Lower Division Courses (74 credits total)	
Communications (See General Education Requirements) Credit Hours: 9	
Humanities (See General Education Requirements) Credit Hours: 6	
Social and Behavioral Sciences (See General Education Requirements) Credit Hours: 9	
ENC 2210 - Technical Report Writing Credit Hours: 3	
PHY 2053C - General Physics I Credit Hours: 4	
PHY 2054C - General Physics II Credit Hours: 4	
BSC 2085C - Human Anatomy and Physiology I Credit Hours: 4	
BSC 2086C - Human Anatomy and Physiology II Credit Hours: 4	
BSC 2010C – Principles of Biology I Credit Hours: 4	
BSC 2011C – Principles of Biology II Credit Hours: 4	
CHM 2045C - General Chemistry and Qualitative Analysis I Credit Hours: 4	
CHM 2046C - General Chemistry and Qualitative Analysis II Credit Hours: 4	
CHM 2210C - Organic Chemistry I Credit Hours: 4	
CHM 2211C - Organic Chemistry II Credit Hours: 4	
MAC 2311 - Calculus with Analytical Geometry I Credit Hours: 4	
STA 2023 – Elementary Statistics Credit Hours: 3 Or MAC 2312 - Calculus with Analytical Geometry II* Credit Hours: 4	
Biomedical Sciences Upper Division Core (32 credits total)	
MCB 3020C - Basic Biology of Microorganisms Credit Hours: 4	
BCH 4024 – Introduction to Biochemistry and Molecular Biology Credit Hours: 4	
PCB 3023C - Cell Biology Credit Hours: 4	
PCB 3063C - Genetics and Molecular Biology Credit Hours: 4	
CHM 3130C - Chemistry Instrumentation Credit Hours: 4	
HSC 4730 - Health Science Research Credit Hours: 3	
HSA 3113 - Health Care Trends and Issues Credit Hours: 3	
HSC 4653 - Ethical Issues in Health Sciences Credit Hours: 3	
IDS 4936 - Biomedical Degree Capstone Credit Hours: 3	
Students choose either Biological Sciences or Biochemistry as a concentration. (Concentrations are 14 credits of upper level coursework in a designated track and should be selected based on student interest and career goals.)	
Upper Division Biological Sciences Concentration (Choose 14 credits)	
MCB 4404 - Microbial Physiology and Genetics Credit Hours: 3	
ZOO 3713C - Comparative Vertebrate Anatomy (only if not taken in place of BSC 2086C) Credit Hours: 4	
MCB 4503 – Virology Credit Hours: 3	
PCB 3713C - General Physiology Credit Hours: 4	
BSC 4933 - Selected Topics in Biological Sciences (may be repeated with different topics up to 3 times) Credit Hours: 3	
Upper Division Biochemistry Concentration (choose 14 credits)	
BCH 4034C - Advanced Biochemistry Credit Hours: 4	
CHM 3120C - Elementary Analytical Chemistry Credit Hours: 4	
CHM 4410 - Physical Chemistry I Credit Hours: 3	
CHM 4411 - Physical Chemistry II Credit Hours: 3	
CHM 4932 - Selected Topics in Chemistry (may be repeated with different topics up to 3 times) Credit Hours: 3	
Total	**120 credits**

FLORIDA STATE COLLEGE AT JACKSONVILLE
COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	BCH 4024
COURSE TITLE:	Introduction to Biochemistry and Molecular Biology
PREREQUISITE(S):	CHM 2211C (Organic Chemistry II with lab) with a grade of "C" or better
COREQUISITE(S):	None
CREDIT HOURS:	4
CONTACT HOURS/WEEK:	4
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	4
Laboratory:	none
Other _____:	
FACULTY WORKLOAD POINTS:	4
STANDARDIZED CLASS SIZE ALLOCATION:	35

CATALOG COURSE DESCRIPTION:
This course is a comprehensive one semester biochemistry course intended for science majors. Course topics to be covered include physical biochemistry, intermediary metabolism of key catabolic and anabolic pathways as well as the mechanisms for *in vivo* regulation of these pathways, a survey of molecular biology, and enzyme kinetics. Students will also learn about the structures and functions of proteins, nucleic acids, lipids and carbohydrates and how these biologically central molecules are synthesized and turned over.

SUGGESTED TEXT(S):	Berg, Tymoczko, and Stryer, Biochemistry, Freeman Publisher, Latest edition Mathews, van Holde, and Ahern, Biochemistry, Prentice Hall Publisher, Latest edition Voet and Voet, Biochemistry, Wiley Publisher, Latest edition
IMPLEMENTATION DATE:	Fall Term, 2011 (20121)
REVIEW OR MODIFICATION DATE:	

COURSE TOPICS	CONTACT HOURS PER TOPIC
I. Chemical interactions in aqueous environments	4
a. Properties of water	
b. Acids/Bases	
c. Buffers	
II. Energetics	4
a. Energy, heat and work	
b. Laws of Thermodynamics	
c. Chemical equilibria	
d. Free energy	
e. ATP	
III. Survey of proteins	6
a. Protein structure	
i. Amino acids	
ii. Peptide bonds	
iii. Protein folding	
b. Protein function	
i. Contractile proteins	
ii. Transport proteins	
IV. Survey of lipids	5
a. Structure	
i. Fatty acids	
ii. Triglycerides and phospholipids	
b. Function	
i. Biological membranes	
ii. Excitable membrane (action potentials)	
V. Survey of carbohydrates	5
a. Structure	
i. Simple sugars to oligosaccharides	
ii. Polysaccharides	
iii. Glycoproteins	
b. Function	
i. Energy storage	
ii. Cell markers	
VI. Survey of Nucleic Acids	6
a. Structure	
i. DNA	
ii. RNA	
b. Function	
i. DNA	
ii. RNA	
c. Regulation of gene expression	

VII. Enzymes 6

- a. Properties
- b. Vitamins and co-enzymes
- c. Basics of kinetics and catalysis
- d. Regulation

VIII. Intermediary metabolism 24

- a. Bioenergetics
- b. Carbohydrate metabolism
  - i. Catabolic pathways
  - ii. Anabolic pathways
- c. Photosynthesis
  - i. Light reactions
  - ii. Dark reactions
- d. Lipid metabolism
  - i. Catabolic pathways
  - ii. Anabolic pathways
- e. Protein metabolism
  - i. Catabolic pathways
  - ii. Anabolic pathways
- f. Metabolism of nitrogenous compounds
  - i. Catabolic pathways
  - ii. Anabolic pathways
- g. Nucleic acid metabolism
  - i. Catabolic pathways
  - ii. Anabolic pathways

Florida State College At Jacksonville

Course Learning Outcomes & Assessment

NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1	
COURSE PREFIX AND NUMBER: BCH 4024	**SEMESTER CREDIT HOURS (CC):** 4 CONTACT HOURS (NCC): ____
COURSE TITLE: Introduction to Biochemistry and Molecular Biology	

Section 2

TYPE OF COURSE: (Click on the box to check all that apply)

- ☐ AA Elective
- ☐ AS Required Professional Course
- ☐ College Prep
- ☐ AS Professional Elective
- ☐ AAS Required Professional Course
- ☐ Technical Certificate
- ☒ Other B.S. Biomedical Sciences Upper Division Core Course
- ☐ PSAV
- ☐ Apprenticeship
- ☐ General Education: (For General Education courses, you must also complete Section 3 and Section 7)

Section 3 (If applicable)

INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

- ☐ Communications
- ☐ Social & Behavioral Sciences
- ☐ Mathematics
- ☐ Natural Sciences
- ☐ Humanities

Section 4

INTELLECTUAL COMPETENCIES:

- ☐ Reading
- ☐ Speaking
- ☒ Critical Analysis
- ☐ Quantitative Skills
- ☒ Scientific Method of Inquiry
- ☐ Writing
- ☐ Listening
- ☐ Information Literacy
- ☐ Ethical Judgment
- ☐ Working Collaboratively

Section 5

STATE GENERAL EDUCATION LEARNING OUTCOME AREA

- ☐ Communication
- ☐ Critical Thinking
- ☐ Scientific and Quantitative Reasoning
- ☐ Information Literacy
- ☐ Global Sociocultural Responsibility

Section 6 **LEARNING OUTCOMES**		***Type of Outcome: Gen. Ed, Program, Course***	**METHOD OF ASSESSMENT**
•	Demonstrate knowledge of the structures and functions of proteins, nucleic acids, lipids, and carbohydrates	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Demonstrate knowledge of biological membranes	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Demonstrate knowledge of the principles of enzymology	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Demonstrate knowledge of bioenergetics of metabolism	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations

•	Use basic scientific language and processes and be able to distinguish between scientific and non-scientific explanations	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Demonstrate the application of interdisciplinary natural science curricula to biomedical sciences.	Program	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).

Section 7

Name of Person Completing This Form: Lourdes Norman Date: 1/20/2011

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	BCH 4034C
COURSE TITLE:	Advanced Biochemistry
PREREQUISITE(S):	BCH 4024 (Introduction to Biochemistry and Molecular Biology) with a grade of "C" or better
COREQUISITE(S):	None
CREDIT HOURS:	4
CONTACT HOURS/WEEK:	6
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	3
Laboratory:	3
Other _____:	
FACULTY WORKLOAD POINTS:	5.1
STANDARDIZED CLASS SIZE ALLOCATION:	27 (laboratory safety consideration)

CATALOG COURSE DESCRIPTION:
Introduction to biomolecular structure determinations by spectroscopic methods, principles of enzyme kinetics, transport across membranes, molecular physiology, and molecular genetics.

SUGGESTED TEXT(S):	Berg, Tymoczko, and Stryer, Biochemistry, Freeman Publisher, Latest edition Mathews, van Holde, and Ahern, Biochemistry, Prentice Hall Publisher, Latest edition Voet and Voet, Biochemistry, Wiley Publisher, Latest edition
IMPLEMENTATION DATE:	Fall Term, 2011 (20121)
REVIEW OR MODIFICATION DATE:	

COURSE TOPICS	CONTACT HOURS PER TOPIC
I. Signal Transduction Pathways	6
II. RNA and Genetic Information	3
III. Immune System/Antibody Structure and function	3
IV. Glycogen Metabolism	3
V. Fatty Acid Metabolism	3
VI. Protein Turnover and Amino Acid Catabolism	3
VII. Biosynthesis of Amino Acids	3
VIII. Nucleotide Biosynthesis	3
IX. DNA Replication and Repair	3
X. RNA Synthesis	3
XI. Protein Synthesis	3
XII. Special Topics a. Scientific Journal Article analysis b. Biochemistry of Select Disease/Disorders c. Photosynthesis	9
Total lecture hours:	45
Suggested Laboratory Activities:	
I. Cell Culture Techniques	9
II. Protein Over-expression and Purification a. Amino-acid sequencing b. Western blotting	9
III. Protein Modification Analysis a. Protein Phosphorylation (6) b. Protein Glycosylation(3)	9
IV. Advanced Enzyme Kinetics	9
V. Genetic Engineering/ Protein Mutation	9
Total laboratory hours:	45

Florida State College At Jacksonville

Course Learning Outcomes & Assessment

NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1	
COURSE PREFIX AND NUMBER: BCH 4034C	**SEMESTER CREDIT HOURS (CC):** 4 CONTACT HOURS (NCC):
COURSE TITLE: Advanced Biochemistry	

Section 2

TYPE OF COURSE: (Click on the box to check all that apply)

☐	AA Elective	☐	AS Required Professional Course	☐	College Prep
☐	AS Professional Elective	☐	AAS Required Professional Course	☐	Technical Certificate
☒	Other B.S. Biomedical Sciences Upper Division Core Course PSAV	☐		☐	Apprenticeship
☐	General Education: (For General Education courses, you must also complete Section 3 and Section 7)				

Section 3 (If applicable)

INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

☐	Communications	☐	Social & Behavioral Sciences	☐	Mathematics
☐	Natural Sciences	☐	Humanities		

Section 4

INTELLECTUAL COMPETENCIES:

☐	Reading	☐	Speaking	☒	Critical Analysis	☐	Quantitative Skills	☒	Scientific Method of Inquiry
☐	Writing	☐	Listening	☐	Information Literacy	☐	Ethical Judgment	☐	Working Collaboratively

Section 5

STATE GENERAL EDUCATION LEARNING OUTCOME AREA

☐	Communication	☐	Critical Thinking	☐	Scientific and Quantitative Reasoning
☐	Information Literacy	☐	Global Sociocultural Responsibility		

Section 6 **LEARNING OUTCOMES**		***Type of Outcome: Gen. Ed, Program, Course***	**METHOD OF ASSESSMENT**
•	Demonstrate knowledge of the structures and functions of proteins, nucleic acids, lipids, and carbohydrates	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Demonstrate knowledge of biological membranes	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Demonstrate knowledge of the principles of enzymology	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Conduct an experiment, collect and analyze data, and interpret results in a laboratory setting	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the

			answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Analyze, evaluate, and test a scientific hypothesis	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Use basic scientific language and processes and be able to distinguish between scientific and non-scientific explanations	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Demonstrate the application of interdisciplinary natural science curricula to biomedical sciences.	Program	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Students will demonstrate technical and analytical laboratory skills as they apply to biomedical sciences research and/or applications.	Program	Students will answer a set of questions developed by the program faculty and delivered across courses in the program. A faculty panel will evaluate the answers using a common rubric with scores from 1 (not yet competent) to 3 (competent).

