

**The University of Michigan  
College of Engineering  
Curriculum Committee**

**Agenda**

**April 17, 2007**

**1:30-3:00 p.m.**

**GM ROOM 4<sup>th</sup> Floor**

**Lurie Engineering Center**

1. Approval of Minutes from April 03, 2007 Meeting
2. Race and Ethnicity Requirement
3. Course Approval Forms
4. Nominations and vote for Chairperson for Fall, 2007 term

**University of Michigan  
College of Engineering  
Curriculum Committee Meeting  
Tuesday April 3, 2007  
1:30-3:00 p.m.  
Lurie Engineering Center GM Room  
Minutes**

Richard Robertson called the meeting to order at 1:40 p.m.

Members Present: R. Robertson, J. Barker, A. Hunt, D. Karr, K. Kearfott, C. Lastoskie, M. Keyserling, M. Moghaddam, J. Pan, R. Rogers, M. Solomon, R. Sulewski, T. Teorey

Members Absent: L. Bernal, G. Herrin, M. Krug, P. Mazumder, S. Pang, J. Shi, T. Szvarca

Guests: Kathleen Vargo, Brian Noble, Dawn Simpson

**Motion to approve the minutes of the last meeting**

**The minutes were approved with one slight correction**

**Race and Ethnicity Requirement –Brian Noble**

Brian Noble, representing The Diversity and Outreach Council, came to this meeting for some continued discussion regarding implementation of the Race and Ethnicity Requirement for the College of Engineering.

This had been at the previous (March 20) Committee meeting and had been brought back by the Committee members to their various departments for further discussion.

After some more discussion, the consensus of the Committee was that it was too early to make a decision and this proposal should be brought to the next Faculty Meeting *For Information Only*.

**Unrestricted Electives – Academic Rules Working Group – Kathleen Vargo**

Kathleen Vargo, representing The Academic Rules Working Group, passed our some information regarding Unrestricted Electives.

Kathleen noted that since Curriculum 2000 came into being, what had previously been called “free electives” had been changed to “unrestricted electives”. There are not really “unrestricted electives” so they would like to change the name to “free electives”.

Motion to change the name to General Electives.

Moved and Seconded. Approved.

**Awarding Credit for Transfer Courses Using .5 Units of Credit – Dawn Simpson**

There was some information in the Meeting Packet regarding this issue. Dawn Simpson , a credit evaluator from the Recruitment and Transfer Admissions office addressed this issue. She asked the Committee to agree to accept credit granted as .5 and round up credit that is accepted as .66.

This was discussed and it was decided to not vote on this issue.

### **Course approval Forms**

Dick Robertson called for a motion to approve the following courses. This was moved and seconded.

- AOSS 350      Modification—Changed Title from: Atmospheric Physics I to: ***Atmospheric Thermodynamics***; Changed Description
- AOSS 380      Modification—Changed Title from: Atmospheric Physics II to: ***Introduction to Atmospheric Radiation***; Changed Description; Changed Prerequisites from: AOSS 350 (advised) to: ***Math 216 or equivalent (C or better (enforced))***
- EECS 306      Deletion
- EECS 578      Modification—Changed Prerequisites from: EECS 478 to: ***EECS 478 or Graduate Standing***; Changed Credit Hours from: 3 to: ***4***
- EECS 628      New Course
- IOE 437        New Course
- IOE 506(X-Listed with Math 506) Math is home department on this, and IOE will be cross-listed.
- IOE 539(X-Listed with MFG 539) Modification—Changed Title from: Occupational Safety Engineering to: ***Safety Engineering Methods***; Changed Description; Changed Prerequisites from: IOE 265 or BIOSTAT 500 to: ***IOE 265 or BIOSTAT 503***
- IOE 548        Modification—Changing Description; Changing Prerequisites from: Graduate Standing; Co-reg with OMS 548; Permission of TMI to: ***Graduate Standing; Permission of Tauber Institute***

**All the above courses were approved.**

### **Nominations for Chairperson for Fall, 2007 Term**

It was announced that there will be a vote at the next meeting (April 17) for a new chairperson beginning in the Fall, 2007 term. Committee members were invited to either nominate themselves or a fellow Committee member.

**Adjournment:** Motion to adjourn was made and seconded  
**Motion carried (approved)**

**Next Meeting: April 17, 2007 GM Room (4<sup>th</sup> Floor Lurie Engineering Center)**



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## Race & Ethnicity

The LSA faculty added the Race & Ethnicity requirement in 1991 after long and thoughtful discussion. The faculty does believe that because racial and ethnic intolerance has fundamentally affected the development of contemporary American society and because its effects will continue to be felt well into the future, all students should take at least one course that deals on a fairly sophisticated level with topics such as the historical development of racism, and the social, political, and economic effects of racism and other types of discrimination.

Courses approved to meet the Race & Ethnicity requirement will address issues arising from racial or ethnic intolerance. In approving the requirement, the faculty of the College made the following statements:

**Required content.** All courses satisfying the requirement must provide discussion, consistent with disciplinary approaches, of:

1. the meaning of race, ethnicity, and racism;
2. racial and ethnic intolerance and resulting inequality as it occurs in the United States or elsewhere;
3. comparisons of discrimination based on race, ethnicity, religion, social class, or gender.

### Required focus.

1. Every course satisfying the requirement must devote substantial, but not necessarily exclusive, attention to the required content. Courses may meet this requirement by various means consistent with disciplines or fields of study, and faculty members from all departments are urged to think creatively about how their fields might contribute to the requirement.
2. Although it is hoped that many of these courses will focus on the United States, it is not required that they do so. Courses that deal with these issues in other societies, or that study them comparatively, may also meet the requirement.

