CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA

ACADEMIC SENATE

GENERAL EDUCATION COMMITTEE

REPORT TO

THE ACADEMIC SENATE

GE-114-156

BIO 3070 – Biology of Human Pregnancy (GE Area B5)

General Education Committee	Date: 06/29/2016
Executive Committee Received and Forwarded	Date: 08/17/2016
Academic Senate	Date: 08/31/2016 First Reading

BACKGROUND:

This is a new course seeking GE status. It will be offered as a 3-unit Lecture Discussion course under the semester system.

RESOURCES CONSULTED:
Faculty
Department Chairs
Associate Deans
Deans
Office of Academic Programs

DISCUSSION:

The GE Committee reviewed the ECO for this course and found it to satisfy the GE Student Learning Outcomes and other requirements for GE Area B5.

RECOMMENDATION:

The GE Committee recommends approval of GE-114-156, BIO 3070 – Biology of Human Pregnancy for GE Area B5.

BIO - 3070 - Biology of Human Pregnancy

C. Course - New General Education* Updated

General Catalog Information

****READ BEFORE YOU BEGIN****

1. Import curriculum data from the Catalog by clicking on the following icon . It is a BEST PRACTICE to always import data on existing courses. This will limit the opportunity for data errors.
2. Turn the help text on by clicking on the following icon .
3. All fields with an asterisk (*) are required fields. If left blank, the request will not be launched and cannot be acted upon.
4. Run and attach an impact report by clicking to show all courses and programs impacted by this proposal.
5. Attach additional documentation by clicking .

Department*	**Biological Sciences**
Semester Subject Area*	**BIO**
Semester Catalog Number*	3070
Quarter Subject Area	**None Selected**
Quarter Catalog Number	
Course Title*	Biology of Human Pregnancy
Units*	**(3)**
C/S Classification *	**C-02 (Lecture Discussion)**

To view C/S Classification Long Description click: http://www.cpp.edu/~academic-programs/scheduling/Documents/Curriculum%20Guide/Appendix_C_CS_Classification.pdf

Component*	**Lecture**
Instruction Mode*	**Face-to-Face** **Web-Assisted**
Grading Basis*	**Graded Only**

Repeat Basis*	**May be taken only once**
If it may be taken multiple times, limit on number of enrollments	**1**
Cross Listed Course Subject Area and Catalog Nbr (if offered with another department)	
Dual Listed Course Subject Area and Catalog number (If offered as lower/upper division or ugrd/grad)	
Choose appropriate type (s) of course(s)*	☐ Major Course ☐ Service Course ☑ GE Course ☐ None of the above
General Education Area / Subarea*	**B5**

To view the General Education SubArea definitions, click http://www.cpp.edu/~academic-programs/scheduling/Documents/Ch.3-GeneralEducationProposals.pdf.

I. Catalog Description

Catalog Description

Biology of human pregnancy from conception to parturition. Emphasis will be on cell biology, tissue and organ development, and physiological mechanisms governing human pregnancy. Historical, current, and emerging practices and trends also considered. Three hours of lecture, discussion, problem solving, guest speakers, and/or films. Course fulfills GE Area B5.

II. Required Coursework and Background

Prerequisite(s)

Pre-requisites: Completion of GE Area A and GE Area B sub-areas (B1, B2, B3, and B4)

Corequisite(s)	
Pre or Corequisite (s)	
Concurrent	

III. Expected Outcomes

List the knowledge, skills, or abilities which students should possess upon	Upon successful completion of this course, students will be able to:

completing the course.*

- Understand as well as synthesize information regarding normal female and male reproductive physiology and the conditions that bring about fertilization (conception).
- Synthesize and evaluate information regarding abnormal conditions that prevent conception or lead to abnormal pregnancy.
- Develop a complete chronological understanding of embryonic and fetal development, being able to link correlative anatomical (e.g., organ formation) and physiological (e.g., hormonal fluctuations) changes that take place during gestation, including the differences in male and female development.
- Synthesize and correlate chronological changes in fetal physiology to changes in maternal physiology during pregnancy.
- Understand as well as synthesize information regarding the function of the placenta and umbilical cord, and how these structures couple and coordinate fetal and maternal systems for gas exchange, and transfer of nutrients, hormones, and other essential molecules.
- Perform calculations, analyze raw data, use tables and graphs to draw quantitative conclusions regarding ovulation date, conception date, delivery due date, fetal growth rates, and values of maternal and fetal physiological parameters (e.g., basal metabolic rate, heart rate, ventilation rate, etc.).
- Synthesize the maternal integrative physiological functions that take place prior to, during, and after parturition, as well as the integrative physiological processes that allow the newborn to survive outside of the womb after parturition.
- Compile and synthesize information from scientific discoveries, technological advances, and societal norms and trends to analyze and put in perspective the historical, current, and emerging trends related to human contraception and pregnancy.
- Compare, contrast, analyze, and evaluate the role of support structures available to pregnant mothers in traditional and modern societies.

- Analyze the primary literature to present oral and written assessments of current and emerging topics of importance to human pregnancy.
- Research and examine the primary, secondary, and tertiary literature sources in order to formulate arguments in favor of or against novel methods enabled by modern scientific advances (e.g., in vitro fertilization, genetic testing, stem cells, etc.).

If this is a course for the major, describe how these outcomes relate to the mission, goals and objectives of the major program.

Explain how the course meets the description of the GE SubArea(s). Please select appropriate outcomes according to the GE Area/SLO mapping.

Human pregnancy refers to the period during which one (sometimes more) offspring develops inside a mother's uterus. Pregnancy generally results from in-vivo fertilization of an egg by a sperm. The anatomical, physiological, psychological, behavioral changes that follow fertilization are among the most amazing, awe-inspiring, and dramatic changes that have been documented in biological systems. By its nature, understanding human pregnancy requires integration and synthesis of facts and knowledge from several disciplines including biology, psychology, public health policy, technological advances in medical practice, political science, and practices of traditional and modern societies. The goal of this GE course is to challenge students to expand their appreciation and understanding of human pregnancy from a perspective that goes beyond everyday observations and experiences. In particular, students will use their foundational background in science draw correlative conclusions regarding fetal and maternal changes that take place during pregnancy. Students will leave the course with a new appreciation as well as a solid scientific and quantitative understanding of the complexity of processes that take place during human pregnancy.

Guidelines for GE Synthesis Courses

The major focus of a synthesis course is to integrate and focus fundamental concepts and issues. Each course in this category shall:

Include readings from original primary/historical sources, as opposed to only secondary sources.

Students in this course will be required to read articles from the primary, secondary, and tertiary scientific literature related to various aspects of human pregnancy.

Promote original and critical thinking in writing and/or discussion.

Students complete a written analysis (position paper) of the articles they have read from the primary literature. In addition, the students debate controversial issues related to human pregnancy through in-class discussions and debates.

Focus attention on understanding the interrelationships among the disciplines and their applications.

This course provides students with the opportunity to learn and synthesize knowledge related to human pregnancy drawn from several disciplines including biology, psychology, public health policy, technological advances in medical practice, political science, and practices of traditional and modern societies.

Examine ideas and issues covered in this area in deeper and/or broader more integrative ways.

Student-led classroom discussions/debates will allow students to explore topics covered in more detail and engage the rest of the class in a discussion on the broader impacts of those issues. Position papers will engage students in considering controversial issues based on facts, empirical evidence, and quantitative data.

Encourage synthetic-creative thinking in order to identify problems, understand broader implications and construct original ideas.

Please see the first paragraph above.

Identify and evaluate assumptions and limitations of ideas and models.

Reading the primary literature allows students to analyze the research being conducted in human pregnancy, critically evaluate the hypotheses being examined, draw conclusions about complex and interrelated processes, and gain an understanding of the larger models.

Develop written and oral communication skills appropriate for an upper division course.

Please see Section IX (Evaluation of Outcomes).

Provide student work for assessment of the student's understanding of the required educational objectives in this subarea or in this course.

Please see Section IX (Evaluation of Outcomes).

The relationship between science, technology, and civilization.

This course will have a strong emphasis in understanding the interactions between human pregnancy as influenced by scientific facts, psychological pressures, technological advances in medical practice, ideological and political pressures, and practices of traditional and modern societies.

The effect science and technology have on culture and human values.