Section 7

Name of Person Completing This Form: J. Aaron Matthews Date: 12/8/10

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	BSC 4933
COURSE TITLE:	Selected Topics in Biological Sciences
PREREQUISITE(S):	MCB 3020C (Basic Biology of Microorganisms with lab) with a grade of "C" or better
COREQUISITE(S):	None
STUDENT ADVISING NOTES:	Depends Upon Topic (As example Pathogenic Bacteriology)
CREDIT HOURS:	3
CONTACT HOURS/WEEK:	3
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	3
Laboratory:	
Other _____:	
FACULTY WORKLOAD POINTS:	3
STANDARDIZED CLASS SIZE ALLOCATION:	35

CATALOG COURSE DESCRIPTION:
This course is a study of the biological basis of infectious disease. It will emphasize bacterial infections, the principles of the host-parasite relationship, the pathogenic characteristics and virulence factors of microorganisms, and the various modes of action of antimicrobial agents.

SUGGESTED TEXT(S):	Murray et al., Medical Microbiology, Elsevier Press, Latest edition Wilson et al., Bacterial Pathogenesis, A Molecular Approach, ASM Press, Latest edition
IMPLEMENTATION DATE:	Fall Term, 2011 (20121)
REVIEW OR MODIFICATION DATE:	

COURSE TOPICS	CONTACT HOURS PER TOPIC
I. Introduction to Pathogens	1
II. Review of cell structure function A. Bacterial cell structure 1. Gram Positive 2. Gram Negative 3. Acid Fast	5
III. Host-Pathogen Relationship A. Detection of Pathogens 1. Culture/Microscopy 2. Serology 3. Nucleic Acids Based B. Immune System Responses 1. Cellular 2. Humeral C. Antimicrobial agents 1. Vaccines 2. Antibiotics D. Mechanisms of Pathogensis 1. Toxins 2. LPS 3. Inflammation/Host Response	9
IV. Gram Positive Bacterial Pathogens A. Staphylococcus B. Streptococcus B. Clostridium C. Bacillus D. Mycobacterium	15
V. Gram negative Bacterial Pathogens A. Enterobacteriaciae i. E. coli ii. Other enterics B. Pseudomonas, Vibrio C. Campylobacter, Helicobacter D. Bordatella, Franciella, Brucella E. Neisseria, Haemophilus F. Corynebacterium, Treponema, Borrelia	15
TOTAL HOURS	45

Florida State College At Jacksonville

Course Learning Outcomes & Assessment

NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1

COURSE PREFIX AND NUMBER: BSC 4933

SEMESTER CREDIT HOURS (CC): 3
CONTACT HOURS (NCC): ____

COURSE TITLE: Selected Topics in Biological Sciences (Pathogenic Bacteriology)

Section 2

TYPE OF COURSE: (Click on the box to check all that apply)

- ☐ AA Elective
- ☐ AS Required Professional Course
- ☐ College Prep
- ☐ AS Professional Elective
- ☐ AAS Required Professional Course
- ☐ Technical Certificate
- ☒ Other B.S. Biomedical Sciences Upper Division Biological Sciences Concentration Course
- ☐ Apprenticeship
- ☐ PSAV
- ☐ General Education: (For General Education courses, you must also complete Section 3 and Section 7)

Section 3 (If applicable)

INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

- ☐ Communications
- ☐ Social & Behavioral Sciences
- ☐ Mathematics
- ☐ Natural Sciences
- ☐ Humanities

Section 4

INTELLECTUAL COMPETENCIES:

- ☐ Reading
- ☐ Speaking
- ☒ Critical Analysis
- ☐ QuantitativeSkills
- ☒ Scientific Method of Inquiry
- ☐ Writing
- ☐ Listening
- ☐ Information Literacy
- ☐ Ethical Judgment
- ☐ Working Collaboratively

Section 5

STATE GENERAL EDUCATION LEARNING OUTCOME AREA

- ☐ Communication
- ☐ Critical Thinking
- ☐ Scientific and Quantitative Reasoning
- ☐ Information Literacy
- ☐ Global Sociocultural Responsibility

Section 6 **LEARNING OUTCOMES**		***Type of Outcome: Gen. Ed, Program, Course***	**METHOD OF ASSESSMENT**
•	Demonstrate knowledge of the structure, function, and nomenclature of bacterial pathogens.	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations

•	Demonstrate knowledge of identification and diagnostic methodologies of bacteria.	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Demonstrate knowledge of the virulence mechanisms of bacteria.	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Demonstrate knowledge of the host-pathogen interactions and treatment methods for pathogens.	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Demonstrate the application of interdisciplinary natural science curricula to biomedical sciences.	Program	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Analyze, evaluate, and test a scientific hypothesis	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Use basic scientific language and processes and be able to distinguish between scientific and non-scientific explanations	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Identify unifying principles and repeatable patterns in nature, the values of natural diversity, and apply them to problems or issues of a scientific nature	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Analyze and discuss the impact of scientific discovery on human thought and behavior	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).

Section 7

Name of Person Completing This Form: David Beall Date: 12/17/2010

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	CHM 3120C
COURSE TITLE:	Elementary Analytical Chemistry
PREREQUISITE(S):	CHM2046C (General Chemistry and Qualitative Analysis II with corresponding lab) with a grade of "C" or better
COREQUISITE(S):	None
CREDIT HOURS:	4
CONTACT HOURS/WEEK:	7
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	3
Laboratory:	4
Other _____:	
FACULTY WORKLOAD POINTS:	5.8
STANDARDIZED CLASS SIZE ALLOCATION:	27 (laboratory safety considerations)

CATALOG COURSE DESCRIPTION:

This course is a study of the fundamentals of analytical chemistry. Topics include titrimetric and gravimetric methods, spectrophotometry, potentiometry, chromatography, and chemical equilibria. The laboratory work will be quantitative in nature, stressing accurate laboratory techniques.

SUGGESTED TEXT(S):

Skoog, D. M. West, F. J. Holler, and S. R. Crouch, Analytical Chemistry: An Introduction; Skoog, Saunders (College) Publishers, Latest edition

Harris, Quantitative Chemical Analysis, W.H. Freeman Publisher, Latest edition

David S. Hage, Analytical Chemistry and Quantitative Analysis, Pearson Publishing, Latest edition

IMPLEMENTATION DATE: Fall Term, 2011 (20121)

REVIEW OR MODIFICATION DATE:

COURSE TOPICS		CONTACT HOURS PER TOPIC
I.	Introduction - The Analytical Process	2
II.	Measurements and Sampling	2
III.	Experimental Error	2
IV.	Statistics for Analytical Chemists	4
V.	Gravimetric Analysis	6
VI.	Chemical Equilibrium	6
VII.	Acid-Base Chemistry	6
VIII.	Precipitation and Complexation	6
IX.	Electrochemistry and Redox Titrations	6
X.	Spectrochemical Analysis	3
XI.	Special topics	2
	Total hours	45

LABORATORY ACTIVITIES:

I.	Safety in the Laboratory, maintenance of laboratory notebook	2
II.	Physical and Instrumental Measurements and Sampling	6
III.	Statistical Treatment of Raw Data	4
IV.	Gravimetric Techniques and Stoichiometry	8
V.	Equilibrium and LeChatelier's Prinicple	8
VI.	Acid-base Titrations	8
VII.	Precipitation and/or Complexation Titration	8
VIII.	Electrochemistry and Redox Titrations	8
IX.	Additional Laboratory Activities Selected at the Discretion of the Instructor	8
	Total hours	60

Florida State College At Jacksonville

Course Learning Outcomes & Assessment

NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1

COURSE PREFIX AND NUMBER: CHM 3120C

SEMESTER CREDIT HOURS (CC): 4
CONTACT HOURS (NCC): ____

COURSE TITLE: Elementary Analytical Chemistry

Section 2

TYPE OF COURSE: (Click on the box to check all that apply)

- ☐ AA Elective
- ☐ AS Required Professional Course
- ☐ College Prep
- ☐ AS Professional Elective
- ☐ AAS Required Professional Course
- ☐ Technical Certificate
- ☒ Other B.S. Biomedical Sciences Upper Division Core Course PSAV
- ☐
- ☐ Apprenticeship
- ☐ General Education: (For General Education courses, you must also complete Section 3 and Section 7)

Section 3 (If applicable)

INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

- ☐ Communications
- ☐ Social & Behavioral Sciences
- ☐ Mathematics
- ☐ Natural Sciences
- ☐ Humanities

Section 4

INTELLECTUAL COMPETENCIES:

- ☐ Reading
- ☐ Speaking
- ☒ Critical Analysis
- ☒ Quantitative Skills
- ☒ Scientific Method of Inquiry
- ☐ Writing
- ☐ Listening
- ☐ Information Literacy
- ☐ Ethical Judgment
- ☐ Working Collaboratively

Section 5

STATE GENERAL EDUCATION LEARNING OUTCOME AREA

- ☐ Communication
- ☐ Critical Thinking
- ☐ Scientific and Quantitative Reasoning
- ☐ Information Literacy
- ☐ Global Sociocultural Responsibility

Section 6 **LEARNING OUTCOMES**		***Type of Outcome: Gen. Ed, Program, Course***	**METHOD OF ASSESSMENT**
•	Explain and apply major concepts in analytical chemistry including measurement, sampling, statistical treatment of data, and the major	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations

	techniques of analytical chemistry.		
•	Demonstrate proficiency in quantitative wet-chemistry laboratory techniques	Course	Methods of assessment can include lab quizzes and/or exams, lab reports, instructor observation and accuracy with unknowns.
•	Conduct an experiment, collect and analyze data, and interpret results in a laboratory setting	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers using a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Analyze, evaluate, and test a scientific hypothesis	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers using a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Use basic scientific language and processes and be able to distinguish between scientific and non-scientific explanations	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers using a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Students will demonstrate the application of interdisciplinary natural science curricula to biomedical sciences.	Program	Students will answer a set of questions developed by the program faculty and delivered across courses in the program. A faculty panel will evaluate the answers using a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Students will demonstrate technical and analytical laboratory skills as they apply to biomedical sciences research and/or applications.	Program	Students will answer a set of questions developed by the program faculty and delivered across courses in the program. A faculty panel will evaluate the answers using a common rubric with scores from 1 (not yet competent) to 3 (competent).

Section 7

Name of Person Completing This Form: Kathleen S. Laurenzo Date: 12/15/2010

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	CHM 3130C
COURSE TITLE:	Chemistry Instrumentation
PREREQUISITE(S):	CHM 2046C (General Chemistry II with a corresponding lab) with a grade of "C" or better
COREQUISITE(S):	None
CREDIT HOURS:	4
CONTACT HOURS/WEEK:	7
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	3
Laboratory:	4
Other _____:	
FACULTY WORKLOAD POINTS:	5.8
STANDARDIZED CLASS SIZE ALLOCATION:	27 (laboratory safety considerations)

CATALOG COURSE DESCRIPTION:

The foundations of chemical instrumental analysis, i.e., atomic and molecular identification and structure through spectroscopic, electrochemical, and separation methods.

SUGGESTED TEXT(S):

Skoog, Douglas A., Holler, F. James, Crouch, Stanley R., Principles of Instrumental Analysis, Thomson Brooks/Cole, Latest edition

Rouessac, Francis, Rouessac, Annick, Modern Instrumentation Methods and Techniques, John Wiley and Sons, Latest edition

SUGGESTED TEXT(S):	Robinson, James W., Skelly Frame, Eileen M., Frame II, George M., Undergraduate Instrumental Analysis, CRC Press, Latest edition
IMPLEMENTATION DATE:	Fall Term, 2011 (20121)
REVIEW OR MODIFICATION DATE:	

COURSE TOPICS		CONTACT HOURS PER TOPIC
I.	Introduction	1
II.	Measurement	6
	a. Electronics, Circuits, Operational Amplifiers, Instrumentation	
	b. Analog to Digital Conversion	
	c. Digital Electronics and Computers	
III.	Atomic Spectroscopy	10
	a. Introduction and Optics	
	b. Absorption and Emission Spectroscopies	
	c. Fluorescence and Mass Spectroscopies	
IV.	Molecular Spectrocopy	10
	a. Ultraviolet-Visible Spectroscopy	
	b. Molecular Fluorescence, Luminesence, and Phosphorescence	
	c. Infrared and Raman Spectroscopies	
	d. NMR	
	e. Mass Spectroscopy	
V.	Methods of Electroanalytics	9
	a. Potentiometry	
	b. Coulometry	
	c. Voltammetry	
VI.	Methods of Separation	9
	a. Gas and Liquid Chromatography	
	b. Supercritical Fluid Chromatography	
	c. Capillary Electrophoresis and Electrochromatography	
	d. Field-Flow Fractionation	
	Total Lecture Hours:	45

LABORATORY ACTIVITIES		CONTACT HOURS PER TOPIC
I.	Introduction and Lab Safety	2
II.	Measurement	6
	a. Electronics, Circuits, Operational Amplifiers, Instrumentation	
	b. Analog to Digital Conversion	
	c. Digital Electronics and Computers	
III.	Atomic Spectroscopy	12
	a. Optics and Electrooptics	
	b. Absorption and Emission Spectroscopy	
	c. Fluorescence and Mass Spectroscopies	
IV.	Molecular Spectrocopy	16
	a. Ultraviolet-Visible Spectroscopy	
	b. Molecular Fluorescence, Luminesence, and Phosphorescence	
	c. Infrared and Raman Spectroscopies	
	d. NMR	
	e. Mass Spectroscopy	
V.	Methods of Electroanalytics	12
	a. Potentiometry	
	b. Coulometry	
	c. Voltammetry	
VI.	Methods of Separation	12
	a. Gas and Liquid Chromatography	
	b. Supercritical Fluid Chromatography	
	c. Capillary Electrophoresis and Electrochromatography	
	d. Field-Flow Fractionation	
	Total Laboratory Hours:	60