Students who are new to the College of LSA (that is, first time enrolled as an LSA student) in the Fall Term of 1991, and thereafter, **must** (in any term before graduation) **receive credit for** one of the approved Race and Ethnicity (R&E) courses. Each term's listing will vary as courses are added or deleted by the College of LSA Curriculum Committee. The College offers several courses taught by a number of different departments each term. Although the list of courses that meet this requirement varies from term to term, all such courses are designed to give students exposure to questions focusing on the meaning of race and racism, racial and ethnic intolerance and resulting inequality, and comparisons with other types of discrimination.

This list is subject to change without notice.

College of Literature, Science, and the Arts  
500 S. State Street, Ann Arbor, MI 48109  
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[< back](#)[Send To Printer](#) **LSA Course Guide Search Results: UG, Fall 2007, Reqs = RE**

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Title Section Instructor	Term Credits Requirements
<b>AAPTIS 289</b> - From Genghis Khan to the Taliban: Modern Central Asia <b>Section 001</b> , LEC  <b>Instructor:</b> Northrop,Douglas Taylor; homepage	<b>FA 2007</b> <b>Credits:</b> 4 <b>Reqs:</b> SS, RE
<b>AMCULT 100</b> - Rethinking American Culture <b>Section 001</b> , LEC  <b>Instructor:</b> Daligga,Catherine Elizabeth	<b>FA 2007</b> <b>Credits:</b> 4 <b>Reqs:</b> SS, RE
<b>AMCULT 103</b> - First Year Seminar in American Studies <b>Section 002</b> , SEM <i>Interracial America</i>  <b>Instructor:</b> Briones,Matthew M	<b>FA 2007</b> <b>Credits:</b> 3 <b>Reqs:</b> RE, HU <b>Other:</b> FYSem
<b>AMCULT 210</b> - Introduction to Ethnic Studies <b>Section 001</b> , REC <i>Introduction to Arab American Studies.</i>  <b>Instructor:</b> Naber,Nadine C	<b>FA 2007</b> <b>Credits:</b> 3 <b>Reqs:</b> RE, SS
<b>AMCULT 213</b> - Introduction to Latino Studies - Humanities <b>Section 001</b> , LEC  <b>Instructor:</b> Cotera,Maria E; homepage	<b>FA 2007</b> <b>Credits:</b> 4 <b>Reqs:</b> HU, RE
<b>AMCULT 214</b> - Introduction to Asian/Pacific American Studies <b>Section 001</b> , REC  <b>Instructor:</b> Akutsu,Phillip D; homepage	<b>FA 2007</b> <b>Credits:</b> 3 <b>Reqs:</b> ID, RE
<b>AMCULT 240</b> - Introduction to Women's Studies <b>Section 001</b> , LEC  <b>Instructor:</b> Cole,Elizabeth Ruth; homepage	<b>FA 2007</b> <b>Credits:</b> 4 <b>Reqs:</b> HU, RE
<b>AMCULT 313</b> - Cuba and its Diaspora <b>Section 001</b> , LEC <i>Issues in Race &amp; Ethnicity</i>  <b>Instructor:</b> Behar,Ruth	<b>FA 2007</b> <b>Credits:</b> 4 <b>Reqs:</b> RE, ULWR
<b>AMCULT 342</b> - History of the Family in the U.S. <b>Section 001</b> , LEC <i>Issues in Race &amp; Ethnicity</i>	<b>FA 2007</b> <b>Credits:</b> 4 <b>Reqs:</b> RE, SS
<b>AMCULT 464</b> - Race, Culture, and Politics in the Era of Civil War and Reconstruction <b>Section 001</b> , REC  <b>Instructor:</b> Rosen,Hannah	<b>FA 2007</b> <b>Credits:</b> 3 <b>Reqs:</b> RE
<b>ANTHCUL 101</b> - Introduction to Anthropology <b>Section 001</b> , LEC  <b>Instructor:</b> Shryock,Andrew J; homepage	<b>FA 2007</b> <b>Credits:</b> 4 <b>Reqs:</b> SS, RE

**ANTHRCUL 101** - Introduction to Anthropology  
Section 026, LEC

**Instructor:** Peters-Golden,Holly; homepage

FA 2007  
Credits: 4  
Reqs: SS, RE

**ANTHRCUL 202** - Ethnic Diversity in Japan  
Section 001, LEC  
*Issues in Race & Ethnicity*

**Instructor:** Robertson,Jennifer E; homepage

FA 2007  
Credits: 4  
Reqs: RE, SS

**ANTHRCUL 314** - Cuba and its Diaspora  
Section 001, LEC  
*Issues in Race & Ethnicity*

**Instructor:** Behar,Ruth

FA 2007  
Credits: 4  
Reqs: RE, ULWR

**ANTHRCUL 319** - Latin American Society and Culture  
Section 001, LEC  
*Issues in Race & Ethnicity*

**Instructor:** Frye,David L; homepage

FA 2007  
Credits: 4  
Reqs: RE, SS

**ANTHRCUL 346** - Latin America: The Colonial Period  
Section 001, LEC  
*Issues in Race & Ethnicity*

**Instructor:** Mumford,Jeremy Ravi

FA 2007  
Credits: 4  
Reqs: RE, SS

**ANTHRCUL 370** - Language and Discrimination: Language as  
Social Statement  
Section 001, LEC

FA 2007  
Credits: 3  
Reqs: SS, RE

**ANTHRCUL 447** - Culture, Racism, and Human Nature  
Section 001, SEM

**Instructor:** Williams,Melvin D; homepage

FA 2007  
Credits: 3  
Reqs: RE

**ASIAN 207** - Southeast Asian Civilization  
Section 001, LEC  
*Issues in Race & Ethnicity*

**Instructor:** Lieberman,Victor B

FA 2007  
Credits: 4  
Reqs: RE, SS  
Other: WorldLit

**ASIAN 289** - From Genghis Khan to the Taliban: Modern  
Central Asia  
Section 001, LEC

**Instructor:** Northrop,Douglas Taylor; homepage

FA 2007  
Credits: 4  
Reqs: SS, RE

**CAAS 103** - First Year Social Science Seminar  
Section 005, SEM  
*I, Too, Sing America: A Psychology of Race & Racism*