Through evaluation of the primary, secondary, and tertiary literature, students gain an appreciation of the impact of science, technology, society, culture, and traditions on human pregnancy. Further, students learn how science and technology have benefitted society in terms of understanding human pregnancy and the factors that bring about safe outcomes for both the mother and newborn.

The application and generalization of basic scientific or quantitative knowledge from the foundational courses to real world or practical problems.

Please see the first paragraph above.

Describe how these outcomes relate to the associated GE Learning

1a) Write effectively for various audiences.

Outcomes listed below.*

This course will contain 16 writing assignments: 15 weekly assignments and 1 position paper due at the end of the semester. For both assignment types, the grading rubric will be made available to the students in order to be explicit about the expectations and desired outcomes for these assignments. The rubric will address the following issues: appropriate background research, organization of ideas, presentation of ideas, logical flow of ideas, relevance to assigned topic, information accuracy, quantitative approach, and appropriate synthesis of information. The weekly writing assignments will be graded immediately in order to provide feedback to the students, as well as to provide a framework for continuous student improvement in writing throughout the semester.

1b) Speak effectively for various audiences.

Students will be required to participate (i.e., use spoken words) during in-class debates and discussions. In addition, each student will select a gestation week during pregnancy, and will produce a video mini-lecture (8-10 minutes) describing the major anatomical, physiological, psychological, behavioral events that take place during this week from the perspectives of both the fetus and the pregnant mother.

1c) Find, evaluate, use and share information effectively and ethically.

The students will search for primary literature of interest to them, critically evaluate the research described in the articles, and prepare a written report (position paper) on the information. The instructor will discuss ethical ways to obtain and present data including a discussion of plagiarism.

1d) Construct arguments based on sound evidence and reasoning to support an opinion or conclusion.

Pre-selected peer-reviewed papers on controversial issues related to human pregnancy will be provided to the students for analysis. During the classroom discussions/debates, students will analyze the broader implications of those issues and must support their own opinions with well-constructed and reasoned evidence.

1e) Apply and communicate quantitative arguments using equations and graphical representations of data.

The peer-reviewed papers contain graphs and equations that the student teams will need to analyze and present to the rest of the class in support of their opinions in discussions and debates, as well as use quantitative arguments in their writing and speaking exercises.

2a) Apply scientific methods and models to draw quantitative and qualitative conclusions about the physical and natural world.

Students will apply scientific principles to interpret and analyze the peer-reviewed papers provided in order to evaluate them for the written assignments and for the discussions/debates.

2d) Integrate concepts, examples, and theories from more than one discipline to identify problems, construct original ideas, and draw conclusions.

Human pregnancy is an integrative field that borrows from several disciplines, including biology, psychology, public health policy, technological advances in medical practice, political science, and practices of traditional and modern societies. This course integrates knowledge from all these disciplines in an attempt to provide students with a broad understanding of human pregnancy, especially as it relates to scientific advances, technology, medicine, society, culture, politics, and the legal system.

General Education Outcomes*

Ia. Write effectively for various audiences

Ib. Speak effectively to various audiences.

Ic. Find, evaluate, use, and share information effectively and ethically.

Id. Construct arguments based on sound evidence and reasoning to support an opinion or conclusion.

Ie. Apply and communicate quantitative arguments using equations and graphical representations of data.

IIa. Apply scientific methods and models to draw quantitative and qualitative conclusions about the physical and natural world.

IId. Integrate concepts, examples, and theories from more than one discipline to identify problems, construct original ideas, and draw conclusions.

To view the mapping, click https://www.cpp.edu/~academic-programs/Documents/GE%20SLO%20Mapping.pdf

IV. Instructional Materials

Provide bibliography that includes texts that may be used as the primary source for instruction, and other appropriate reference materials to be used in instruction. The reference list should be current, arranged alphabetically by author and the materials should be listed in accepted bibliographic form.