Florida State College At Jacksonville

Course Learning Outcomes & Assessment

NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1

COURSE PREFIX AND NUMBER: CHM 3130C

SEMESTER CREDIT HOURS (CC): 4
CONTACT HOURS (NCC):

COURSE TITLE: Chemistry Instrumentation

Section 2

TYPE OF COURSE: (Click on the box to check all that apply)

- ☐ AA Elective
- ☐ AS Required Professional Course
- ☐ College Prep
- ☐ AS Professional Elective
- ☐ AAS Required Professional Course
- ☐ Technical Certificate
- ☒ Other B.S. Biomedical Sciences Upper Division Core Course
- ☐ PSAV
- ☐ Apprenticeship
- ☐ General Education: (For General Education courses, you must also complete Section 3 and Section 7)

Section 3 (If applicable)

INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

- ☐ Communications
- ☐ Social & Behavioral Sciences
- ☐ Mathematics
- ☐ Natural Sciences
- ☐ Humanities

Section 4

INTELLECTUAL COMPETENCIES:

- ☐ Reading
- ☐ Speaking
- ☒ Critical Analysis
- ☒ Quantitative Skills
- ☒ Scientific Method of Inquiry
- ☐ Writing
- ☐ Listening
- ☐ Information Literacy
- ☐ Ethical Judgment
- ☐ Working Collaboratively

Section 5

STATE GENERAL EDUCATION LEARNING OUTCOME AREA

- ☐ Communication
- ☐ Critical Thinking
- ☐ Scientific and Quantitative Reasoning
- ☐ Information Literacy
- ☐ Global Sociocultural Responsibility

Section 6 **LEARNING OUTCOMES**		***Type of Outcome: Gen. Ed, Program, Course***	**METHOD OF ASSESSMENT**
•	Demonstrate knowledge of instrument-based analytical chemistry	Course	Methods of assessment can include exams, quizzes, papers, lab reports, lab practicals, and/or oral presentations
•	Demonstrate knowledge of the atomic and molecular spectroscopies	Course	Methods of assessment can include exams, quizzes, papers, lab reports, lab practicals, and/or oral presentations
•	Demonstrate knowledge of electrochemical methods	Course	Methods of assessment can include exams, quizzes, papers, lab reports, lab practicals, and/or oral presentations
•	Demonstrate knowledge of chemical separation methods	Course	Methods of assessment can include exams, quizzes, papers, lab reports, lab practicals, and/or oral presentations

•	Demonstrate technical and analytical laboratory skills as they apply to biomedical sciences research and/or applications.	Program	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Demonstrate the application of interdisciplinary natural science curricula to biomedical sciences.	Program	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Conduct an experiment, collect and analyze data, and interpret results in a laboratory setting	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Analyze, evaluate, and test a scientific hypothesis	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Use basic scientific language and processes and be able to distinguish between scientific and non-scientific explanations	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Identify unifying principles and repeatable patterns in nature, the values of natural diversity, and apply them to problems or issues of a scientific nature	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).

Section 7

Name of Person Completing This Form: Stephen Lukacs, Ph.D. Date: December 17, 2010

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	CHM 4410
COURSE TITLE:	Physical Chemistry I
PREREQUISITE(S):	CHM 3120C (Elementary Analytical Chemistry with lab), MAC 2311 (Calculus with Analytical Geometry I), and PHY 2054C (General Physics II with lab) all with a grade of "C" or better
COREQUISITE(S):	None
CREDIT HOURS:	3
CONTACT HOURS/WEEK:	3
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	3
Laboratory: Other _____:	
FACULTY WORKLOAD POINTS:	3
STANDARDIZED CLASS SIZE ALLOCATION:	35

CATALOG COURSE DESCRIPTION:

This course will cover gases, solutions, thermodynamics, chemical equilibria, and kinetics with an added emphasis on how these chemical principles influence enzymes and other biological macromolecules and processes.

SUGGESTED TEXT(S):

Chang, Raymond, Physical Chemistry for the Biosciences, University Science Books, Latest edition

Kuhn, Hans, Forsterling, Horst-Dieter, Waldeck, David H., Principles of Physical Chemistry, John Wiley and Sons, Latest edition

McQuarrie, Donald A., Simon, John D., Physcial Chemistry, A Molecular Approach, University Science Books, Latest edition

Silbey, Robert J., Alberty, Robert A., Bawendi, Moungi G., Physical Chemistry, John Wiley and Sons, Latest edition

Chang, Raymond, Physical Chemistry for the Chemical and Biological Sciences, University Science Books, Latest edition

Levine, Ira N., Physical Chemistry, McGraw Hill, Latest edition

Engel, Thomas, Reid, Philip, Physical Chemistry, Prentice Hall, Latest edition

IMPLEMENTATION DATE: Fall Term, 2011 (20121)

REVIEW OR MODIFICATION DATE:

COURSE TOPICS		CONTACT HOURS PER TOPIC
I	Introduction	1
II.	Gases	5
	e. Ideal	
	f. Real	
	g. Kinetic Theory	
	h. Maxwell Distribution	
III.	Thermodynamics	12
	a. First Law	
	b. Second Law	
	c. Third Law	
	d. Gibbs Free Energy	
IV.	Solutions	9
	a. Ideal	
	b. Real	
	c. Electrolytic	
	d. Colligative	
	e. Acids & Bases	
	f. Electrochemistry	
V.	Chemical Equilibria	9
VI.	Chemical Kinetics	9
	a. Chemical	
	b. Enzymatic	
	Total Lecture Hours:	45

Florida State College At Jacksonville

Course Learning Outcomes & Assessment

NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1

COURSE PREFIX AND NUMBER: CHM 4410

SEMESTER CREDIT HOURS (CC): 3
CONTACT HOURS (NCC):

COURSE TITLE: Physical Chemistry I

Section 2

TYPE OF COURSE: (Click on the box to check all that apply)

- ☐ AA Elective
- ☐ AS Required Professional Course
- ☐ College Prep
- ☐ AS Professional Elective
- ☐ AAS Required Professional Course
- ☐ Technical Certificate
- ☒ Other B.S. Biomedical Sciences Upper Division Core Course
- ☐ PSAV
- ☐ Apprenticeship
- ☐ General Education: (For General Education courses, you must also complete Section 3 and Section 7)

Section 3 (If applicable)

INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

- ☐ Communications
- ☐ Social & Behavioral Sciences
- ☐ Mathematics
- ☐ Natural Sciences
- ☐ Humanities

Section 4

INTELLECTUAL COMPETENCIES:

- ☐ Reading
- ☐ Speaking
- ☒ Critical Analysis
- ☒ Quantitative Skills
- ☒ Scientific Method of Inquiry
- ☐ Writing
- ☐ Listening
- ☐ Information Literacy
- ☐ Ethical Judgment
- ☐ Working Collaboratively

Section 5

STATE GENERAL EDUCATION LEARNING OUTCOME AREA

- ☐ Communication
- ☐ Critical Thinking
- ☐ Scientific and Quantitative Reasoning
- ☐ Information Literacy
- ☐ Global Sociocultural Responsibility

Section 6 **LEARNING OUTCOMES**		***Type of Outcome: Gen. Ed, Program, Course***	**METHOD OF ASSESSMENT**
•	Demonstrate knowledge of ideal and real gases and solutions	Course	Methods of assessment can include exams, quizzes, papers, lab reports, lab practicals, and/or oral presentations
•	Demonstrate knowledge of chemical thermodynamics	Course	Methods of assessment can include exams, quizzes, papers, lab reports, lab practicals, and/or oral presentations
•	Demonstrate knowledge of chemical equilibria and kinetics	Course	Methods of assessment can include exams, quizzes, papers, lab reports, lab practicals, and/or oral presentations
•	Demonstrate the application of interdisciplinary natural science curricula to biomedical sciences.	Program	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the

			answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Conduct an experiment, collect and analyze data, and interpret results in a laboratory setting	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Analyze, evaluate, and test a scientific hypothesis	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Use basic scientific language and processes and be able to distinguish between scientific and non-scientific explanations	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Identify unifying principles and repeatable patterns in nature, the values of natural diversity, and apply them to problems or issues of a scientific nature	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).

Section 7

Name of Person Completing This Form: Stephen Lukacs, Ph.D. Date: December 17, 2010

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	CHM 4411
COURSE TITLE:	Physical Chemistry II
PREREQUISITE(S):	CHM4410 (Physical Chemistry I) with a grade of "C" or better
COREQUISITE(S):	
CREDIT HOURS:	3
CONTACT HOURS/WEEK:	3
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	3
Laboratory:	
Other _____:	
FACULTY WORKLOAD POINTS:	3
STANDARDIZED CLASS SIZE ALLOCATION:	35

CATALOG COURSE DESCRIPTION:

This course will cover the foundations of quantum mechanics, spectroscopy, chemical bonding and intermolecular forces, and photochemistry with an emphasis on how theses principles apply to protein structure and folding and other biological macromolecules and processes.

SUGGESTED TEXT(S):

Chang, Raymond, Physical Chemistry for the Biosciences, University Science Books, Latest edition

Kuhn, Hans, Forsterling, Horst-Dieter, Waldeck, David H., Principles of Physical Chemistry, John Wiley and Sons, Latest edition

SUGGESTED TEXT(S):	McQuarrie, Donald A., Simon, John D., Physcial Chemistry, A Molecular Approach, University Science Books, Latest edition Silbey, Robert J., Alberty, Robert A., Bawendi, Moungi G., Physical Chemistry, John Wiley and Sons, Latest edition Chang, Raymond, Physical Chemistry for the Chemical and Biological Sciences, University Science Books, Latest edition Levine, Ira N., Physical Chemistry, McGraw Hill, Latest edition Engel, Thomas, Reid, Philip, Physical Chemistry, Prentice Hall, Latest edition
IMPLEMENTATION DATE:	Fall Term, 2011 (20121)
REVIEW OR MODIFICATION DATE:	

COURSE TOPICS	CONTACT HOURS PER TOPIC
I. Introduction	1
II. Quantum Mechanics	12
a. Blackbody Radiation and the Photoelectric Effect	
b. Particle-Wave Duality	
c. Planck, Einstein, Bohr, de Broglie, Heisenberg, Schrodinger, etc.	
d. Particle in a 1D Box	
III. Spectroscopy	8
a. The Harmonic Oscillator and Rigid Rotator	
b. The Hydrogen Atom and Molecule	
c. Absorption and Emission Spectroscopies	
d. Microwave, Infrared, Visible, UV, Fluorescence, Phosphorescence, etc., Spectroscopies	10
IV. Chemical Bonding	
a. Lewis Structures	
b. Valence Bond Theory	
c. Electronegativity and Polarization	
d. Molecular Orbital Theory	
e. Diatomic Molecules	
f. Resonance and Electron Delocalization	
V. Intermolecular Forces	8
a. Intermolecular Interactions and their types	
b. Hydrogen Bonding	
c. Water	
d. Hydrophobic Interactions	
VI. Photochemistry	6
a. Primary versus Secondary Processes	
b. Photosynthesis	
c. Vision	
Total Lecture Hours:	45

Florida State College At Jacksonville

Course Learning Outcomes & Assessment

NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1

COURSE PREFIX AND NUMBER: CHM 4411

SEMESTER CREDIT HOURS (CC): 3
CONTACT HOURS (NCC):

COURSE TITLE: Physical Chemistry II

Section 2

TYPE OF COURSE: (Click on the box to check all that apply)

- ☐ AA Elective
- ☐ AS Required Professional Course
- ☐ College Prep
- ☐ AS Professional Elective
- ☐ AAS Required Professional Course
- ☐ Technical Certificate
- ☒ Other B.S. Biomedical Sciences Upper Division Core Course
- ☐ PSAV
- ☐ Apprenticeship
- ☐ General Education: (For General Education courses, you must also complete Section 3 and Section 7)

Section 3 (If applicable)

INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

- ☐ Communications
- ☐ Social & Behavioral Sciences
- ☐ Mathematics
- ☐ Natural Sciences
- ☐ Humanities

Section 4

INTELLECTUAL COMPETENCIES:

- ☐ Reading
- ☐ Speaking
- ☒ Critical Analysis
- ☒ Quantitative Skills
- ☒ Scientific Method of Inquiry
- ☐ Writing
- ☐ Listening
- ☐ Information Literacy
- ☐ Ethical Judgment
- ☐ Working Collaboratively

Section 5

STATE GENERAL EDUCATION LEARNING OUTCOME AREA

- ☐ Communication
- ☐ Critical Thinking
- ☐ Scientific and Quantitative Reasoning
- ☐ Information Literacy
- ☐ Global Sociocultural Responsibility

Section 6 **LEARNING OUTCOMES**		***Type of Outcome: Gen. Ed, Program, Course***	**METHOD OF ASSESSMENT**
•	Demonstrate knowledge of quantum mechanics, spectroscopy, and chemical bonding	Course	Methods of assessment can include exams, quizzes, papers, lab reports, lab practicals, and/or oral presentations
•	Demonstrate knowledge of intermolecular forces	Course	Methods of assessment can include exams, quizzes, papers, lab reports, lab practicals, and/or oral presentations
•	Demonstrate knowledge of photochemistry	Course	Methods of assessment can include exams, quizzes, papers, lab reports, lab practicals, and/or oral presentations
•	Demonstrate the application of interdisciplinary natural science curricula to biomedical sciences.	Program	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the

			answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Conduct an experiment, collect and analyze data, and interpret results in a laboratory setting	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Analyze, evaluate, and test a scientific hypothesis	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Use basic scientific language and processes and be able to distinguish between scientific and non-scientific explanations	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Identify unifying principles and repeatable patterns in nature, the values of natural diversity, and apply them to problems or issues of a scientific nature	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).