**Instructor:** Behling,Charles F

FA 2007  
Credits: 3  
Reqs: RE, SS  
Other: FYSem

**CAAS 103** - First Year Social Science Seminar  
Section 006, SEM  
*Justice For All? Difference & Oppression in U.S. Society*

**Instructor:** Gurin,Patricia Y

FA 2007  
Credits: 3  
Reqs: RE, SS  
Other: FYSem

**CAAS 104** - First Year Humanities Seminar  
Section 001, SEM  
*Interracial America*

**Instructor:** Briones,Matthew M

FA 2007  
Credits: 3  
Reqs: RE, HU  
Other: FYSem

**CAAS 111** - Introduction to Africa and Its Diaspora  
Section 001, LEC

**Instructor:** Whatley, Warren C; homepage  
**Instructor:** Means Coleman, Robin Renee

FA 2007  
Credits: 4  
Reqs: HU, RE

**CAAS 303** - Race and Ethnic Relations  
Section 001, LEC

**Instructor:** Chen, Anthony S

FA 2007  
Credits: 4  
Reqs: SS, RE

**CAAS 476** - Contemporary Afro-American Literature  
Section 001, REC  
*Redesigning the House that Race Built: Issues in African American Literary & Cultural Studies, 1965-Present*

FA 2007  
Credits: 3  
Reqs: RE

**EDUC 118** - Introduction to Education: Schooling and Multicultural Society  
Section 001, REC

**Instructor:** Moje, Elizabeth B

FA 2007  
Credits: 3  
Reqs: RE

**ENGLISH 319** - Literature and Social Change  
Section 001, LEC  
*Rhetorical Activism & U.S. Civil Rights Movements*

**Instructor:** Portnoy, Alisse Suzanne; homepage

FA 2007  
Credits: 3  
Reqs: RE, HU

**ENGLISH 478** - Contemporary Afro-American Literature  
Section 001, REC  
*Redesigning the House that Race Built: Issues in African American Literary & Cultural Studies, 1965-Present*