Instructional Materials*

Texts may vary with instructor and over time. Examples of possible texts include one or more of the following:

· Texts may vary with instructor and over time. Examples of possible texts include:

o Blackburn, S. (2012) *Maternal, Fetal, & Neonatal Physiology, 4th ed.* Saunders, Philadelphia, PA.

o Tallack, P. (2006) *In the Womb.* National Geographic Society, Washington, D.C.

o Auerbach, R.D. (2008) *A Miracle in the Making.* Budlong Press.

o Campbell, S. (2004) *Watch Me Grow!* St. Martin's Griffin, New York, NY.

o Flanagan, G.L. (1996) *Beginning Life.* DK Publishing, Inc., New York, NY.

o Nilsson L. (2009) *A Child is Born.* Jonathan Cape.

o Nilsson L. (2006) *Life.* Abrams, New York, NY.

o Sims, M. (2009) *In the Womb: Animals.* National Geographic Society, Washington, D.C.

o Power, M.L., Schulkin, J. (2012) *The Evolution of the Human Placenta.* The Johns Hopkins University Press, Baltimore, MD.

o Cobb, M. (2006) *The Egg & Sperm Race.* Simon & Schuster, London.

o Hutter Epstein, R. (2010). *Get Me Out. A History of Childbirth from the Garden of Eden to the Sperm Bank.* W.W. Norton & Company, New York.

· Additional lecture notes, PowerPoint slides, original articles, and review articles will be provided by the instructor.

· Several reference monographs, texts, and atlases will be made available to students by the instructor.

Faculty are encouraged to make all materials accessible. Indicate with an asterisk those items that have had accessibility (ATI/Section 508) reviewed. For more information, http://www.cpp.edu/~accessibility

V. Minimum Student Material

List any materials, supplies, equipment, etc., which students must provide, such as notebooks, computers, internet access, special clothing or uniforms, safety equipment, lockers, sports equipment, etc. Note that materials that require the assessment of a fee may not be included unless the fee has been approved according to University procedures.

Minimum Student Material*	Computer, Microsoft Office Suite, printer, access to the internet and e-mail, iClicker, calculator, notebook, and writing implements.

VI. Minimum College Facilities

List the university facilities/equipment that will be required in order to offer this class, such as gymnastic equipment, special classroom, technological equipment, laboratories, etc.

Minimum College Facilities*

Classroom for sitting 50 students and equipped with a whiteboard, computer, and projection system. Library services. Information Technology (IT) services. Classroom Management System (e.g., Blackboard).

VII. Course Outline

Describe specifically what will be included in the course content. This should not be a repetition of the course description but an expansion that provides information on specific material to be included in the class, e.g. lecture topics, skills to be taught, etc. This should not be a week-by-week guide unless all instructors are expected to follow that schedule.

Course Outline*

1. Pregnancy through the ages
    a. Historical trends
    b. Fertility rates
    c. Infant mortality rates
    d. Support structures for pregnant mothers

2. Fundamental Principles of Reproductive Physiology

   a. Anatomy and physiology of the male reproductive system

   b. Spermatogenesis

   c. Anatomy and physiology of the female reproductive system

   d. Oogenesis

   e. Menstrual cycle and ovulation

3. Fertility, Infertility, Conception, and Contraception

   a. Contraception

   b. Preconception health

   c. Infertility

   d. Conception

4. Placenta and Umbilical Cord

5. Gestation

   a. Overview of the 1st trimester

   b. Month 1

   c. Month 2

   d. Month 3

   e. Overview of the 2nd trimester

   f. Month 4

   g. Month 5

   h. Month 6

   i. Overview of the 3rd trimester

   j. Month 7

k. Month 8

l. Month 9

6. Parturition

a. Preparing for birth

b. Stages of labor

c. Active labor and birth

d. Induced labor

e. Unnatural birth

7. Recovery and Feeding

8. Additional development of the newborn after birth

9. Complications of Pregnancy and Labor

10. Problems in Newborns

11. Post-Partum Issues

VIII. Instructional Methods

Describe the type(s) of method(s) that are required or recommended for the instruction of this course (lectures, demonstrations, etc.). Include any method that is essential to the course, such as the use of particular tools or software.

Instructional Methods*

Various instructional methods will be used to help students achieve the expected course outcomes. These include:

1. Lectures describing the importance and details of topics under discussion. Numerous relevant examples will serve to bring the topics to life. PowerPoint slides will be utilized to summarize the important facts and concepts. iClicker questions will be used to assess student understanding during lecture.

2. In-class thought-provoking questions, small-group discussions, and group problem-solving activities will promote student active thinking, learning, and problem solving.