Section 7

Name of Person Completing This Form: Stephen Lukacs, Ph.D. Date: December 17, 2010

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	CHM 4932
COURSE TITLE:	Selected Topics in Chemistry
PREREQUISITE(S):	Junior Status and CHM 2211C (Organic Chemistry II with lab) with a grade of "C" or better
COREQUISITE(S):	None
CREDIT HOURS:	3
CONTACT HOURS/WEEK:	3
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	3
Laboratory:	
Other _____:	
FACULTY WORKLOAD POINTS:	3
STANDARDIZED CLASS SIZE ALLOCATION:	35

CATALOG COURSE DESCRIPTION:
This is an advanced undergraduate course designed for majors in the natural sciences that introduces the principles of organometallic chemistry. Topics will include general properties of organometallic complexes, various structures and types of bonding, coordination chemistry of different ligand types, fundamental reactions and mechanisms, organometallic catalysis, and special topics including biochemical catalysis. At the end of this course, students should demonstrate skill in reading and critiquing scientific articles within this subject area.

SUGGESTED TEXT(S):	Robert H. Crabtree. The Organometallic Chemistry of the Transition Metals, Wiley-Interscience, Latest edition
	Christoph Elschenbroich, Organometallics, Wiley, Latest edition
	John Hartwig, Organotransition Metal Chemistry: From Bonding to Catalysis, University Science Books, Latest edition
IMPLEMENTATION DATE:	Fall Term, 2011 (20121)
REVIEW OR MODIFICATION DATE:	

COURSE TOPICS	CONTACT HOURS PER TOPIC
I. Syllabus Overview and Introduction to Organometallics a. Coordination Chemistry b. Trans Effect c. Hard-soft Theory d. Crystal and Ligand Field Theories e. σ-Bonding, π-Bonding and Backbonding	3
II. Ligand Systems and Electron Counting a. Types of Ligands b. Oxidation States and d-Electron Configurations c. 18-Electron "Rule" d. Coordination Number and Geometry	6
III. Specific Ligand Types a. Carbonyls, Phosphines and Hydrides b. Alkyls and Aryls c. Carbenes and Carbynes d. Allyl, Cyclobutadienes, Arenes and Cyclopentadienyl e. Metal-Metal Bonding	8
IV. Fundamental Organometallic Reactions a. Ligand Substitution Reactions (3) b. Oxidative Addition/Reductive Elimination Reactions (3) c. Intramolecular Insertion/Elimination Reactions	8
V. Catalytic Processes a. Symmetric and Asymmetric Hydrogenations b. Carbonylations c. Polymerizations and Cyclizations	8
VI. Applications a. Alkene Metathesis b. Coenzyme B-12 c. Nitrogen Fixation d. Nickel Enzymes e. Biomedical Applications	8
VII. Special Topics	5
Total Hours	45

Florida State College At Jacksonville

Course Learning Outcomes & Assessment

NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1	
COURSE PREFIX AND NUMBER: CHM 4932	**SEMESTER CREDIT HOURS (CC):** 3 CONTACT HOURS (NCC): __
COURSE TITLE: Selected Topics in Chemistry (Fundamentals and Applications of Organometallic Chemistry)	

Section 2

TYPE OF COURSE: (Click on the box to check all that apply)

- ☐ AA Elective
- ☐ AS Required Professional Course
- ☐ College Prep
- ☐ AS Professional Elective
- ☐ AAS Required Professional Course
- ☐ Technical Certificate
- ☒ Other B.S. Biomedical Sciences Upper Division Concentration in Biochemistry
- ☐ PSAV
- ☐ Apprenticeship
- ☐ General Education: (For General Education courses, you must also complete Section 3 and Section 7)

Section 3 (If applicable)

INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

- ☐ Communications
- ☐ Social & Behavioral Sciences
- ☐ Mathematics
- ☐ Natural Sciences
- ☐ Humanities

Section 4

INTELLECTUAL COMPETENCIES:

- ☐ Reading
- ☐ Speaking
- ☒ Critical Analysis
- ☐ Quantitative Skills
- ☒ Scientific Method of Inquiry
- ☐ Writing
- ☐ Listening
- ☐ Information Literacy
- ☐ Ethical Judgment
- ☐ Working Collaboratively

Section 5

STATE GENERAL EDUCATION LEARNING OUTCOME AREA

- ☐ Communication
- ☐ Critical Thinking
- ☐ Scientific and Quantitative Reasoning
- ☐ Information Literacy
- ☐ Global Sociocultural Responsibility

Section 6 **LEARNING OUTCOMES**		***Type of Outcome: Gen. Ed, Program, Course***	**METHOD OF ASSESSMENT**
•	Demonstrate and apply knowledge of the fundamental theories, trends, and properties related to organometallic complexes.	Course	Methods of assessment can include exams, quizzes, papers, and/or oral presentations
•	Demonstrate knowledge of the fundamental types of organometallic reactions and catalytic processes.	Course	Methods of assessment can include exams, quizzes, papers, and/or oral presentations
•	Students will demonstrate the application of interdisciplinary natural science curricula to biomedical sciences.	Program	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not

			yet competent) to 3 (competent).
•	Students will value the larger social impact of biomedical sciences.	Program	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Conduct an experiment, collect and analyze data, and interpret results in a laboratory setting	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Analyze, evaluate, and test a scientific hypothesis	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Use basic scientific language and processes and be able to distinguish between scientific and non-scientific explanations	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Identify unifying principles and repeatable patterns in nature, the values of natural diversity, and apply them to problems or issues of a scientific nature	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Analyze and discuss the impact of scientific discovery on human thought and behavior	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).

Section 7

Name of Person Completing This Form: Julia Marie Keller Date: 12/17/2010

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	HSA 3113
COURSE TITLE:	Health Care Trends and Issues
PREREQUISITE(S):	ENC1101 (English Composition I) with a grade of "C" or better
COREQUISITE(S):	None
CREDIT HOURS:	3
CONTACT HOURS/WEEK:	3
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	3
Laboratory:	0
Other _____:	
FACULTY WORKLOAD POINTS:	3
STANDARDIZED CLASS SIZE ALLOCATION:	35

CATALOG COURSE DESCRIPTION:
This course provides the student with the knowledge of key issues and trends of the U.S. health care system. This course promotes the analysis of key health care issues with an emphasis on health care policies and initiatives that shape health care delivery. An analysis of the current structure of profit versus non-profit health care organizations, financing health care, and the impact of financial stakeholders will be emphasized. Ethical issues that develop when government, the private sector, and consumers vie to influence health care are presented as a component of evidence-based policy revisions. Students are introduced to the different types of research, its focus, methods, and the nature of their subsequent findings.

SUGGESTED TEXT(S):	Anderson, Rice, Kominski, Changing the U.S. Health Care System. Key Issues in Policyand Management, Wiley Publisher, Latest edition
IMPLEMENTATION DATE:	Fall Term, 2011 (20121)
REVIEW OR MODIFICATION DATE:	

COURSE TOPICS	CONTACT HOURS PER TOPIC
I. Access to Health Care	3
II. Disparities in Health Care A. Ethnic B. Age C. Gender D. Religion	6
III. Public Policies to Extend Health Care Coverage A. Medicare B. Medicaid	3
IV. Measuring Health Care Costs and Trends	3
V. Containing Health Care costs A. General B. Pharmaceutical	6
VI. Measuring Outcomes and Health-Related Quality of Life A. Evaluating Quality B. Public Release of Information	6
VII. Long-Term Care and Populations A. Children and Families B. Mental Health Services and Policy Issues C. Women's Health D. Homeless Care E. Public Health Challenges	9
VIII. Managed Care and Competition	3
IX. Public Health Services	3
X. Ethical Issues in Public Health Services	3
Total Hours	45

Florida State College At Jacksonville

Course Learning Outcomes & Assessment

NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1	
COURSE PREFIX AND NUMBER: HSA 3113	**SEMESTER CREDIT HOURS (CC):** 3 CONTACT HOURS (NCC): ____
COURSE TITLE: Health Care Trends and Issues	

Section 2

TYPE OF COURSE: (Click on the box to check all that apply)

- ☐ AA Elective
- ☐ AS Required Professional Course
- ☐ College Prep
- ☐ AS Professional Elective
- ☐ AAS Required Professional Course
- ☐ Technical Certificate
- ☒ Other B.S. Biomedical Sciences Upper Division Core Course
- ☐ PSAV
- ☐ Apprenticeship
- ☐ General Education: (For General Education courses, you must also complete Section 3 and Section 7)

Section 3 (If applicable)

INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

- ☐ Communications
- ☐ Social & Behavioral Sciences
- ☐ Mathematics
- ☐ Natural Sciences
- ☐ Humanities

Section 4

INTELLECTUAL COMPETENCIES:

- ☐ Reading
- ☐ Speaking
- ☒ Critical Analysis
- ☐ Quantitative Skills
- ☐ Scientific Method of Inquiry
- ☐ Writing
- ☐ Listening
- ☐ Information Literacy
- ☒ Ethical Judgment
- ☐ Working Collaboratively

Section 5

STATE GENERAL EDUCATION LEARNING OUTCOME AREA

- ☐ Communication
- ☐ Critical Thinking
- ☐ Scientific and Quantitative Reasoning
- ☐ Information Literacy
- ☐ Global Sociocultural Responsibility

Section 6 **LEARNING OUTCOMES**		***Type of Outcome: Gen. Ed, Program, Course***	**METHOD OF ASSESSMENT**
•	Evaluate and interpret policy issues and financial trends related to health care coverage and access	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Demonstrate knowledge of analyzing data related to the quality of health care in the United States	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Demonstrate knowledge of ethical issues influencing public health care services	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Analyze and discuss the impact of scientific discovery on human thought and behavior	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the

			answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Students will demonstrate the application of interdisciplinary natural science curricula to biomedical sciences.	Program	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Students will value the larger social impact of biomedical sciences.	Program	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).

Section 7

Name of Person Completing This Form: Sondra Evans Date: 12/17/10

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	HSC 4653
COURSE TITLE:	Ethical Issues in Health Sciences
PREREQUISITE(S):	Junior Level Standing
COREQUISITE(S):	None
CREDIT HOURS:	3
CONTACT HOURS/WEEK:	3
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	3
Laboratory:	
Other _____:	
FACULTY WORKLOAD POINTS:	3
STANDARDIZED CLASS SIZE ALLOCATION:	35

CATALOG COURSE DESCRIPTION:
This course will focus on the ethical issues that affect interdisciplinary health care/biomedical research and health care/biomedical practices. Students will be introduced to the ethical issues encountered in health care and biomedical settings as they specifically relate to health care delivery, in health professions, health education, and biomedical research. Policy and ethical decision making will be investigated. Case studies will be integrated within the course to enhance critical thinking, communications, ethical decision making, and to foster an interdisciplinary approaches to addressing health and biomedical issues.

SUGGESTED TEXT(S):

Rosemarie Tong, New Perspectives in Healthcare Ethics: An Interdisciplinary and Crosscultural Approach, Pearson, Latest edition

N.S. Jecker, A.R. Jonsen, R.A. Pearlman, Bioethics: An Introduction to the History, Methods, and Practice, Jones & Bartlett, Latest edition

R. M. Veatch, A.M. Haddad and D.C. English, Case Studies in Biomedical Ethics; Decision-Making, Principles, and Cases, Oxford Press, Latest edition

IMPLEMENTATION DATE: Fall Term, 2011 (20121)

REVIEW OR MODIFICATION DATE:

COURSE TOPICS	CONTACT HOURS PER TOPIC
I. An Introduction to Biomedical/Health Ethics	6
A. Ethical Theories and Principles in Health Care	
B. The Nature of Morality	
C. Consequentialist (Teleological) Theories of Morality	
D. Nonconsequentialist (Deontological) Theories of Morality	
E. Virtue Ethics	
F. Absolutism versus Relativism	
G. Freedom versus Determinism	
II. The Emergence of Biomedical/Health Ethics as Discipline and Discourse	3
III. The Challenge of Ethical Relativism	3
IV. The Methods of Philosophy	3
A. Institutional Review Board (IRB)	
B. Institutional Animal Care and Use Committee (IACUC)	
V. The Challenge of Using Biomedical/Health Ethics Methods in a Clinical Settings	6
A. The Health Care Professional-Patient Relationship	
B. Organ Transplantation: Individual Allocation Decisions	
C. Informed Consent.	
VI. Ethical Topics at the Beginning of Life	9
A. Abortion	
B. Reproduction-Assisting Technologies: Donor Insemination, In-vitro Fertilization, and Beyond	
C. Genetic Screening, Counseling, and Therapy	
D. Therapeutic Cloning, Reproductive Cloning, and Ectogenesis	
VII. Ethical Topics at the End of Life	9
A. The Aging Process and Long-Term Health Care	
B. Euthanasia, Assisted Suicide, and Palliative Care	
VIII. Cultural Assumptions in Health Ethics	6
A. Biological Givens or Social Constructions?	
B. Equality and Rights in Medical Care	
Total Hours	45

