Course description: This is an interdisciplinary course which addresses both the societal and scientific aspects of reproductive biotechnologies. The topics include biotechnologies associated with (a) pregnancy, birth and newborn care (b) assisted reproduction and (c) diagnostic and treatment technologies associated with reproductive disease. The course format is interactive and will include situational cases and discussion. Each student will be expected to research, prepare and present a short (approximately 10-15 minutes) presentation on a selected topic and to read and critic three books. This course satisfies the U1 LinC guideline.

Textbooks:

1. AS NATURE MADE HIM by J. Colapinto (2000)
3. Optional third book (see list of possible options)

Tentative Schedule:

Tuesday January 11: Introduction to course..discuss book papers and class presentations

What is ethics?

Thursday January 13: Fetal genetic diagnostic methods

ultrasound
amniocentesis
chronic villi method
fetoscopy

Applications of these technologies - Down syndrome case study
Potential ethical issues related to these technologies

Tuesday January 18: Pregnancy related technologies

Fetal monitoring technology/ethics - SP #1
Birth method technology/ethics - SP #2
C-section technology/ethics - SP #3
Episiotomy (methods)/ethics - SP #4

Thursday January 20: Situations and discussion
Tuesday January 25

Assisted reproductive technologies (ART)
Ovulation induction - SP #5
Multiple births/selective pregnancy reduction SP #6
Technologies associated with premature births SP #7

Thursday January 27

Situations and discussion
(1) Iowa septuplets
(2) technology in NICU units

Tuesday Feb 1

Technologies used in diagnosis of male infertility SP #8
Impotence treatment technology SP # 9
Sperm donation (artificial insemination) and storage technology #10

Thursday Feb 3

Situations and discussion
(1) Nobel sperm banks
(2) Rule and Regulations

Tuesday Feb 8

Egg retrieval and banking technology #11
Basic *in vitro* fertilization technology #12
ICSI #13

Thursday Feb 10

Situations and discussion
(1) Embryo assessment and storage
(2) Preimplantation genetic diagnosis
(3) Associated psychological implications
(4) Insurance aspects
(5) Legal implications

Tuesday Feb 15

Guest speaker

Thursday Feb 17

Guest speaker

Tuesday Feb 22

Cloning
Animal cloning technologies (Dolly) #14
Human cloning technologies #15

Thursday Feb 24

Situations and applications
Religious and political implications (issues)
Associated aspects of genetic enhancement

Tuesday March 1

Stem cells - technologies and medical applications
Concerns
Bush’s- position/restrictions
New research facilities

**PERFECT BABY PAPER DUE**

Thursday March 3

Discussion on PERFECT BABY book
Tuesday March 15  
**Infant related technologies**  
- Infant genetic screening technologies (PKU) #16  
- Male circumcision technology #17  
- Female circumcision technology #18  
- Breast feeding technologies #19  

Thursday March 17  
Situations and discussion  

Tuesday March 22  
**Reproductive sexual development**  
Unique aspects of human sexual development  
Ambiguous genitalia - treatment technologies  

Thursday March 24  
Discussion of the AS NATURE MADE HIM book  
AS NATURE MADE HIM paper due  

Tuesday March 29  
**Birth control technologies**  
- Contraceptive pill technology #20  
- Traditional/future female methods #21  
- Traditional/future male contraceptive methods #22  

Thursday March 31  
Situations and discussion on birth control  
- religious concerns  
- rules/regulation for distribution  
- parental involvement (consent)  
- Emergency contraception  
- Planned parenthood  

Tuesday April 5  
**Issues associated with birth control**  
- World population growth #23  
- Planned parenthood services #24  
- Abortion technologies #25  

Thursday April 7  
Debates- pro and con of abortion related issues:  
(a) Roe verus Wade legislation  
(b) selected fetal reduction associated with ART  
(c) associated with pregnancy related problems (maternal health, genetic and environmental fetal defects/disease)  
(d) as a method of birth control (different cultures)  
(e) Gag rule  

