help" section, submit a **report ticket**.

SJSU IT Support Help is available by calling (408) 924-1530 or emailing info-support@sjsu.edu

****It is highly recommended that students spend time working in on-campus computer labs and make use of the IT Help desk associated with that lab.**

The Computer Lab in Clark Hall has PC & Mac computers available on a "first-come-first-serve" basis.

****More computers are available at the MLK Library, which is open in the evenings and on weekends.**

If you aren't able to download and run programs on your own computer, you are responsible for getting help from IT Support Services at the Clark Hall computer lab: there are 30 PC and 30 Macintosh computers in the lab.

Do not contact your instructor for help with using Canvas. You will need to figure out the system on your own.

Some of the animations require specific programs (e.g., QuickTime, Windows Media or Real Player, Macromedia or Adobe Flash Player, etc.) – usually links are provided onsite to access downloads of the relevant programs.

If you are not automatically provided with a link on the animated/video site to download the programs, you can find links to multimedia programs at this website: <http://www.uh.edu/sibs/tutorial/plugin.htm>

Certain online articles will require that you access them through an accredited academic institution, i.e., through the SJSU server. When this is the case, you will need to go through the MLK Library website: <http://www.sjlibrary.org/>

HYBRID COURSES WITH ONLINE WORK REQUIRE STUDENTS TO BE MORE PROACTIVE.

You will need to allow EXTRA TIME for learning new computer technology.

You will also need to organize your time carefully...and stay on schedule!!

ADDITIONAL NOTES:

Occasionally you will be asked to perform mathematical calculations for your assignments. If you have forgotten, or need help with math/algebra/geometry etc., go to the free online math help site: <http://www.webmath.com/>

Students are strongly encouraged to consult with the instructor for guidance by email or by **text message** to her **cellphone** (**recommended**), at any time during the weekdays (Monday – Friday), when any part of any assignment is unclear or especially difficult.

The instructor will generally not be available on the weekends (outside the webinar hours), so don't wait to contact her at the last minute!!

SPECIAL-NEEDS STUDENTS; LEARNING CHALLENGES

Are you having significant problems with any of the following?

- (a) reading comprehension and/or retention;
(do you read things over and over and still not understand what you read?)
- (b) writing and/or exam anxiety;
(do you get super-stressed out trying to write term papers or answer exam questions?)
- (c) understanding and/or completing course assignments;
(do you feel really lost when trying to complete the reports?)
- (d) keeping up with the pace of the course.
(do you frequently feel overwhelmed with trying to keep up?)

If you are experiencing difficulties with any of these issues, you should consider checking out the SJSU Disabilities Center or the SJSU Accessible Technology Center in the MLK Library, because there is a wealth of VERY COOL, VERY HELPFUL, brand-new technology to increase your academic success. And it's free!! So don't deprive yourself.

If you have already registered with the SJSU Disabilities Center, please inform the instructor at the beginning of the class so that she can better address your learning needs throughout the course.

University, College & Department Policy Information:

You are responsible for understanding the policies and procedures about add/drops, academic renewal, withdrawal, etc. found at <http://www2.sjsu.edu/senate/S04-12.pdf>

DR. PFEIFFER'S POLICY: Deal with administrative issues EARLY to avoid registration headaches. I cannot assist you with any registration problems. All I can do is sign documents. You may need to scan and email them to me.

a) Academic integrity statement (from Office of Judicial Affairs):

"Your own commitment to learning, as evidenced by your enrollment at San José State University and the University's Academic Integrity Policy requires you to be honest in all your academic course work. Faculty are required to report all infractions to the Office of Judicial Affairs. The policy on academic integrity can be found at <http://www2.sjsu.edu/senate/S04-12.pdf>

b) Campus policy in compliance with the Americans with Disabilities Act:

"If you need course adaptations or accommodations because of a disability, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities register with DRC to establish a record of their disability."

DR. PFEIFFER'S POLICY: I am accustomed to facilitating the full participation of students who have special needs, or who are experiencing short-term crises. I encourage all students to communicate with me if they are experiencing difficulties with completing assignments in a timely fashion due to a serious issue.

Academic Honesty:

STANDARD POLICY: Faculty will make every reasonable effort to foster honest academic conduct in their courses. They will secure examinations and their answers so that students cannot have prior access to them and proctor examinations to prevent students from copying or exchanging information. They will be on the alert for plagiarism (a definition of plagiarism can be found on Judicial Affairs website at <http://www2.sjsu.edu/senate/plagiarismpolicies.htm>. Students who are caught cheating will be reported to the Judicial Affairs Officer of the University, as prescribed by [Academic Senate Policy S04-12](#). If you would like to include in your paper any material you have submitted, or plan to submit, for another class, please note that SJSU's Academic Integrity policy S04-12 requires approval by instructors.

DR. PFEIFFER'S POLICY: Due to the way assignments are structured and graded, **it is virtually impossible to plagiarize in this course**. I will not tolerate ANY attempts to claim someone else's work or words as your own without crediting and citing the source(s). We will ALWAYS cite our sources, both written (cited in our text & bibliographies) and oral (using quotation marks & noted as "Personal Communication").