Florida State College At Jacksonville

Course Learning Outcomes & Assessment

NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1	
COURSE PREFIX AND NUMBER: HSC 4653	**SEMESTER CREDIT HOURS (CC):** 3 CONTACT HOURS (NCC): ____
COURSE TITLE: Ethical Issues in Health Sciences	

Section 2

TYPE OF COURSE: (Click on the box to check all that apply)

- ☐ AA Elective
- ☐ AS Required Professional Course
- ☐ College Prep
- ☐ AS Professional Elective
- ☐ AAS Required Professional Course
- ☐ Technical Certificate
- ☒ Other B.S. Biomedical Sciences Upper Division Core Course
- ☐ PSAV
- ☐ Apprenticeship
- ☐ General Education: (For General Education courses, you must also complete Section 3 and Section 7)

Section 3 (If applicable)

INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

- ☐ Communications
- ☐ Social & Behavioral Sciences
- ☐ Mathematics
- ☐ Natural Sciences
- ☐ Humanities

Section 4

INTELLECTUAL COMPETENCIES:

- ☐ Reading
- ☐ Speaking
- ☒ Critical Analysis
- ☐ Quantitative Skills
- ☐ Scientific Method of Inquiry
- ☐ Writing
- ☐ Listening
- ☐ Information Literacy
- ☒ Ethical Judgment
- ☐ Working Collaboratively

Section 5

STATE GENERAL EDUCATION LEARNING OUTCOME AREA

- ☐ Communication
- ☐ Critical Thinking
- ☐ Scientific and Quantitative Reasoning
- ☐ Information Literacy
- ☐ Global Sociocultural Responsibility

Section 6 **LEARNING OUTCOMES**		***Type of Outcome: Gen. Ed, Program, Course***	**METHOD OF ASSESSMENT**
•	Distinguish among the philosophical theories that represent principles of ethical decision-making in health and biomedical science	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Construct a well-reasoned response to moral problems in health and biomedical sciences.	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Identify major principles that guide ethical decision-making in health and biomedical science related situations	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Demonstrate an awareness of and sensitivity to cultural and ethnic	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations

	differences among various groups.		
•	Students will demonstrate the application of interdisciplinary natural science curricula to biomedical sciences.	Program	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers using a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Students will value the larger social impact of biomedical sciences.	Program	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers using a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Use basic scientific language and processes and be able to distinguish between scientific and non-scientific explanations	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers using a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Identify unifying principles and repeatable patterns in nature, the values of natural diversity, and apply them to problems or issues of a scientific nature	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers using a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Analyze and discuss the impact of scientific discovery on human thought and behavior	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers using a common rubric with scores from 1 (not yet competent) to 3 (competent).

Section 7

Name of Person Completing This Form: James Stittsworth Date: 12/10/10

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	HSC 4730
COURSE TITLE:	Health Science Research
PREREQUISITE(S):	STA 2023 (Elementary Statistics) with a grade of "C" or better **or** MAC 2311 (Calculus with Analytical Geometry I) with a grade of "C" or better
COREQUISITE(S):	None
CREDIT HOURS:	3
CONTACT HOURS/WEEK:	3
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	3
Laboratory:	
Other _____:	
FACULTY WORKLOAD POINTS:	3
STANDARDIZED CLASS SIZE ALLOCATION:	35

CATALOG COURSE DESCRIPTION:

This course covers the principles of research methodology as it applies to contemporary healthcare. Topics covered include the various designs of research studies, basic techniques in qualitative and quantitative research, applying research to solve health care problems, and evaluating contemporary health related research reports, peer reviewed articles, and research proposals.

SUGGESTED TEXT(S):

S. Polgar and S.A. Thomas, Introduction to Research in the Health Sciences, 5th edition. Elsevier, Latest edition

IMPLEMENTATION DATE: Fall Term, 2011 (20121)

REVIEW OR MODIFICATION DATE:

COURSE TOPICS	CONTACT HOURS PER TOPIC
I. Role of research in contemporary healthcare	3
II. The scientific method in health sciences research a. Identifying a research problem b. Choosing the appropriate study design c. Collecting, analyzing and conveying data/findings	5
III. Research planning a. Institutional Review Board (IRB) requirements b. Sampling methods and external validity c. Causal research and internal validity	6
IV. Introduction to study designs a. Surveys and quasi-experimental designs b. Case control studies c. Case series and cross sectional studies d. Community-based participatory research	7
V. Introduction to qualitative research techniques a. Design of questionnaires b. Interview techniques c. Collecting and analyzing interview data	7
VI. Introduction to Quantitative Research Techniques a. Descriptive statistics b. Inferential statistics c. Probability and sampling distributions	7
VII. Critical evaluation of research studies and proposals a. Methods for searching scientific literature b. Assessing the quality of sources/peer reviewed literature c. Assessing the quality of a proposal	10
Total hours	45

Florida State College At Jacksonville

Course Learning Outcomes & Assessment

NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1	
COURSE PREFIX AND NUMBER: HSC 4730	**SEMESTER CREDIT HOURS (CC):** 3 CONTACT HOURS (NCC): ____
COURSE TITLE: Health Science Research	

Section 2

TYPE OF COURSE: (Click on the box to check all that apply)

- ☐ AA Elective
- ☐ AS Required Professional Course
- ☐ College Prep
- ☐ AS Professional Elective
- ☐ AAS Required Professional Course
- ☐ Technical Certificate
- ☒ Other B.S. Biomedical Sciences Upper Division Core Course
- ☐ PSAV
- ☐ Apprenticeship
- ☐ General Education: (For General Education courses, you must also complete Section 3 and Section 7)

Section 3 (If applicable)

INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

- ☐ Communications
- ☐ Social & Behavioral Sciences
- ☐ Mathematics
- ☐ Natural Sciences
- ☐ Humanities

Section 4

INTELLECTUAL COMPETENCIES:

- ☐ Reading
- ☐ Speaking
- ☒ Critical Analysis
- ☐ Quantitative Skills
- ☒ Scientific Method of Inquiry
- ☐ Writing
- ☐ Listening
- ☐ Information Literacy
- ☒ Ethical Judgment
- ☐ Working Collaboratively

Section 5

STATE GENERAL EDUCATION LEARNING OUTCOME AREA ***(This is not a general education course)***

- ☐ Communication
- ☐ Critical Thinking
- ☐ Scientific and Quantitative Reasoning
- ☐ Information Literacy
- ☐ Global Sociocultural Responsibility

Section 6 **LEARNING OUTCOMES**		***Type of Outcome: Gen. Ed, Program, Course***	**METHOD OF ASSESSMENT**
•	Describe the impact of research on contemporary healthcare	Course	Methods of assessment can include exams, quizzes, papers and/or oral presentations
•	Describe the different types of study Designs and identify what study design Would be the most appropriate to apply to answer a given research question	Course	Methods of assessment can include exams, quizzes, papers and/or oral presentations
•	Identify factors that threaten internal and external validity of a study	Course	Methods of assessment can include exams, quizzes, papers and/or oral presentations

•	Analyze data and interpret results	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Use basic scientific language and processes and be able to distinguish between scientific and non-scientific explanations	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Identify unifying principles and repeatable patterns in nature, the values of natural diversity, and apply them to problems or issues of a scientific nature	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Students will value the larger social impact of biomedical sciences.	Program	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).

Section 7

Name of Person Completing This Form: Lourdes Norman Date: 12/17/2010

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMB:	IDS 4936
COURSE TITLE:	Biomedical Degree Capstone
PREREQUISITE(S):	Completion of all upper level core courses for Biomedical Sciences B.S. program with a grade of "C" or better
COREQUISITE(S):	None
CREDIT HOURS:	3
CONTACT HOURS/WEEK:	3
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	3
Laboratory:	
Other _____:	
FACULTY WORKLOAD POINTS:	3
STANDARDIZED CLASS SIZE ALLOCATION:	35

CATALOG COURSE DESCRIPTION: This course focuses on the integration of knowledge, skills, and abilities learned in the bachelor's degree in biomedical sciences through a capstone project. This project will expose students to a multidisciplinary approach of learning science by requiring students to analyze social, economic, ethical, scientific, and professional aspects of their chosen research topic.

SUGGESTED TEXT(S):	No textbook required
IMPLEMENTATION DATE:	Fall Term, 2011 (20121)
REVIEW OR MODIFICATION DATE:	

COURSE TOPICS	CONTACT HOURS PER TOPIC
I. Introduction and Overview	2
II. Capstone Project	37
a. Topic selection and review of topic	2
b. Description of the context of the study	2
c. Concept paper part 1: research problem	4
d. Concept paper Part 2: review of current literature	8
e. Concept paper part 3: research questions	8
f. Submission and approval of concept paper	1
g. Concept paper part 4: Interpretation of current body of literature	7
h. Concept paper part 5: Recommendations and submission of final paper	7
III. Oral presentation of capstone project	6
Total Hours	45

Florida State College At Jacksonville

Course Learning Outcomes & Assessment

NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1	
COURSE PREFIX AND NUMBER: IDS 4936	**SEMESTER CREDIT HOURS (CC):** 3 CONTACT HOURS (NCC): ____
COURSE TITLE: Biomedical Degree Capstone	

Section 2

TYPE OF COURSE: (Click on the box to check all that apply)

- ☐ AA Elective
- ☐ AS Required Professional Course
- ☐ College Prep
- ☐ AS Professional Elective
- ☐ AAS Required Professional Course
- ☐ Technical Certificate
- ☒ Other B.S. Biomedical Sciences Upper Division Core Course ☐ PSAV
- ☐ Apprenticeship
- ☐ General Education: (For General Education courses, you must also complete Section 3 and Section 7)

Section 3 (If applicable)

INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

- ☐ Communications
- ☐ Social & Behavioral Sciences
- ☐ Mathematics
- ☒ Natural Sciences
- ☐ Humanities

Section 4

INTELLECTUAL COMPETENCIES:

- ☐ Reading
- ☐ Speaking
- ☒ Critical Analysis
- ☒ Quantitative Skills
- ☒ Scientific Method of Inquiry
- ☐ Writing
- ☐ Listening
- ☐ Information Literacy
- ☐ Ethical Judgment
- ☐ Working Collaboratively

Section 5

STATE GENERAL EDUCATION LEARNING OUTCOME AREA

- ☐ Communication
- ☐ Critical Thinking
- ☐ Scientific and Quantitative Reasoning
- ☐ Information Literacy
- ☐ Global Sociocultural Responsibility

Section 6 **LEARNING OUTCOMES**		***Type of Outcome: Gen. Ed, Program, Course***	**METHOD OF ASSESSMENT**
•	Apply analytical, critical thinking, and problem solving skills to develop a research topic	Course/Program	Case study, assignment or research project and oral presentation
•	Apply analytical, critical thinking, and problem solving skills to identify current peer reviewed literature that relates to their research topic.	Course/Program	Case study, assignment or research project and oral presentation
•	Apply analytical, critical thinking, and problem solving skills to identify review to current literature and draw conclusion from it.	Course/Program	Case study, assignment or research project and oral presentation

•	Apply analytical, critical thinking, and problem solving skills to clearly present the findings of the research project and make future recommendations based on the conclusion of the research.	Course/Program	Case study, assignment or research project and oral presentation

Section 7

Name of Person Completing This Form: Jose Fierro Date: 12/14/2010

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	MCB 3020C
COURSE TITLE:	Basic Biology of Microorganisms
PREREQUISITE(S):	CHM 2045C (General Chemistry and Qualitative Analysis I with lab) with a grade of "C" or better and BSC 2010C (Principles of Biology I with lab) with a grade of "C" or better
COREQUISITE(S):	None
CREDIT HOURS:	4
CONTACT HOURS/WEEK:	6
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	3
Laboratory:	3
Other _____:	
FACULTY WORKLOAD POINTS:	5.1
STANDARDIZED CLASS SIZE ALLOCATION:	27 (laboratory safety considerations)

CATALOG COURSE DESCRIPTION:

This course is designed for biology or other natural sciences majors and will cover the history and development of microbiology; prokaryotic structure and function; microbial growth and metabolism; prokaryotic genetics; methods for control of microorganisms; taxonomy and classification of microorganisms; viruses and viral replication; medical microbiology; microbial ecology; food microbiology; and, industrial microbiology. Laboratory work will include sterile techniques and isolation of microbes; microscopic examination of microbes; growth of microbes; measurement of microbial growth; physiological testing of microbes; food microbiology; medical and clinical microbiology; microbial genetics; microbial ecology; and, identification of unknown microbes.

SUGGESTED TEXT(S):

Talaro, K.P., Foundations in Microbiology, McGraw-Hill publishers, Latest edition

Norton, Cynthia F. Microbiology, Addison Wesley, Latest edition

Tortora, Funke, & Case. Microbiology – An introduction, Pearson, Latest edition

Leboffe, M.J. and B.E. Pierce. Photographic Atlas for the Microbiology Laboratory, Morton publishers, Latest edition

Madigan, *et al*. Brock Biology of Microorganisms, Pearson, Latest edition

Pommerville, J.C. Alcamo's Fundamentals of Microbiology, Jones and Bartlett Publishers, Latest edition

Wheelis, Principles of Modern Microbiology, Jones and Bartlett Publishers, Latest edition.