FA 2007  
Credits: 3  
Reqs: RE

**ENVIRON 222** - Introduction to Environmental Justice  
Section 001, LEC  
*Issues in Race & Ethnicity*

**Instructor:** Bryant Jr, Bunyan I; homepage

FA 2007  
Credits: 3  
Reqs: RE, SS

**HISTORY 207** - Southeast Asian Civilization  
Section 001, LEC  
*Issues in Race & Ethnicity*

**Instructor:** Lieberman, Victor B

FA 2007  
Credits: 4  
Reqs: RE, SS  
Other: WorldLit

**HISTORY 210** - Early Middle Ages, 300-1100  
Section 001, LEC  
*Issues in Race & Ethnicity*

**Instructor:** Squatriti, Paolo

FA 2007  
Credits: 4  
Reqs: RE, SS

**HISTORY 289** - From Genghis Khan to the Taliban: Modern Central Asia  
Section 001, LEC

**Instructor:** Northrop, Douglas Taylor; homepage

FA 2007  
Credits: 4  
Reqs: SS, RE

**HISTORY 347** - Latin America: The Colonial Period  
Section 001, LEC  
*Issues in Race & Ethnicity*

**Instructor:** Mumford, Jeremy Ravi

FA 2007  
Credits: 4  
Reqs: RE, SS

**HISTORY 368** - History of the Family in the U.S.  
Section 001, LEC  
*Issues in Race & Ethnicity*

FA 2007  
Credits: 4  
Reqs: RE, SS

**HISTORY 386** - The Holocaust  
Section 001, LEC

FA 2007  
Credits: 4  
Reqs: RE

**HISTORY 464** - Race, Culture, and Politics in the Era of Civil War and Reconstruction  
Section 001, REC

FA 2007  
Credits: 3  
Reqs: RE

Instructor: Rosen,Hannah

**HONORS 251** - Sophomore Seminar  
Section 003, SEM  
*Race, Racism, & Ethnicity*

FA 2007  
Credits: 3  
Reqs: RE, HU  
Other: Honors

**JUDAIC 386** - The Holocaust  
Section 001, LEC

FA 2007  
Credits: 4  
Reqs: RE

**LING 370** - Language and Discrimination: Language as Social Statement  
Section 001, LEC

FA 2007  
Credits: 3  
Reqs: SS, RE

**MEMS 210** - Early Middle Ages, 300-1100  
Section 001, LEC  
*Issues in Race & Ethnicity*

FA 2007  
Credits: 4  
Reqs: RE, SS

Instructor: Squatriti,Paolo

**MENAS 289** - From Genghis Khan to the Taliban: Modern Central Asia  
Section 001, LEC

FA 2007  
Credits: 4  
Reqs: SS, RE

Instructor: Northrop,Douglas Taylor; homepage

**NURS 220** - Perspectives in Women's Health  
Section 001, LEC

FA 2007  
Credits: 3  
Reqs: SS, RE

Instructor: Bailey,Joanne Motino; homepage

**PHIL 359** - Law and Philosophy  
Section 001, LEC

FA 2007  
Credits: 4  
Reqs: HU, RE

Instructor: Anderson,Elizabeth S; homepage

**PSYCH 310** - Processes of Intergroup Dialogues Facilitation  
Section 001, SEM

FA 2007  
Credits: 3  
Reqs: RE

Instructor: Behling,Charles F

**PSYCH 310** - Processes of Intergroup Dialogues Facilitation  
Section 002, SEM

FA 2007  
Credits: 3  
Reqs: RE

Instructor: Behling,Charles F

**PSYCH 310** - Processes of Intergroup Dialogues Facilitation  
Section 003, SEM

FA 2007  
Credits: 3  
Reqs: RE

Instructor: Behling,Charles F

**PSYCH 493** - Psychological Perspectives on Culture and Ethnicity  
Section 001, LEC  
*Culture and Immigration*

FA 2007  
Credits: 3  
Reqs: RE

Instructor: Mahalingam,Ramaswami



**RCHUMS 333** - Art and Culture  
**Section 001**, SEM  
*Race, Identity, and Western Art Music*

**Instructor:** Andre,Naomi A  
**Instructor:** Siegfried,Susan L

**FA 2007**  
**Credits:** 3  
**Reqs:** RE

**REES 289** - From Genghis Khan to the Taliban: Modern  
 Central Asia  
**Section 001**, LEC

**Instructor:** Northrop,Douglas Taylor; homepage

**FA 2007**  
**Credits:** 4  
**Reqs:** SS, RE

**SLAVIC 225** - Arts and Cultures of Central Europe  
**Section 001**, LEC  
*Issues in Race & Ethnicity*

**Instructor:** Eagle,Herbert J; homepage  
**Instructor:** Toman,Jindrich; homepage  
**Instructor:** Carpenter,Bogdana; homepage

**FA 2007**  
**Credits:** 3  
**Reqs:** RE, HU  
**Other:** WorldLit

**SOC 105** - First Year Seminar in Sociology  
**Section 001**, SEM  
*Transforming America: Immigrants Then and Now*

**Instructor:** Pedraza,Silvia

**FA 2007**  
**Credits:** 3  
**Reqs:** RE, SS  
**Other:** FYSem

**SOC 105** - First Year Seminar in Sociology  
**Section 002**, SEM  
*Diversity, Democracy, Community*

**Instructor:** Schoem,David

**FA 2007**  
**Credits:** 3  
**Reqs:** RE, SS  
**Other:** FYSem

**SOC 303** - Race and Ethnic Relations  
**Section 001**, LEC

**Instructor:** Chen,Anthony S

**FA 2007**  
**Credits:** 4  
**Reqs:** SS, RE

**SOC 320** - Processes of Intergroup Dialogues Facilitation  
**Section 001**, SEM

**Instructor:** Behling,Charles F

**FA 2007**  
**Credits:** 3  
**Reqs:** RE

**SOC 320** - Processes of Intergroup Dialogues Facilitation  
**Section 002**, SEM

**Instructor:** Behling,Charles F

**FA 2007**  
**Credits:** 3  
**Reqs:** RE

**SOC 320** - Processes of Intergroup Dialogues Facilitation  
**Section 003**, SEM

**Instructor:** Behling,Charles F

**FA 2007**  
**Credits:** 3  
**Reqs:** RE

**UC 320** - Processes of Intergroup Dialogues Facilitation  
**Section 001**, SEM

**Instructor:** Behling,Charles F

**FA 2007**  
**Credits:** 3  
**Reqs:** RE

**UC 320** - Processes of Intergroup Dialogues Facilitation  
**Section 002**, SEM

**Instructor:** Behling,Charles F

**FA 2007**  
**Credits:** 3  
**Reqs:** RE

**UC 320** - Processes of Intergroup Dialogues Facilitation  
**Section 003**, SEM

**Instructor:** Behling,Charles F

**FA 2007**  
**Credits:** 3  
**Reqs:** RE

**WOMENSTD 220** - Perspectives in Women's Health  
Section 001, LEC

**Instructor:** Bailey, Joanne Motino; [homepage](#)

**FA 2007**  
**Credits:** 3  
**Reqs:** SS, RE

**WOMENSTD 240** - Introduction to Women's Studies  
Section 001, LEC

**Instructor:** Cole, Elizabeth Ruth; [homepage](#)

**FA 2007**  
**Credits:** 4  
**Reqs:** HU, RE

**WOMENSTD 360** - History of the Family in the U.S.  
Section 001, LEC  
*Issues in Race & Ethnicity*

**FA 2007**  
**Credits:** 4  
**Reqs:** RE, SS

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## COURSE APPROVAL FORMS

### For April 17, 2007 CoE CC Meeting

AERO 585 Modification—Adding Pre-requisite (Aero 385 or Senior Standing  
BME 520 (X-listed with BA 518, HMP 630, PHRM 620) New Course (Re-submitting  
with corrections)



Action Requested

- New Course
- Modification of Existing Course
- Deletion of Course

**Complete the following sections:**  
 New Courses - B & C completely  
 Modifications - A modified information, B & C completely  
 Deletions - A & C completely

Date 4/3/2007

Effective Fall 2007

**A. CURRENT LISTING**

**B. REQUESTED LISTING**

Home Department		Div #	Course Number
Cross Listed Course Information			
Course Title			
TITLE ABBREVIATION	Time Sched Max = 19 Spaces		
	Transcript Max = 20 Spaces		
Course Description			

Home Department		Div #	Course Number
AEROSP			585
Cross Listed Course Information			
Course Title			
Aerospace Engineering Seminar			
TITLE ABBREVIATION	Time Sched Max = 19 Spaces	Aerospace Seminar	
	Transcript Max = 20 Spaces	Aerospace Seminar	
Course Description for Official Publication (Max = 50 words)			
A series of seminars by noted speakers designed to acquaint graduate and undergraduate students with contemporary research and technological issues in aerospace engineering. Involves a short term paper pertinent to one of the seminar topics.			