3. Supplementary online modules will help students conceptualize difficult processes.

4. Weekly reading and writing assignments will encourage students synthesize and summarize fetal and maternal changes during a given gestational week.

5. Practice questions and problems given in preparation for quizzes and exams will encourage students to learn basic facts used to synthesize higher levels of understanding.

6. Weekly quizzes reinforce consistent study habits and prepare students for exams.

7. Video mini-lecture produced by students will encourage students to learn to express information and ideas in spoken language.

8. Position paper written by students will demonstrate the importance of the primary, secondary, and tertiary literature sources in supporting or opposing a given position on a controversial issue.

IX. Evaluation of Outcomes

Describe the methods to be used to evaluate students' learning, i.e. written exams, term papers, projects, participation, quizzes, attendance, etc.*

Students are evaluated with respect to the course material through the use of in-class questions during lectures (e.g., iClicker questions), small-group discussions and problem-solving activities, weekly quizzes, weekly written assignments, exams, video mini-lecture, and position paper. The writing component consists of essay questions on quizzes and exams. The quizzes and exams will consist of short-answer and multiple-choice questions, quantitative problems, and essay questions. All modes of evaluation test the students' factual, conceptual, as well as quantitative understanding of the course material. Please see below for details.

Questions in lecture (iClicker):

In-class questions will consist of short answer or multiple-choice questions, or they may involve extracting information from graphs. The purpose of these questions will be to familiarize students with the format of quiz and exam

questions, as well as to facilitate student understanding during class. These questions will assess General Education Student Learning Outcomes 1b, 1c, 1d, 1e, 2a, and 2d.

Group discussion / problem solving:

For these activities, students will be prompted in advance (previous class meeting) to research a given topic. Topics may be related to various anatomical, physiological, or other markers associated with pregnancy. Alternatively, a controversial topic may be selected for this purpose (e.g., methods of contraception, unnatural birth, breast feeding, etc.). For this purpose, reading will be assigned from the primary, secondary, and/or tertiary literature sources. Students will be quizzed on this reading (in-class or online). During class, students will work in small groups and will actively participate in discussions and debates focused on the selected topic. For controversial topics, a given small group will be instructed to take the pro or con position on the topic. For problem-solving activities, groups will be instructed to perform calculations, analyze raw data, and/or interpret tables/graphs. After a predefined period for discussion, each group will make a brief presentation to the class. The presentation will be oral and may include visual aids. All students will be required to take part in these small group activities. These activities will assess General Education Student Learning Outcomes 1b, 1c, 1d, 1e, 2a, and 2d.

Weekly quizzes:

The quizzes are designed to evaluate understanding of topics and readings. Quizzes will be composed of a combination of short answer, multiple choice, and calculation questions. Further, the questions will help to address the students' ability to synthesize and evaluate information in order to draw higher-level conclusions regarding the topics covered. Quizzes will assess General Education Student Learning Outcomes 1c, 1d, 1e, 2a, and 2d.

Weekly written assignments:

Human gestation is generally 40 weeks long. Each week, students will write a one-page summary of the major anatomical, physiological, psychological, behavioral events that take place during two or three gestation weeks from the perspectives of both the fetus and the pregnant mother. These written assignments will be graded immediately and given back to the student in order to provide feedback (see 'Meaningful writing component' below). A grading rubric will be provided to the students for these weekly written assignments in order to explain and clarify the grading basis for these assignments. These written assignments will assess General Education Student Learning Outcomes 1a, 1c, 1d, 1e, 2a, and 2d.

Exams:

The exams (midterms and final) will consist of short-answer and multiple-choice questions, quantitative problems, and essay questions. Exams will require students to synthesize the knowledge gained in class to explain human pregnancy from the perspectives of both the fetus and mother. Moreover, questions will be used to test the students' ability to integrate concepts and theories from more than one discipline (anatomy, physiology, neurobiology, psychology, public health policy) to identify problems, construct original ideas, and draw conclusions. Exams will assess General Education Student Learning Outcomes 1c, 1d, 1e, 2a, and 2d.

Video mini-lecture:

Each student will select a gestation week during pregnancy, and will produce a video mini-lecture (8-10 minutes) describing the major anatomical, physiological, psychological, behavioral events that take place during this week from the perspectives of both the fetus and the pregnant mother. These videos will assess General Education Student Learning Outcomes 1b, 1c, 1d, 1e, 2a, and 2d.