IMPLEMENTATION DATE: Fall Term, 2011 (20121)

REVIEW OR MODIFICATION DATE:

COURSE TOPICS		CONTACT HOURS PER TOPIC
I.	Introduction to Microbiology	1
II.	The Chemistry of Biology	2
III.	Microbiology in the Laboratory	2
IV.	Prokaryotic Microorganisms	3
V.	Eukaryotic Microorganisms	3
VI.	Introduction to Viruses	2
VII.	Microbial Nutrition and Growth	3
VIII.	Microbial Genetics	3
IX.	Physical and Chemical Control of Microbes	3
X.	The Elements of Chemotherapy	3
XI.	Microbe-Human Interactions	2
XII.	Host Defenses	2
XIII.	Bacteria and Disease	3
XIV.	Fungi and Disease	2
XV.	Viruses and Disease	2
XVI.	Protozoans and Disease	2
XVII.	Environmental Microbiology	2
XVIII.	Microbial Ecology	2
XIX.	The Roles of Microbes in Elemental Cycles	2
XX.	Applied and Industrial Microbiology	1
	Total lecture hours:	45

LABORATORY TOPICS (suggested completion 15 out of 20 lab modules for a semester total of 45)

		CONTACT HOURS PER TOPIC
I.	Basic Principles of Aseptic Technique	3
II.	Basic Culture Methods	3
III.	The Gram Stain Procedure	3
IV.	The Streak Plate Method	2
V.	The Plate Count Procedure	2
VI.	Transmission of Microbes on Human Skin and Fomites	2
VII.	Normal Microflora of Human Skin and Throat	2
VIII.	Identification of Pathogenic Staphylococci	2
IX.	Identification of Pathogenic Streptococci	2
X.	Microorganisms and Tooth Decay	2
XI.	Microorganisms of the Human Gastrointestinal Tract	2
XII.	Microbiological Analysis of Urine Specimens	2
XIII.	Survivability of *Pseudomonas* species	2
XIV.	The Kirby-Bauer/Disk Diffusion Technique	3
XV.	Identification of an Unknown Bacterium	3
XVI.	Microbial Production of Sauerkraut	2
XVII.	Microbial Production of Yogurt	2
XVIII.	Microbiological Analysis of Food Samples	2
XIX.	Microbiological Analysis of Water Samples	2
XX.	Mutagenic Properties of Ultraviolet (UV) radiation	2
	Total laboratory hours	45

Florida State College At Jacksonville

Course Learning Outcomes & Assessment

NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1

COURSE PREFIX AND NUMBER: MCB 3020C

SEMESTER CREDIT HOURS (CC): 4
CONTACT HOURS (NCC): _____

COURSE TITLE: Basic Biology of Microorganisms

Section 2

TYPE OF COURSE: (Click on the box to check all that apply)

- ☐ AA Elective
- ☐ AS Required Professional Course
- ☐ College Prep
- ☐ AS Professional Elective
- ☐ AAS Required Professional Course
- ☐ Technical Certificate
- ☒ Other B.S. Biomedical Sciences Upper Division Core Course
- ☐ PSAV
- ☐ Apprenticeship
- ☐ General Education: (For General Education courses, you must also complete Section 3 and Section 7)

Section 3 (If applicable)

INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

- ☐ Communications
- ☐ Social & Behavioral Sciences
- ☐ Mathematics
- ☐ Natural Sciences
- ☐ Humanities

Section 4

INTELLECTUAL COMPETENCIES:

- ☐ Reading
- ☐ Speaking
- ☒ Critical Analysis
- ☐ Quantitative Skills
- ☒ Scientific Method of Inquiry
- ☐ Writing
- ☐ Listening
- ☐ Information Literacy
- ☐ Ethical Judgment
- ☐ Working Collaboratively

Section 5

STATE GENERAL EDUCATION LEARNING OUTCOME AREA

- ☐ Communication
- ☐ Critical Thinking
- ☐ Scientific and Quantitative Reasoning
- ☐ Information Literacy
- ☐ Global Sociocultural Responsibility

Section 6 **LEARNING OUTCOMES**		***Type of Outcome: Gen. Ed, Program, Course***	**METHOD OF ASSESSMENT**
•	Demonstrate knowledge of both prokaryotic and eukaryotic microorganisms in their cell structure and function.	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Demonstrate knowledge of microbial nutrition and growth.	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Demonstrate knowledge of the diverse microorganisms that cause disease in humans, plants and animals, as well as physical and chemical methods of microbial control.	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations

•	Demonstrate knowledge of microbial ecology and the roles of microbes in global elemental cycles.	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations.
•	Demonstrate technical and analytical laboratory skills as they apply to biomedical science research and/or applications.	Program	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations.
•	Demonstrate the application of interdisciplinary natural science curricula to biomedical sciences.	Program	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Conduct an experiment, collect and analyze data, and interpret results in a laboratory setting	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Analyze, evaluate, and test a scientific hypothesis	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Use basic scientific language and processes and be able to distinguish between scientific and non-scientific explanations	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Identify unifying principles and repeatable patterns in nature, the values of natural diversity, and apply them to problems or issues of a scientific nature	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Analyze and discuss the impact of scientific discovery on human thought and behavior	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).

Section 7

Name of Person Completing This Form: Dianne M. Fair Date: 12/17/2010

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	MCB 4404
COURSE TITLE:	Microbial Physiology and Genetics
PREREQUISITE(S):	MCB 3020C (Basic Biology of Microorganisms with lab) with a grade of "C" or better
COREQUISITE(S):	None
CREDIT HOURS:	3
CONTACT HOURS/WEEK:	3
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	3
Laboratory:	
Other _____:	
FACULTY WORKLOAD POINTS:	3
STANDARDIZED CLASS SIZE ALLOCATION:	35

CATALOG COURSE DESCRIPTION:

This course is a study of the structure and physiology of bacterial cells. The principles of biosynthetic metabolism, aerobic and anaerobic energetic metabolism, and genetic regulation will also be examined. Current research topics will be covered including biotechnology, protein secretion, quorum sensing and metabolism of archaea.

SUGGESTED TEXT(S):	Kim and Gadd, Bacterial Physiology and Metabolism, Cambridge University Press, Latest edition
IMPLEMENTATION DATE:	Fall Term, 2011 (20121)
REVIEW OR MODIFICATION DATE:	

COURSE TOPICS	CONTACT HOURS PER TOPIC
I. Introduction Cell types	1
III. Composition and structure of prokaryotic cells	5
A. Bacterial cell structure	
1. Gram Positive	
2. Gram Negative	
3. Acid Fast	
B. Membranes	6
1. Membrane transport	
2. Nutrient uptake	
3. Protein secretion	
IV. Genetic Systems	9
A. Replication and transcription	
B. Operons and regulation	
C. Gene exchange in bacterial systems	
V. Metabolism and Growth	15
A. Glycolysis	
B. TCA	
C. Electron transport	
i. Oxidative phosphorylation	
ii. Substrate level phosphorylation	
D. Biosynthesis	
E. Microbial growth and cell division	
F. Protein quality control	
G. Non-Glucose heterotrophic metabolism	
H. Fermentation metabolism	
I. Anaerobic respiration	
VI. Chemolithotrophy	3
VII. Global metabolic regulation	3
VIII. Quorum sensing and chemotaxis	3
TOTAL HOURS	45

Florida State College At Jacksonville

Course Learning Outcomes & Assessment

NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1

COURSE PREFIX AND NUMBER: MCB 4404

SEMESTER CREDIT HOURS (CC): 3
CONTACT HOURS (NCC): ____

COURSE TITLE: Microbial Physiology and Genetics

Section 2

TYPE OF COURSE: (Click on the box to check all that apply)

- ☐ AA Elective
- ☐ AS Required Professional Course
- ☐ College Prep
- ☐ AS Professional Elective
- ☐ AAS Required Professional Course
- ☐ Technical Certificate
- ☒ Other B.S. Biomedical Sciences Upper Division Biological Sciences Concentration Course
  - ☐ PSAV
- ☐ Apprenticeship
- ☐ General Education: (For General Education courses, you must also complete Section 3 and Section 7)

Section 3 (If applicable)

INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

- ☐ Communications
- ☐ Social & Behavioral Sciences
- ☐ Mathematics
- ☐ Natural Sciences
- ☐ Humanities

Section 4

INTELLECTUAL COMPETENCIES:

- ☐ Reading
- ☐ Speaking
- ☒ Critical Analysis
- ☐ Quantitative Skills
- ☒ Scientific Method of Inquiry
- ☐ Writing
- ☐ Listening
- ☐ Information Literacy
- ☐ Ethical Judgment
- ☐ Working Collaboratively

Section 5

STATE GENERAL EDUCATION LEARNING OUTCOME AREA

- ☐ Communication
- ☐ Critical Thinking
- ☐ Scientific and Quantitative Reasoning
- ☐ Information Literacy
- ☐ Global Sociocultural Responsibility

Section 6 **LEARNING OUTCOMES**		***Type of Outcome: Gen. Ed, Program, Course***	**METHOD OF ASSESSMENT**
•	Demonstrate knowledge of the microbial structural features.	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Demonstrate knowledge of unique genetic organizational features of microbial genomic material.	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Demonstrate knowledge of the general metabolic pathways of microorganisms.	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Demonstrate knowledge of regulatory elements and coordination of gene expression in microbial systems.	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations

•	Demonstrate the application of interdisciplinary natural science curricula to biomedical sciences.	Program	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Analyze, evaluate, and test a scientific hypothesis	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Use basic scientific language and processes and be able to distinguish between scientific and non-scientific explanations	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Identify unifying principles and repeatable patterns in nature, the values of natural diversity, and apply them to problems or issues of a scientific nature	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Analyze and discuss the impact of scientific discovery on human thought and behavior	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•			

Section 7

Name of Person Completing This Form: David Beall Date: 12/07/2010

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	MCB 4503
COURSE TITLE:	Virology
PREREQUISITE(S):	MCB 3020C (Basic Biology of Microorganisms with lab) with a grade of "C" or better
COREQUISITE(S):	None
CREDIT HOURS:	3
CONTACT HOURS/WEEK:	3
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	3
Laboratory:	
Other _____:	
FACULTY WORKLOAD POINTS:	3
STANDARDIZED CLASS SIZE ALLOCATION:	35

CATALOG COURSE DESCRIPTION:

This course is a study of the biological basis of viral structure and life cycle . It will emphasize viral infections, the principles of the host-parasite relationship, the pathogenic characteristics and virulence factors of viruses, and the various modes of action of antiviral agents.

SUGGESTED TEXT(S):	Voyles,The Biology of Viruses, McGraw Hill College Press, Latest edition
	Murray *et al,* Medical Microbiology, Elsevier Press. Latest edition
IMPLEMENTATION DATE:	Fall Term, 2011 (20121)
REVIEW OR MODIFICATION DATE:	

COURSE TOPICS	CONTACT HOURS PER TOPIC
I. Introduction to Pathogens	1
II. History of Viruses	5
A. Theory, Disease and Identification	
B. Virus Structure	
1. Nomenclature	
2. DNA/RNA Viruses	
3. Naked/Enveloped Viruses	
III. Methods in Virology	12
A. Detection of Viruses	
1. Culture/Microscopy	
2. Serology	
3. Nucleic Acids Based	
B. Immune System Responses	
1. Cellular	
2. Humoral	
C. Antimicrobial agents	
1. Specific Drugs	
2. Interferons	
3. Vaccines	
D. Mechanisms of Pathogensis	
1. Syncitia	
2. Lysis/Lysogeny	
3. Inflammation/Host Response	
IV. Viral Pathogens	10
A. Togoviridae	
B. Orthomyxoviridae	
C. Picornoviridae	
D. Flaviviridae	
V. Viral Pathogens, Cont.	12
A. Papilomaviridae	
B. Filoviridae	
C. Variola	
D. Hepatoviridae	
E. Retroviridae	
VI. Viral Pathogens of other cell types	5
A. Bacteriophage	
B. Animal Viruses	
C. Plant Viruses	
TOTAL HOURS	45

Florida State College At Jacksonville

Course Learning Outcomes & Assessment

NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1

COURSE PREFIX AND NUMBER: MCB 4503

SEMESTER CREDIT HOURS (CC): 3
CONTACT HOURS (NCC): ____

COURSE TITLE: Virology

Section 2

TYPE OF COURSE: (Click on the box to check all that apply)

- ☐ AA Elective
- ☐ AS Professional Elective
- ☒ Other B.S. Biomedical Sciences Upper Division Biological Sciences Concentration Course
- ☐ PSAV
- ☐ General Education: (For General Education courses, you must also complete Section 3 and Section 7)
- ☐ AS Required Professional Course
- ☐ AAS Required Professional Course
- ☐ College Prep
- ☐ Technical Certificate
- ☐ Apprenticeship

Section 3 (If applicable)

INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

- ☐ Communications
- ☐ Social & Behavioral Sciences
- ☐ Mathematics
- ☐ Natural Sciences
- ☐ Humanities

Section 4

INTELLECTUAL COMPETENCIES:

- ☐ Reading
- ☐ Speaking
- ☒ Critical Analysis
- ☐ Quantitative Skills
- ☒ Scientific Method of Inquiry
- ☐ Writing
- ☐ Listening
- ☐ Information Literacy
- ☐ Ethical Judgment
- ☐ Working Collaboratively

Section 5

STATE GENERAL EDUCATION LEARNING OUTCOME AREA

- ☐ Communication
- ☐ Critical Thinking
- ☐ Scientific and Quantitative Reasoning
- ☐ Information Literacy
- ☐ Global Sociocultural Responsibility

Section 6 **LEARNING OUTCOMES**		***Type of Outcome: Gen. Ed, Program, Course***	**METHOD OF ASSESSMENT**
•	Demonstrate knowledge of the structure, function, and nomenclature of viruses.	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations.
•	Demonstrate knowledge of viral identification and diagnostic methodologies.	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Demonstrate knowledge of the virulence mechanisms of viruses.	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Demonstrate knowledge of the basic concepts viral life cycles.	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Demonstrate the application of	Program	Students will answer a set of questions developed by

	interdisciplinary natural science curricula to biomedical sciences.		the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Analyze, evaluate, and test a scientific hypothesis	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Use basic scientific language and processes and be able to distinguish between scientific and non-scientific explanations	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Identify unifying principles and repeatable patterns in nature, the values of natural diversity, and apply them to problems or issues of a scientific nature	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Analyze and discuss the impact of scientific discovery on human thought and behavior	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).