**PROGRAM OUTCOMES:**

a  b  c  d  e  f  g  h  i  j  k

**Degree Requirements**     Degree Requirement     Free Elective     Other  
 Core Course                       Tech Elective

**Prerequisites**     Enforced     Advised

**Credit Restrictions**

<b>Level of Credit</b>	<b>Credit Hours</b>	<b>Contact</b>
<input type="checkbox"/> Undergrad only <input type="checkbox"/> Rackham Grad <input type="checkbox"/> Non-Rackham Grad <input type="checkbox"/> Ugrad or Rackham Grad	Min    Max _____	Hrs/Wk _____ Number of Wks _____

**PROGRAM OUTCOMES:**

a  b  c  d  e  f  g  h  i  j  k

**Degree Requirements**     Degree Requirement     Free Elective     Other  
 Core Course                       Tech Elective

**Prerequisites**    Aero 385 -or- Senior Standing  
 Enforced     Advised

**Credit Restrictions**

<b>Level of Credit</b>	<b>Credit Hours</b>	<b>Contact</b>
<input type="checkbox"/> Undergrad only <input type="checkbox"/> Rackham Grad <input type="checkbox"/> Non-Rackham Grad <input checked="" type="checkbox"/> Ugrad or Rackham Grad	Min    Max 1        1	Hrs/Wk    1.5 Number of Wks    term

**C.**    Repeatability (Indi Research, Dir. Study, Dissertation):

Is this course repeatable?     Yes     No

Maximum Hours?    \_\_\_\_\_    Maximum Times?    \_\_\_\_\_

Can it be repeated in the same term?     Yes     No

<b>Class Type(s)</b>	<b>Graded Section</b>	<b>Grading</b>	<b>Location</b>
<input checked="" type="checkbox"/> Lec <input type="checkbox"/> Rec <input type="checkbox"/> Sem <input type="checkbox"/> Lab <input type="checkbox"/> Dis <input type="checkbox"/> Ind <input type="checkbox"/> Other _____	<input type="radio"/> Lec <input type="radio"/> Rec <input checked="" type="radio"/> Sem <input type="radio"/> Lab <input type="radio"/> Dis <input type="radio"/> Ind <input type="radio"/> Other	<input checked="" type="checkbox"/> A-E <input type="checkbox"/> CR/NC <input type="checkbox"/> S/U <input type="checkbox"/> P/F <input type="checkbox"/> Y	<input checked="" type="checkbox"/> Ann Arbor <input type="checkbox"/> Biological Station <input type="checkbox"/> Camp Davis <input type="checkbox"/> Extension

**Printing Information (Optional)**     Print the course in the Bulletin  
 Print the course in the Time Schedule

**Terms & Freq. of Offering**     I     II     IIIa     IIIb     III    Half term     1st     2nd

Yearly     Alter Years     Even Years     Odd Years

**Cognizant Faculty Member:**    P. Friedmann    **Title** Professor

Grad Course: Attach nomination if Cognizant Faculty is not a regular graduate faculty

**Approval**

Curriculum Comm. \_\_\_\_\_

Faculty \_\_\_\_\_

Rackham \_\_\_\_\_

Cross listed Unit 1 \_\_\_\_\_

Cross listed Unit 2 \_\_\_\_\_

Submitted By:     Home Dept.     Cross-listed Dept.

Name, Signature & Department:    *H. McClamroch*  
 Home Dept.    \_\_\_\_\_  
 Cross-listed Dept(s).    \_\_\_\_\_





**SUPPORTING STATEMENT**

This course is currently offered by the Ross School of Business as BA 518. The Ross School of Business Curriculum Committee recommended and approved that this course be cross-listed with a CoE course on 3/23/07.

This course takes a multi-disciplinary approach and depends heavily on a wide variety of academic experience among students. It is important to have students from multiple programs enrolled in the course each term. In the current state it is difficult for engineering students to register for this course due to administrative constraints in the Ross School of Business registration process. Cross-listing this course with BME 520 (a new course) would alleviate these complications.

Because this course is offered for 2.25 credits in the Ross School of Business, it is understood that CoE policy requires the credit hours to be rounded down to 2 credits.

Please find attached:

- 1) Syllabus
- 2) 3-year Summary Report
- 3) Email from Ross School of Business (3/23/07) Indicating Approval for CoE to cross-list

Are any special resources or facilities required for this course?  Yes  No

Detail the Special requirements

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.....

.....

.....

*The University of Michigan*

BA 518/HMP 630

**The Business of Biology**

Fall A 2006

Ross School of Business

Liz Barry, JD

Managing Director, Life Sciences Institute

Bill Hall, MBA, MS, PhD

Adjunct Professor of Corporate Strategy, Ross School of Business

Research Investigator, Life Sciences Institute

**Course Description**

The health care and life sciences industry is undergoing profound and transformative change in the U.S. and around the globe. The interactive effects of discoveries in the life sciences, advances in medical and information technology, and the emerging new consumerism is revolutionizing the industry creating new business opportunities and a new age of medicine. This multidisciplinary course will explore the consequences of transformative change on the future of business and industry, medicine and health, and the complex ethical and legal issues that face individuals and society.

The course will provide an overview of the collaborative research enterprise; the promise of personalized medicine and the challenge for the biopharmaceutical industry; the economic realities of the health care industry; the latest trends in venture investing; and the effort to finally bring health care into the digital age.

The purpose of this course is to provide you with a “helicopter view” of the dynamic developments in the life sciences and health care. Although the course will not make you an expert, it will provide you with a conceptual framework to help you identify the key trends, issues, challenges and opportunities in the burgeoning “Business of Biology.”

Students will have the opportunity to work together on a group research project plus explore a topic in depth in an individual paper.



## Course Materials

CoursePack (cases and readings). (A copy is available at the Business School library.)