Tuesday April 12  
Biotechnologies associated with the diagnosis and treatment of **sexually transmitted diseases**  
1. DNA sequencing  
2. microarrays  
3. high throughput screening  

Thursday April 14  
Syphilis diagnosis and treatment concerns #26  
Gonorrhea diagnosis and treatment concerns #27  

Syphilis/Tuskegie story  

Tuesday April 19  
HIV - history, diagnosis and treatment technologies
ART associated with the HIV positive patient

Thursday April 24  
**Reproductive system diseases (problems)**
1. endometriosis technology #28
2. hysterectomy technology #29
3. hormone replacement therapy (menopause) #30

Tuesday April 26  
**Female reproductive cancers** - diagnosis and treatment technologies
1. breast
2. cervical
3. ovarian

Thursday April 28  
**Male reproductive cancers** - diagnosis and treatment
1. prostate
2. testicular
3. penis

Future - Brave New World of Tomorrow

Final exam: This exam will be based on a list of focus questions.

Course comments:

1. Students are expected to attend class and to participate. If you miss class you must contact the instructor to received an excused absence. **Unexcused absences will negatively influence your grade.**

2. Grading:
   a. Papers: 150 pts each
   b. Presentation: 150 pts
   c. Final exam: 200 pts
   d. Class participation grade (which includes attendance): 100 pts
   
   Percentage - total earned points/possible points
   
   90-100 pts = A
   80-89 pts. = B +/- will be assigned at the discretion of the professor
   70-79 pts = C
   60-69 pts = D

3. Contracted work: If you would like to contract for additional projects, prepare a written statement of what you intend to do and discuss the project with the
instructor. Typical point value for this type of project is between 100 and 200 points.

4. Book paper information: Papers should be 3-5 pages. If you use additional resources be sure to reference them and to indicate the references in a bibliography.

Copies of these two books are in the bookstore:

1. **THE PERFECT BABY** -- Discuss the pros and cons of the reproductive biotechnologies which McGee feels may lead to a “perfect baby”. Do you think a perfect baby is possible now or in the future?  
   **Due March 1st.**

2. **AS NATURE MADE HIM** -- This paper should be a **reactionary** paper. Focus particularly on the ethical aspects of what happened to David. Indicate the importance of this case in influenced corrective genital surgery in newborns.  
   **Paper due March 22nd.**

2. The third book is optional. It can be a book on the following list or you can select one as long as you have the approval of the instructor. This book will have to be ordered independently. **Paper due on the date indicated for each book.**

Possible optional book choices:

* **ANGEL OF ASHLAND: Practicing Compassion and Tempting Fate**  
  by Vincent Genovese (2000) ($8.45-$16.50)  
  **April 7**

  *This is an interesting story about Robert Spencer a physician in Ashland, PA who performed more than 100,000 abortions during a time period when abortion was considered to be illegal (1919 to mid 1960s).*

* **PANDORA’S BABY: How the 1st Test Tube Babies Sparked the Reproductive Revolution**  
  by Robin Marantz Henig (2004) ($4.94-$16.50)  
  **Feb 10**

  *This is a history of the development of In vitro fertilization. It is a compelling story which presents the scientific and ethical dilemmas of the new reproductive biotechnologies.*

* **BEYOND CHOICE: Reproductive Freedom in the 21st Century**  
  by Alexander Sanger (2004) ($0.50 - $16.38)  
  **March 21**

  *Sanger is the grandson of reproductive rights activist Margaret Sanger. He presents a prochoice view in terms of abortion legislation. He is a strong advocate of Planned Parenthood policies.*

**BEARING RIGHT: HOW CONSERVATIVES WON THE ABORTION WAR**  
**April 7**

*History of political battles in abortion legality, parental notification and a number
of other reproductive issues.

*PROTEUS EFFECT: Stem Cells and Their Promise for Medicine  

History, science and ethics of stem cell research.

OUR POSTHUMAN FUTURE: Consequences of the Biotechnology Revolution  
by Francis Fukeyama (2003) ($6.69-$10.50) April 28

Fukeyama is a conservative political historian. He is particularly concerned about the potential negative future implications of human genetic technology. This is a more technical book which involves some degree of dedication to read.