Section 7

Name of Person Completing This Form: David Beall Date: 12/07/2010

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	PCB 3023C
COURSE TITLE:	Cell Biology
PREREQUISITE(S):	BSC 2011C (Principles of Biology II with lab) with a grade of "C" or better and CHM 2045C (General Chemistry and Quantitative Analysis I with lab) with a grade of "C" or better
COREQUISITE(S):	None
CREDIT HOURS:	4
CONTACT HOURS/WEEK:	5
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	3
Laboratory:	2
Other _____:	
FACULTY WORKLOAD POINTS:	4.4
STANDARDIZED CLASS SIZE ALLOCATION:	27 (laboratory safety considerations)

CATALOG COURSE DESCRIPTION:
This course is designed to provide a thorough introduction to cell biology. The course will cover the following topics: prokaryotic and eukaryotic cell types, intracellular structures and functions, cell metabolism, membrane structure and transport, gene expression and regulation, DNA, RNA, and protein manipulation, cell growth and development, cell communication, and cell death.

SUGGESTED TEXT(S):

Alberts *et al.*, Molecular Biology of the Cell, Garland Publishing, Latest edition

Lodish *et al.*, Molecular Cell Biology, Freeman Publisher, Latest edition

IMPLEMENTATION DATE:	Fall Term, 2011 (20121)
REVIEW OR MODIFICATION DATE:	

COURSE TOPICS		CONTACT HOURS PER TOPIC
I.	Cells and Genomes	5
	A. Cell Theory	
	B. Eukaryotic vs. Prokaryotic Cell Types	
	C. Theory of Endosymbiosis	
	D. Intracellular Structures and Functions	
	E. Intracellular Vesicular Traffic	
II.	Cell Chemistry and Biosynthesis	6
	A. The Chemical Composition of the Cell	
	B. Protein Structure and Function	
	C. Cell Metabolism: Cellular Respiration and Photosynthesis	
III.	Membrane Compositions and Transport	4
	A. The Lipid Bilayer	
	B. Passive and Active Transport	
	C. Membrane Proteins	
	D. Ion Channels and the Electrical Properties of the Plasma Membrane	
	E. The Plant Cell Wall	
IV.	Cells in Their Environment	4
	A. Cell Junctions	
	B. Cell Adhesion	
	C. Cell Communication	
	D. The Extracellular Matrix	
V.	DNA Structure, Replication, Repair and Recombination	4
VI.	Gene expression: The Central Dogma	8
	A. Transcription and Translation	
	B. Post-transcriptional RNA Modification	
	C. Prokaryotic vs. Eukaryotic Gene Expression	
	D. Protein Targeting and Folding	
	E. Regulation of Gene Expression	
VII.	The Cell Cycle, Mitosis, and Meiosis	4
	A. Phases and Regulation of the Cell Cycle	
	B. Mitosis	
	C. Meiosis	
	D. Genetic Diversity	
VIII.	Cell Growth and Development	4
	A. Cell Specialization	
	B. Cancer	
	C. Cell Death	
	D.	

IX.	Biotechnology	6
	A. Manipulation of Gene Expression	
	B. Recombinant DNA Technology	
	C. Manipulation DNA, RNA, and Proteins	
	Total lecture hours:	45

Laboratory Activities:

I.	Review of Microscopy and Slide Preparation	3
II.	Observation of Prokaryotic and Prokaryotic Cell Types	4
	A. Intracellular Structures and Functions	
III.	The Chemical Composition of Cells	3
IV.	Membrane Structures and Transport	3
V.	Cell Metabolism: Cellular Respiration and Photosynthesis	4
VI.	The Cell Cycle, Mitosis, and Meiosis	3
VII.	Isolation of DNA, RNA, and Protein	4
VIII.	Manipulating DNA, RNA, and Proteins	6
	B. Biotechnology: Cloning, PCR, Restriction Enzyme Use, and Gel Electrophoresis	
	Total laboratory hours	30

Florida State College At Jacksonville

Course Learning Outcomes & Assessment

NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1

COURSE PREFIX AND NUMBER: PCB 3023C

SEMESTER CREDIT HOURS (CC): 4
CONTACT HOURS (NCC): ____

COURSE TITLE: Cell Biology

Section 2

TYPE OF COURSE: (Click on the box to check all that apply)

- ☐ AA Elective
- ☐ AS Required Professional Course
- ☐ College Prep
- ☐ AS Professional Elective
- ☐ AAS Required Professional Course
- ☐ Technical Certificate
- ☒ Other B.S. Biomedical Sciences Upper Division Core Course
- ☐ PSAV
- ☐ Apprenticeship
- ☐ General Education: (For General Education courses, you must also complete Section 3 and Section 7)

Section 3 (If applicable)

INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

- ☐ Communications
- ☐ Social & Behavioral Sciences
- ☐ Mathematics
- ☐ Natural Sciences
- ☐ Humanities

Section 4

INTELLECTUAL COMPETENCIES:

- ☐ Reading
- ☐ Speaking
- ☒ Critical Analysis
- ☐ Quantitative Skills
- ☒ Scientific Method of Inquiry
- ☐ Writing
- ☐ Listening
- ☐ Information Literacy
- ☐ Ethical Judgment
- ☐ Working Collaboratively

Section 5

STATE GENERAL EDUCATION LEARNING OUTCOME AREA

- ☐ Communication
- ☐ Critical Thinking
- ☐ Scientific and Quantitative Reasoning
- ☐ Information Literacy
- ☐ Global Sociocultural Responsibility

Section 6 **LEARNING OUTCOMES**		***Type of Outcome: Gen. Ed, Program, Course***	**METHOD OF ASSESSMENT**
•	Demonstrate knowledge of eukaryotic and prokaryotic cell types	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Demonstrate knowledge of intracellular structures and their functions	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Demonstrate knowledge of cell metabolism, cell communication, the cell cycle, mitosis, meiosis, and cell death.	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations

•	Demonstrate knowledge of gene expression and regulation.	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Demonstrate knowledge of DNA, RNA, and Protein molecules, their functions within the cell, and manipulation of these molecules.	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Conduct an experiment, collect and analyze data, and interpret results in a laboratory setting	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Analyze, evaluate, and test a scientific hypothesis	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Use basic scientific language and processes and be able to distinguish between scientific and non-scientific explanations	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Identify unifying principles and repeatable patterns in nature, the values of natural diversity, and apply them to problems or issues of a scientific nature	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Analyze and discuss the impact of scientific discovery on human thought and behavior	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).

•	Students will demonstrate the application of interdisciplinary natural science curricula to biomedical sciences	Program	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Students will demonstrate technical and analytical laboratory skills as they apply to biomedical research and/or applications	Program	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).

•	Students will value the larger social impact of the biomedical sciences	Program	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).

Section 7

Name of Person Completing This Form: Stefanie Maruhnich Date: 12/09/2010

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	PCB 3063C
COURSE TITLE:	Genetics and Molecular Biology
PREREQUISITE(S):	BSC 2011C (Principles of Biology II with lab) with a grade of "C" or better and CHM 2046C (General Chemistry and Qualitative Analysis II with lab) with a grade of "C" or better
COREQUISITE(S):	None
CREDIT HOURS:	4
CONTACT HOURS/WEEK:	6
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	3
Laboratory:	3
Other _____:	
FACULTY WORKLOAD POINTS:	5.1
STANDARDIZED CLASS SIZE ALLOCATION:	27 (laboratory safety considerations)

CATALOG COURSE DESCRIPTION:

This course is designed for biomedical sciences or other natural sciences majors and will cover the study of the principles of heredity including the gene concept, Mendelian and non-Mendelian inheritance, molecular and population genetics. Topics will include the nature, organization, transmission, expression, recombination and function of genetic materials. Principles are derived for genetically characterizing populations. The curriculum is inquiry based and fully integrated with laboratory experiences that emphasize active learning strategies.

SUGGESTED TEXT(S):

Klug, et al, Concepts of Genetics, Benjamin Cummings publishers, Latest edition

Brooker, Genetics Concepts and Principles, McGraw-Hill publishers, Latest edition

Pierce, Genetics: A Conceptual Approach, W.H. Freeman Publishers, Latest edition

Elrod and Stansfield, Genetics, Schaum's Outlines, Latest edition

Mertens, et al, Genetics Laboratory Investigations, Prentice Hall, Latest edition

IMPLEMENTATION DATE: Fall term, 2011 (20121)

REVIEW OR MODIFICATION DATE:

COURSE TOPICS		CONTACT HOURS PER TOPIC
I.	Overview of genetics	3
II.	Mendelian inheritance	6
	a. Mitosis and meiosis	
	b. Linkage and gene mapping	
	c. Non-Mendelian inheritance	
III.	DNA and RNA	6
	a. Molecular structures	
	b. Chromosome structures	
	c. DNA replication	
IV.	Processes of RNA and DNA	10
	a. Gene transcription	
	b. mRNA translation	
	c. Gene regulation	
	d. Gene mutation	
V.	DNA technology and its applications	10
VI.	Practical uses of Genetics	10
	a. Medical genetics	
	b. Population genetics	
	c. Evolutionary genetics	
	Total lecture hours:	45

LABORATORY TOPICS (suggested completion 15 out of 20 lab modules; for a semester total of 45)

		CONTACT HOURS PER TOPIC
I.	Background in Molecular and Mendelian genetics	
	a. DNA and RNA structure and function	2
	b. Mitosis and meiosis	2
	c. Dominant and recessive genes	2
	d. Gene interactions	3
	e. Basic probability	3
II.	Statistics	
	a. Mutually exclusive events	2
	b. Probability and pedigrees	2
	c. Chi square test	2
III.	Genetics of Drosophila melanogaster	3
IV.	Genetics of Zea mays	3
V.	Genetics of *E. coli*	3
VI.	Human chromosomes	3
VII.	Techniques in Molecular genetics	
	a. Isolation of DNA	3
	b. Restriction Endonuclease Digestion and Gel Electrophoresis of DNA	4
	c. Amplification of DNA polymorphisms by PCR and DNA fingerprinting	3
VIII.	Population genetics	
	a. The Hardy-Weinberg principle	3
	b. The effects of selection and genetic drift	2
	Total laboratory hours:	45

Florida State College At Jacksonville

Course Learning Outcomes & Assessment

NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1	
COURSE PREFIX AND NUMBER: PCB 3063C	**SEMESTER CREDIT HOURS (CC):** 4 CONTACT HOURS (NCC): _____
COURSE TITLE: Genetics and Molecular Biology	

Section 2

TYPE OF COURSE: (Click on the box to check all that apply)

- ☐ AA Elective
- ☐ AS Required Professional Course
- ☐ College Prep
- ☐ AS Professional Elective
- ☐ AAS Required Professional Course
- ☐ Technical Certificate
- ☒ Other B.S. Biomedical Sciences Upper Division Core Course
- ☐ PSAV
- ☐ Apprenticeship
- ☐ General Education: (For General Education courses, you must also complete Section 3 and Section 7)

Section 3 (If applicable)

INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

- ☐ Communications
- ☐ Social & Behavioral Sciences
- ☐ Mathematics
- ☐ Natural Sciences
- ☐ Humanities

Section 4

INTELLECTUAL COMPETENCIES:

- ☐ Reading
- ☐ Speaking
- ☒ Critical Analysis
- ☐ Quantitative Skills
- ☒ Scientific Method of Inquiry
- ☐ Writing
- ☐ Listening
- ☐ Information Literacy
- ☐ Ethical Judgment
- ☐ Working Collaboratively

Section 5

STATE GENERAL EDUCATION LEARNING OUTCOME AREA

- ☐ Communication
- ☐ Critical Thinking
- ☐ Scientific and Quantitative Reasoning
- ☐ Information Literacy
- ☐ Global Sociocultural Responsibility

Section 6 **LEARNING OUTCOMES**		***Type of Outcome: Gen. Ed, Program, Course***	**METHOD OF ASSESSMENT**
•	Demonstrate knowledge of the molecular structure and functions of DNA and RNA.	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Demonstrate knowledge of both Mendelian and non-Mendelian inheritance.	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations
•	Demonstrate knowledge of the processes of DNA replication, gene transcription, mRNA translation and gene regulation.	Course	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations

•	Demonstrate technical and analytical laboratory skills as they apply to biomedical science research and/or applications.	Program	Methods of assessment can include exams, quizzes, papers, lab reports and/or oral presentations.
•	Demonstrate the application of interdisciplinary natural science curricula to biomedical sciences.	Program	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Conduct an experiment, collect and analyze data, and interpret results in a laboratory setting	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Analyze, evaluate, and test a scientific hypothesis	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Use basic scientific language and processes and be able to distinguish between scientific and non-scientific explanations	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Identify unifying principles and repeatable patterns in nature, the values of natural diversity, and apply them to problems or issues of a scientific nature	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Analyze and discuss the impact of scientific discovery on human thought and behavior	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).