Textbook:

Richards, Julia E., and Hawley, R. Scott, *The Human Genome*, Second Edition, Elsevier Academic Press, 2005. (Note that there is an errata sheet for this edition in the front of the coursepack.)

*Note:* Co-Author Julia E. Richards, PhD, is a University of Michigan Associate Professor in the Department of Ophthalmology and Visual Sciences at the Medical School and in the Department of Epidemiology at the School of Public Health.

Optional Web Resource:

UM Center for Genomics and Public Health presentation series and panel discussion: "Six Weeks to Genomic Awareness" at <http://www.genomicawareness.org/>

Additional optional web resources are posted on C-Tools.

## C-Tools

C-Tools includes announcements, the syllabus, assignments, readings, summaries of the lectures, and the presentations. Further, optional articles, an optional bibliography, and optional web resources will also be posted.

C-Tools will also include short biographies of the instructors and guest lecturers plus students' own short biographies or resumes as well.

## Times and Locations

Regular class sessions are held Monday and Wednesday from 8:30 am to 10:00 am at the Undergraduate Research Building in room 1230.

Required special evening sessions:

- Thursday, September 7<sup>th</sup> from 4:00 pm to 7:00 pm Life Sciences Institute 1250 Undergraduate Science Building
  - Topic: **Life Sciences and Genomics**
- Wednesday, September 20<sup>th</sup> from 4:00 pm to 6:30 p.m. 1250 Undergraduate Science Building
  - Topic: **Life Science Industry Perspectives**
- Tuesday, October 10<sup>th</sup> from 4:00 pm to 8:00 pm 1230 Undergraduate Science Building
  - Topic: **Colloquium for Student Research Project Presentations**  
...to be followed by a reception

## **Communication**

Following is our contact information. Feel free to communicate with us as needed.

Liz Barry  
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Hours 8:00 a.m. – 5:00 p.m.

E-mail is the best way to communicate with us for quick exchanges. If you want to talk by telephone, feel free to call us. If you want to get together for an in-person discussion, please make an appointment in advance by contacting our assistants, Sandra Moing 734-774-4502 and Paula Kopka 734-936-1525.

BA 518/HMP 630  
**The Business of Biology**

September 6<sup>th</sup> – October 16<sup>th</sup> 2006

Course Schedule

**Session 1 Wednesday, September 6** – Undergraduate Science Building 1230

Topic      **Overview: Towards a Positive Health Care Future**

Leaders    Liz Barry and Bill Hall

Reading    Richards and Hawley, *The Human Genome*, Chapters 1 – 2. Required pre-reading only for students who do not have a strong biology background.

**Evening 1 Thursday, September 7- Life Sciences Institute and Undergraduate Science Building 1250 4:00 p.m. – 7:00 p.m.**

Topic      **Life Sciences and Genomics**

Leaders    Liz Barry and Julia Richards, PhD, Associate Professor of Ophthalmology

Reading    Richards and Hawley, *The Human Genome*, Chapters 3 – 9, 14 – 16, 18 - 19.  
After class: Richards and Hawley, *The Human Genome*, Chapters 10 – 13.

**Session 2 Monday, September 11** - Undergraduate Science Building 1230

Topic      **Drug Discovery and the Biopharmaceutical Industry**

Leader     Bill Hall

Reading    Richards and Hawley, *The Human Genome*, Chapters 25 - 28.

“Technical Note on the Evolving Economics of Drug Discovery, Development and Commercialization.” The University of Michigan, 2005.

“The Biopharmaceutical Industry in the 21<sup>st</sup> Century.” The University of Michigan, 2004.

**Session 3 Wednesday, September 13 - Undergraduate Science Building 1230**

- Topic        **Venture Investing: Biotechnology and Medical Devices**
- Leaders      Jan Garfinkle - Founding Principal, Arboretum Ventures  
President, Michigan Venture Capital Association
- Timothy Petersen  
Principal, Arboretum Ventures
- Reading      Dotzler, Fred, "What Do Venture Capitalists Really Do, and Where Do  
They Learn to Do It?" *The Journal of Private Equity*, Winter 2001.
- Ferrari, Richard, "Keys to Creating Value for Early-Stage Medical Device  
Companies" *In Vivo: The Business & Medicine Report*, vol. 22, no 10  
(January 2005)
- May, David, "By The Numbers" *Modern Healthcare*, December 20, 2004  
pp 1-58
- Case Study

**Session 4 Monday, September 18 - Undergraduate Science Building 1230**

- Topic        **The Esperion Story: An Example of a Biotech Success in the Midwest**
- Leader       Roger Newton  
President and CEO of Esperion Therapeutics
- Reading      Herper, Matthew, "The Cleaner," *Forbes Magazine*, November 24, 2003,  
pp. 273-274.
- Newton, R.S., Krause, B.R. HDL therapy for the acute treatment of  
atherosclerosis. *Atherosclerosis Supplement* 2002; 3:31-38
- Nicholls, SJ, Tuzcu, EM, Sipahi, IS, et al., Relationship Between  
Atheroma Regression and Change in Lumen Size After the Infusion of  
Apolipoprotein A-I Milano. *Journal of The American Medical Association*.  
2006; 47:992-997.
- Nissen, SE, Tsunoda, T., Tuzcu, EM, et al., Effect of Recombinant Apo A-  
I Milano on Coronary Atherosclerosis in Patients with Acute Coronary  
Syndromes: A Randomized Controlled Trial. *JAMA*. 2003; 290:2292-  
2300.