GENES AND FUTURE PEOPLE: Philosophical Issues in Human Genetics  
by Walter Glanon (2002) March 17 ($4.98 - $29.00)

Discusses the moral implications of advances in genetics involving gene testing, gene therapy, genetic enhancement, cloning, and life span extension. Positive and negative eugenics are discussed.

THE YOUNG WOMAN AT THE RISE OF THE 21st CENTURY:  
Gynecological and Reproductive Issues in Health and Disease  
BY George Creatsus and George Chrousos (2000) ($18.25 - $31.29) April 26

Strong biological emphasis...includes discussion of gynecological problems contraception, cancer, etc.

CLINICAL GUIDE FOR CONTRACEPTION  By Leon Speroff (2001)  
($6.91-$36.95) March 31

This is a quick reference book for general practitioners and women’s health professionals providing contraceptive counseling. The major contraceptive methods are detailed.


This book deals with assisted reproductive biotechnology (ART). It is well written and is a good resource for couples considering ART.

GOD AND THE EMBRYO: Religious Voices on Stem Cells and Cloning  

Theology, philosophy and ethics scholars write from various political and religious perspectives about stem cell and cloning research.

This book focuses on human embryonic development and the questions related to cloning and Bush’s 2001 decision to limit stem cell research.

**HIGH TECH CONCEPTION: A Comprehensive Guidebook for Consumers**  
(1998) ($0.01-$12.71)  
Feb 10

This is an older book on ART and on insurance issues. It has been a popular book for couples considering using the new technologies.

**MAKING WOMEN PAY: The Hidden Costs of Fetal Rights**  
by Rachel Roth  
(2003) ($12.00-$18.19)  
March 31

This book deals with fetal rights.

**REDESIGNING HUMANS - Our Inevitable Genetic Future**  
by Gregory Stock  
March 17

This book discusses gender selection, gene therapy, germinal choice and additional options will are available now or in the near future. The author is a philosopher.

**REPRODUCTIVE TECHNOLOGIES: A Reader**  
by Thomas A. Shannon  
(2003) ($21.95)  
Feb 3

This is a group of readings on the ethical issues surrounding reproductive technologies. Contributors examine issues from a scientific medical, philosophical, and religious perspective.

**CONTRACEPTION TODAY: A Pocketbook for General Practitioners**  
by Jon Guillebaud  
March 31

Answers questions about contraception.

**BIOEVOLUTION - How biotechnology is changing our world**  
by Michael Fumento  

This is a very pro biotechnology book.

**LIFE, LIBERTY AND DEFENSE OF DIGNITY - The Challenge of Bioethics**  
By Leon R. Kass  
(2002) ($1.98-$17.79)

This is an anti-biotechnology book. It argues that biotechnology has left humanity out of its equation.

For the optional books focus on the following items:

1. Why did you pick this book to read?
2. Describe as best you can the background of the author(s).
3. What is the main point (emphasis) of the book? (What is the focus of the authors?)

4. List various reproductive ethical issues mentioned in the book. Do you agree with the author’s approach to these issues?

5. What are the main conclusions of the book? Do you agree with these conclusions? If so, why? If not, why not?

6. What is your assessment of the book in terms of this course?

7. Are there any important topics which were not covered by the author? If so, what were they?

8. Would this book be a good text to include in a future reproductive ethics course?

5. Class presentation
   a. Short presentation (10 to 15 minutes) on a specific reproductive technology.
   b. Prepare a one page outline (can include information on both sides) on your topic which will be given to your classmates (copies can be done in the science office by LouAnn). You should include two discussion questions to stimulate class involvement and which may be included in the focus questions for the final exam. Also include two of your best references which may assist classmate in answering the discussion questions or which provide additional information on the topic.
   c. The presentation grade will be determined on the following basis: 50% for the actual presentation and 50% for your outline, questions, and references.

6. Additional assignments: There may be additional small assignment (both required and optional). The point value for these will be announced.