Section 7

Name of Person Completing This Form: Dianne M. Fair Date: 12/17/2010

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	PCB 3713C
COURSE TITLE:	General Physiology
PREREQUISITE(S):	PCB 3023C (Cell Biology with lab) and *either* BSC2086C (Anatomy and Physiology II with lab) **or** ZOO 3713C (Comparative Vertebrate Anatomy with lab); all prerequisite courses must be completed with a grade of "C" or better.
COREQUISITE(S):	None
CREDIT HOURS:	4
CONTACT HOURS/WEEK:	7
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	3
Laboratory:	4
Other _____:	
FACULTY WORKLOAD POINTS:	5.8
STANDARDIZED CLASS SIZE	
ALLOCATION:	27 (laboratory safety considerations)

CATALOG COURSE DESCRIPTION:

This Course Includes The Study Of Functional Activities And Interactions Of Cells, Tissues, And Organs, With Emphasis On Respiration, Excitation, Transport Phenomena, And Control Mechanisms. The Laboratory Component Of The Course Includes Action Potentials In Neurons, Mechanisms Of Skeletal, Smooth, And Cardiac Muscle Contraction, Dose Response Effects Of Neurotransmitter Administration, Measurement Of Heart Contractility And ECG Components, Mechanical Aspects Of Respiration, And Effects Of Animal Size On Oxygen Consumption And Temperature Regulation.

SUGGESTED TEXT(S):	Eckert, Animal Physiology, Freeman Publishing. Latest edition Guyton and Hall, Textbook of Medical Physiology, Saunders Publishing, Latest edition Tharp and Woodman, Experiments in Physiology (lab manual), Prentice Hall, Latest edition
IMPLEMENTATION DATE:	Fall Term, 2011 (20121)
REVIEW OR MODIFICATION DATE:	

COURSE TOPICS	CONTACT HOURS PER TOPIC
I. Studying Physiology	1
II. Experimental Methods in Physiology	2
III. Molecules, Energy, Biosynthesis	1.5
IV. Membranes, Channels, and Transport	3
V. Functional Basis of Neuronal Function	3
VI. Communication Among and Between Neurons	3
VII. Sensing the Environment	3
VIII. Structural and Functional Organization of Nervous Systems	3
IX. Glands and Endocrine Control	3
X. Muscles and Animal Movement	3
XI. Behavior: Initiation, Patterns, and Control	3
XII. Circulation	3
XIII. Gas Exchange and Acid-Base Balance	3
XIV. Ionic and Osmotic Regulation	3
XV. Acquiring Energy: Feeding, Digestion, Metabolism	3
XVI. Energy Expenditure: Body Size, Locomotion, Reproduction	3
XVII. Energetic Costs of Meeting Environmental Challenges	1.5
Total Lecture Hours	45

Suggested Laboratory Activities

I. Fundamental Physiological Principles	4
II. Movements Through Membranes	4
III. Membrane Action Potentials	4
IV. Reflex Functions	4

V. Sensory Physiology	4
VI. Endocrine Physiology- Glucose, Thyroid	4
VII. Nerve-Muscle Activity	4
VIII. Behavioral Ecology	4
IX. Cardiovascular Function- Cardiac muscle, ECG	8
X. Respiratory Function /Acid Base Balance/gas exchange	4
XI. Ionic and Osmotic Regulation	4
XII. Smooth Muscle motility	4
XIII Metabolic Rate	4
XIV. Physiology of Exercise	4
Total Lab Hours	60

Florida State College At Jacksonville

Course Learning Outcomes & Assessment

NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1

COURSE PREFIX AND NUMBER: PCB 3713C

SEMESTER CREDIT HOURS (CC): 4
CONTACT HOURS (NCC):

COURSE TITLE: General Physiology

Section 2

TYPE OF COURSE: (Click on the box to check all that apply)

- ☐ AA Elective
- ☐ AS Required Professional Course
- ☐ College Prep
- ☐ AS Professional Elective
- ☐ AAS Required Professional Course
- ☐ Technical Certificate
- ☒ Other B.S. Biomedical Sciences Upper Division Course
- ☐ PSAV
- ☐ Apprenticeship
- ☐ General Education: (For General Education courses, you must also complete Section 3 and Section 7)

Section 3 (If applicable)

INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

- ☐ Communications
- ☐ Social & Behavioral Sciences
- ☐ Mathematics
- X Natural Sciences
- ☐ Humanities

Section 4

INTELLECTUAL COMPETENCIES:

- ☐ Reading
- ☐ Speaking
- ☒ Critical Analysis
- ☐ Quantitative Skills
- ☒ Scientific Method of Inquiry
- ☐ Writing
- ☐ Listening
- ☐ Information Literacy
- ☐ Ethical Judgment
- ☐ Working Collaboratively

Section 5

STATE GENERAL EDUCATION LEARNING OUTCOME AREA

- ☐ Communication
- ☐ Critical Thinking
- ☐ Scientific and Quantitative Reasoning
- ☐ Information Literacy
- ☐ Global Sociocultural Responsibility

Section 6 **LEARNING OUTCOMES**		***Type of Outcome: Gen. Ed, Program, Course***	**METHOD OF ASSESSMENT**
•	Demonstrate knowledge of chemical, molecular, and cellular process that effect physiological systems.	Course	Can include exams, quizzes, papers, lab reports and/or presentations
•	Demonstrate knowledge of the physiological systems of animals, their function, and their regulation.	Course	Can include exams, quizzes, papers, lab reports and/or presentations
•	Demonstrate knowledge of energy expenditures for life processes and the costs of meeting environmental challenges.	Course	Can include exams, quizzes, papers, lab reports and/or presentations
•	Demonstrate knowledge of the		Can include exams, quizzes, papers, lab reports

	application of interdisciplinary natural science curriculum to biomedical sciences.	Program	and/or presentations
•	Demonstrate technical and analytical lab skills as they apply to biomedical sciences research and/or applications	Program	Can include exams, quizzes, papers, lab reports and/or presentations
•	Design, conduct, analyze, and interpret a laboratory experiment	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Analyze, evaluate, and test a scientific hypothesis	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Use basic scientific language and processes and be able to distinguish between scientific and non-scientific explanations	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Identify unifying principles and repeatable patterns in nature, the values of natural diversity, and apply them to problems or issues of a scientific nature	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Analyze and discuss the impact of scientific discovery on human thought and behavior	Discipline	Students will answer a set of questions developed by the program faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers a common rubric with scores from 1 (not yet competent) to 3 (competent).

Section 7

Name of Person Completing This Form: Cathy Paterson Date: 12/17/2010

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	ZOO 3713C
COURSE TITLE:	Comparative Vertebrate Anatomy
PREREQUISITE(S):	BSC 2011C (Principles of Biology II with lab) with a grade of "C" or better
COREQUISITE(S):	None
CREDIT HOURS:	4
CONTACT HOURS/WEEK:	5
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	3
Laboratory:	2
Other _____:	
FACULTY WORKLOAD POINTS:	4.4
STANDARDIZED CLASS SIZE ALLOCATION:	27 (laboratory safety considerations)

CATALOG COURSE DESCRIPTION:

This course covers the anatomy of selected vertebrate types emphasizing evolutionary trends. The course is designed for biology or other natural sciences majors and will cover the Chordate origins and phylogeny, Skeletal system, Muscle system, Digestive system, Respiratory system, Circulatory system, Urogenital system and Nervous system of the lamprey, necturus, shark, cat and sheep. Laboratory work will include the dissection and identification of anatomical structures between the above animals, comparison between structures and their development emphasizing the details of the organ systems and compare across taxa.

SUGGESTED TEXT(S):

Kardong, K.V., Comparative Anatomy, Function and Evolution, Latest edition

Kent, G. C. and R.K. Carr, Comparative Anatomy of the Vertebrates, Latest edition

Kardong, K. V., Comparative Vertebrate Anatomy: A Laboratory Dissection Guide, Latest edition

Walker, W. F. and D. G. Homberger, Vertebrate Dissection, Latest edition

Fishbeck, D. W. and A. Sebastiani, Comparative Anatomy Manual of Dissection, Latest edition

Van de Graff, K. M. and J. L. Crawley A Photographic Atlas for the Zoology Laboratory, Latest edition

IMPLEMENTATION DATE: Fall term, 2011 (20121)

REVIEW OR MODIFICATION DATE:

COURSE TOPICS	CONTACT HOURS PER TOPIC
I. Vertebrate Morphology, Phylogeny and Evolution	2
II. Origin of Chordates	2
III. Vertebrate Origins	2
IV. Biological Design and Biomechanics	2
V. Early Embryology and Organogenesis	3
VI. Integument Origins and Differences	3
VII. Skeletal System – Skull	4
VIII. Skeletal System – Axial Skeleton	2
IX. Skeletal System – Appendicular System	4
X. Muscular System	5
XI. Circulatory System	3
XII. Respiratory System	4
XIII. Urogenital/Digestive Systems	3
XIV. Nervous System and Sensory Organs	4
XV. Endocrine System	2
Total lecture hours:	45

Laboratory Activities

I. Introduction to Classification and Comparison	1
II. Protochordates	2
III. Agnathans – Lamprey	2
IV. Integument and its specializations	2
V. Skeletal system – skull	2
VI. Skeletal system – axial and appendicular	2
VII. Muscle – Necturus, Shark	2
VIII. Muscle – Cat	3
IX. Circulatory – Shark, Cat	2
X. Respiratory – Necturus, Shark	2
XI. Urogenital/Digestive – Shark, Cat	2
XII. Nervous System – Shark, Cat	2
XIII. Nervous System – Brain – Shark, Sheep	2
XIV. Nervous System - Sensory Organs – Sheep	2
XV. Endocrine System – Cat	2
Total laboratory hours	30

Florida State College At Jacksonville

Course Learning Outcomes & Assessment

NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1	
COURSE PREFIX AND NUMBER: ZOO 3713C	**SEMESTER CREDIT HOURS (CC):** 4 CONTACT HOURS (NCC):
COURSE TITLE: Comparative Vertebrate Anatomy	

Section 2

TYPE OF COURSE: (Click on the box to check all that apply)

- ☐ AA Elective
- ☐ AS Required Professional Course
- ☐ College Prep
- ☐ AS Professional Elective
- ☐ AAS Required Professional Course
- ☐ Technical Certificate
- ☒ Other B.S. Biomedical Sciences Upper Division Concentration Biological Sciences
- ☐ PSAV
- ☐ Apprenticeship
- ☐ General Education: (For General Education courses, you must also complete Section 3 and Section 7)

Section 3 (If applicable)

INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

- ☐ Communications
- ☐ Social & Behavioral Sciences
- ☐ Mathematics
- ☐ Natural Sciences
- ☐ Humanities

Section 4

INTELLECTUAL COMPETENCIES:

- ☐ Reading
- ☐ Speaking
- ☒ Critical Analysis
- ☐ Quantitative Skills
- ☒ Scientific Method of Inquiry
- ☐ Writing
- ☐ Listening
- ☐ Information Literacy
- ☐ Ethical Judgment
- ☐ Working Collaboratively

Section 5

STATE GENERAL EDUCATION LEARNING OUTCOME AREA

- ☐ Communication
- ☐ Critical Thinking
- ☐ Scientific and Quantitative Reasoning
- ☐ Information Literacy
- ☐ Global Sociocultural Responsibility

Section 6 **LEARNING OUTCOMES**		***Type of Outcome: Gen. Ed, Program, Course***	**METHOD OF ASSESSMENT**
•	Demonstrate knowledge of chordate origins and phylogeny.	Course	Method of assessment can include exams, quizzes, papers, lab reports and/or oral presentations.
•	Demonstrate knowledge and comparison of vertebrate origins and embryologic design.	Course	Method of assessment can include exams, quizzes, papers, lab reports and/or oral presentations.

•	Demonstrate knowledge and comparison of biological design and biomechanics	Course	Method of assessment can include exams, quizzes, papers, lab reports and/or oral presentations.
•	Demonstrate knowledge of and comparisons between systems between vertebrate species.	Course	Method of assessment can include exams, quizzes, papers, lab reports and/or oral presentations.
•	Conduct an experiment, collect and analyze date, and interpret results in a laboratory setting.	Discipline	Students will answer a set of questions developed by the discipline faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers via a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Analyze, evaluate, and test a scientific hypothesis.	Discipline	Students will answer a set of questions developed by the discipline faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers via a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Use basic scientific language and processes and be able to distinguish between scientific and non-scientific explanations.	Discipline	Students will answer a set of questions developed by the discipline faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers via a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Identify unifying principles and repeatable patterns in nature, the values of natural diversity, and apply them to problems or issues of a scientific nature.	Discipline	Students will answer a set of questions developed by the discipline faculty and delivered across courses in the discipline. A faculty panel will evaluate the answers via a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Students will value the larger social impact of biomedical sciences.	Program	Students will answer a comprehensive set of questions developed by the program faculty and delivered across courses in the program. A faculty panel will evaluate the answers via a common rubric with scores from 1 (not yet competent) to 3 (competent).
•	Analyze and discuss the impact of scientific discovery on human thought and behavior.	Program	Students will answer a comprehensive set of questions developed by the program faculty and delivered across courses in the program. A faculty panel will evaluate the answers via a common rubric with scores from 1 (not yet competent) to 3 (competent).

Section 7

Name of Person Completing This Form: Steven Wood Date: 12/11/2010