**Session 5 Wednesday, September 20 - Undergraduate Science Building 1230**

Topic **In-Progress Group Research Project Presentations**

Leader Liz Barry and Bill Hall

**Evening 2 Wednesday, September 20 - Undergraduate Science Building 1250  
4:00 p.m. – 6:30 p.m.**

Topic **Perspectives on Life Sciences Capital & Financing**

Leaders Craig Parker, Managing Director, Lehman Brothers  
John Osborn, Executive Vice President and General Counsel, Cephalon, Inc.  
Tom Porter, General Partner, Trillium Ventures

**Session 6 Monday, September 25 - Undergraduate Science Building 1230**

Topic	<b>Ethical Issues: Genetic Privacy and Discrimination</b>
Leader	Liz Barry
Reading	Greely, Henry T., <i>Banning Genetic Discrimination</i> , N Engl J Med 353:9, September 1, 2005  Richards and Hawley, <i>The Human Genome</i> , Chapter 37.  On-line (optional) National Human Genome Research Institute <i>Policy and Ethics: Critical Issues and Legislation Surrounding Genetic Research</i> <a href="http://www.nhgri.nih.gov/PolicyEthics">http://www.nhgri.nih.gov/PolicyEthics</a>

**Session 7 Wednesday, September 27** - Undergraduate Science Building 1230

Topic **From Genomics to Targeted Medicines**

Leader Gilbert S. Omenn, MD, PhD  
Professor of Human Genetics  
Professor of Internal Medicine  
Professor of Public Health  
President, American Association of the Advancement of Science

Reading Hanahan and Weinberg, "The Hallmarks of Cancer." *Cell*, Vol. 100, 57-70, January 7, 2000.

Omenn, Gilbert S., "Genetic Advances Will Influence the Practice of Medicine: Examples from Cancer Research and Care of Cancer Patients." *Genetics in Medicine*, November/December 2002, Vol. 4, No. 6, Supplement.

Omenn, Gilbert S., "The Crucial Role of the Public Health Sciences in the Postgenomic Era." *Genetics in Medicine*, November/December 2002, Vol. 4, No. 6, Supplement.

Richards and Hawley, *The Human Genome*, Chapter 33.

**Session 8 Monday, October 2** - Undergraduate Science Building 1230

Topic **Placebo Economics: The Financing of Health Care in the U.S.**

Leader Kyle L. Grazier, MS, MPH, Dr. PH  
Professor of Health Care Finance, Dept. of Health Management and Policy  
Editor, Journal of Healthcare Management  
Chair, UM Committee on Health Insurance Premium Design

Reading Anderson, Gerard F. et. al. "Health Spending in the United States and the Rest of the Industrialized World." *Health Affairs*, Vol. 24, No. 4, July/August 2005.

Chun, S. and Matisson, S., "Discovery Health (A)." Harvard Business School, Case 9-599-046, Rev. June 30, 1999.

Fuchs, Victor R., "What's Ahead for Health Insurance in the United States?" *New England Journal of Medicine*, Vol. 346, No. 23, June 6, 2002.

Ginsburg, Paul B., and Grossman, Joy M., "When the Price Isn't Right: How Inadvertent Payment Incentives Drive Medical Care." *Health Affairs* Web Exclusive, August 9, 2005.

Rosenbaum, Sara, "Medicaid." *New England Journal of Medicine*, Vol. 346, No. 8, February 21, 2002.

Stone, Deborah A., "The Struggle for the Soul of Health Insurance." *Journal of Health Politics, Policy and Law*. Vol. 18, No. 2, Summer 1993.

Winakur, Jerald, "What Are We Going To Do with Dad?" *Health Affairs*, Vol. 24, No. 4, July/August 2005.

Woolhandler, S. et. al., "Physicians' Working Group for Single-Payer National Health Insurance. Proposal of the Physicians' Working Group for Single-Payer National Health Insurance." *Journal of the American Medical Association*, Vol. 290, No. 6, August 13, 2005

**Session 9 Wednesday, October 4 - Undergraduate Science Building 1230**

Topic        **Intellectual Property**

Leader        Rebecca S. Eisenberg  
                  Robert and Barbara Luciano Professor of Law

Reading        Eisenberg, Rebecca S., "How Can You Patent Genes?" *In Genetics: Science, Ethics and Public Policy: A Reader*, Edited by T.A. Shannon, 131-45. Readings in Bioethics. Lanham, MD: Rowman & Littlefield Publishers, 2005. (originally published under the same title in *Who Owns Life?*, edited by D. Magnus et al., 117-34. Amherst, N.Y.: Prometheus Books, 2002)

Eisenberg, Rebecca S., "The Problem of New Uses." *Yale Journal of Health Policy L. & Ethics* V, No. 2 (2005): 717-39

Eisenberg, Rebecca S. "Biotech Patents: Looking Backward While Moving Forward" *Nature Biotech*, 24, no. 3 ( 2006): 317-9

Laboratory Corp. of America v. Metabolite Laboratories, Inc., US S Ct Slip Op. No. 04-607, 548 U.S.\_\_(2006).

Eisenberg, Rebecca S., "Reexamining Drug Regulation from the Perspective of Innovation Policy." *Journal Institutional & Theoretical Economics* 160, no. 1 (2004): 126-35.

**Session 10 Monday, October 9** - Undergraduate Science Building 1230

Topic        **Molecular Diagnostics and Predictive Medicine**

Leader        Bill Hall

Reading       Case Study: Genomic Health, Inc. (Posted on C-Tools.)  
                  Richards and Hawley, *The Human Genome*, Chapter 34.