Position paper:

Each student will select a controversial topic, will research the topic by consulting the primary, secondary, and tertiary literature sources, and will write a position paper (pro or con) regarding the topic. A grading rubric will be provided to all students before the position paper is submitted in order to explain and clarify the grading basis for this assignment. The position paper will assess General Education Student Learning Outcomes 1a, 1c, 1d, 1e, 2a, and 2d.

Describe the meaningful writing assignments to be included.*

This course will contain 16 writing assignments: 15 weekly assignments and 1 position paper due at the end of the semester. For each assignment type, a grading rubric will be made available to the students in order to be explicit about the expectations and desired outcomes for these assignments. The rubric will address the following issues: appropriate background research, organization of ideas, presentation of ideas, logical flow of ideas, relevance to assigned topic, information accuracy, quantitative approach, and appropriate synthesis of information. The weekly writing assignments will be graded immediately in order to provide feedback to the students, as well as to provide a framework for continuous student improvement in writing throughout the semester.

Discuss how these methods may be used to address the course and program outcomes, as appropriate. Include or attach a matrix to align the evaluation

A matrix of Course Student Learning Outcomes versus Methods of Assessmen

methods to the outcomes.*

Course Student Learning Outcomes	Methods of Assessment				
	Questions in Lecture (iClicker)	Group Discussion/ Problem Solving	Weekly Quizzes	Weekly Written Assignments	Exa
Understand as well as synthesize information regarding normal female and male reproductive physiology and the conditions that bring about fertilization (conception).	X	X	X	X	X
Synthesize and evaluate information regarding abnormal conditions that prevent conception or lead to abnormal pregnancy.	X	X	X	X	X
Develop a complete chronological understanding of embryonic and fetal development, being able to link correlative anatomical (e.g., organ formation) and physiological (e.g., hormonal fluctuations) changes that take place during gestation, including the differences in male and female development.	X	X	X	X	X
Synthesize and correlate chronological changes in	X	X	X	X	X

fetal physiology to changes in maternal physiology during pregnancy.					
Understand as well as synthesize information regarding the function of the placenta and umbilical cord, and how these structures couple and coordinate fetal and maternal systems for gas exchange, and transfer of nutrients, hormones, and other essential molecules.	X	X	X	X	X
Perform calculations, analyze raw data, use tables and graphs to draw quantitative conclusions regarding ovulation date, conception date, delivery due date, fetal growth rates, and values of maternal and fetal physiological parameters (e.g., basal metabolic rate, heart rate, ventilation rate, etc.).	X	X	X	X	X
Synthesize the maternal integrative physiological functions that take place prior to, during, and after parturition, as well as the integrative physiological processes that allow the newborn to survive outside of the womb after parturition.	X	X	X	X	X
Compile and synthesize information from scientific discoveries, technological advances, and societal norms and	X	X	X	X	X

trends to analyze and put in perspective the historical, current, and emerging trends related to human contraception and pregnancy.					
Compare, contrast, analyze, and evaluate the role of support structures available to pregnant mothers in traditional and modern societies.	X	X	X	X	X
Analyze the primary literature to present oral and written assessments of current and emerging topics of importance to human pregnancy.					
Research and examine the primary, secondary, and tertiary literature sources in order to formulate arguments in favor of or against novel methods enabled by modern scientific advances (e.g., in vitro fertilization, genetic testing, stem cells, etc.).					

If this is a general education course, discuss how these methods may be used to address the associated GE Learning Outcomes listed below. Include or attach a matrix to align the evaluation

A matrix of General Education Student Learning Outcomes for GE Area B5 versus Methods of Assessment:

methods to the outcomes.*

General Education Student Learning Outcomes for GE Area B5	Methods of Assessment				
	Questions in Lecture (iClicker)	Group Discussion/ Problem Solving	Weekly Quizzes	Weekly Written Assignments	Exa
1a			X	X	X
1b		X			
1c	X	X	X	X	X
1d	X	X	X	X	X
1e	X	X	X	X	X
2a	X	X	X	X	X
2d	X	X	X	X	X

X. This OPTIONAL Section is for describing Course/Department/College specific requirements.