**Evening 3 Tuesday, October 10** - Undergraduate Science Building 1230  
4:00 p.m. – 8:00 p.m.

Topic        **Colloquium for Student Research Project Presentations**

Leaders       Liz Barry, Bill Hall, Students

**Session 11 Wednesday, October 11** - Undergraduate Science Building 1230

Topic        **Ethical Issues: Genetic Enhancement**

Leader        Liz Barry

Reading       · Chapman, Audrey R. and Frankel, Mark S., Eds *Designing Our  
Descendants: The Promises and Perils of Genetic Modifications*, Chapter 1  
and 9, The Johns Hopkins University Press, 2003

                  On-line        The President's Council on Bioethics  
                  (*optional*)    <http://www.bioethics.gov>

                  DVD            Film: *Gattica*  
                  (*optional*)

**Session 12 Monday, October 16** - Undergraduate Science Building 1230

Topic        **Summary**

Leaders       Liz Barry and Bill Hall

Reading       To be assigned.



## **Course Assignments and Grading**

- 30% Individual Paper (due Monday, October 16<sup>th</sup> choice of topic)
- 40% Group Project: Two-page Executive Summary and PowerPoint presentation. (due on Tuesday, October 10<sup>th</sup>)
- 30% Class preparation including the assigned readings and active class participation. Name tags are required to be displayed in class.

## **Individual Paper**

You have a choice of two topics for the individual paper. Either assignment consists of an exercise in analysis rather than a traditional research paper. The paper should be no more than 5 to 7 pages in length, double-spaced, 12-pt type. The papers are due **October 16, 2006**.

### 1. Pfizer Case

#### Reading:

“Pfizer Inc.: Responding to Challenges in the 21<sup>st</sup> Century”, Ross School of Business, The University of Michigan, 2005.

“The Lawyer is in at Pfizer”, Business Week, August 14, 2006.

#### Assignment:

On July 28, 2006 the Pfizer Board of Directors named Mr. Jeffrey B. Kindler as Chief Executive Officer, replacing Mr. Hank McKinnell. In accepting the position, Mr. Kindler commented:

“Science is creating wholly new ways to treat disease; regulators and payers are more demanding, and patients are using newly available information to take control of their healthcare decisions. As a result, Pfizer must become more agile and entrepreneurial, embracing the spirit of a small company, while exploiting the advantages of our unmatched scale and reach.”

Using concepts developed in this course and your own (documented, independent) research, prepare a “position paper” for Mr. Kindler with your recommendations as to how Pfizer should approach life science research and drug development in the 21<sup>st</sup> century.

### 2. Ethical/Legal/Social Issues

As an alternative to (1) above, you may choose to write your paper on an ethical, legal or social issue raised by the developments discussed in the course. The paper should be based on required readings, class sessions, outside readings and reflection.

You should analyze and synthesize some observations on your topic, including unresolved and/or important questions remaining. You may write on any topic that meets these general requirements but you must submit your paper topic to Liz Barry no later than **Wednesday, September 27<sup>th</sup>** for approval. Some example topics are listed below.

*Examples.* (1) What are the ethical questions raised by genetic enhancement? Does it turn on whether the changes affect the germ line? This paper might catalog the questions raised by different types of potential enhancements and explore the implications of humans “engineered” for a better result. (2) In the movie *Gattica*, the human engineered to be “better” is outfoxed by his “natural” brother? What moral thesis is the movie projecting? Do you agree or disagree? (3) What are the ethical and social issues raised by the Discovery Health case discussed by Professor Grazier? Analyze. (4) Do you see a rationale basis for the difference in the regulatory approval scheme for pharmaceuticals v. medical devices. How will this scheme be challenged by discoveries that blur the line between the two categories?

## Group Project

### *Overview*

The group project is intended to develop research skills in analyzing how various public and private organizations are dealing with the scientific, behavioral, ethical and economic trends taking place in the life sciences in the early 21<sup>st</sup> century. Each student research group will be assigned to: (1) compare and contrast the objectives and approaches of their assigned organizations in dealing with these complex issues, (2) evaluate these policies from an economic, legal and ethical perspective; and (3) formulate predictions about likely potential outcomes if these organizations maintain their current policies as well as analyze alternative options that may be better than these current approaches.

Library, internet and direct field research is required for these research projects, and a bibliography of all source documentation should be submitted along with visual aids supporting the oral reports.

### *Process*

Students will be assigned to a research group at the first or second course session. Each student research group should submit a written “bid” providing a list of group members and the first and second choice of preferred topics (listed below) no later than **Monday, September 11<sup>th</sup>**. The instructors will assign research topics to student teams using these “bids” as guidelines on **Wednesday, September 13<sup>th</sup>**. As part of an in class assignment on **Wednesday, September 20<sup>th</sup>**, groups will present preliminary outline to the class.

Each student research group should prepare a twenty minute oral presentation with visual aids (allowing five minutes for Q&A) to be delivered on the evening of **Tuesday, October 10<sup>th</sup>** 1230 Undergraduate Science Building from 4:00 to 8:00 pm. These presentations will summarize the group’s research findings, with appropriate audiovisual support and supplemental handouts of source documentation.

These oral reports will be presented in a colloquium-like format at the with a reception to immediately follow for course participants and our guests. We expect that a significant subset of the guest lecturers in the class will attend the colloquium and the reception afterward. We also plan to invite other distinguished guests from the Business School, Life Sciences Institute, School of Public Health, Medical School and so on to join us for the evening.

*Topics*

Topic 1	Pharmaceutical Competitors	Roche and AstraZeneca
Topic 2	Biotechnology Competitors	Genentech and Amgen
Topic 3	Medical Diagnostic Equipment Competitors	General Electric & Seimens
Topic 4	Medical Information Technology Competitors	Cerner and Epic
Topic 5	Medical Device Competitors	Boston Scientific and Johnson & Johnson
Topic 6	Governmental Regulation	US: FDA Europe: European Agency for the Evaluation of Medicinal Products (EMA) China: National Institute for the Control of Pharmaceutical and Biological Products
Topic 7	Governmental Policy on Stem Cell Research	US: California South Korea Singapore: Biopolis
Topic 8	University Approach to Interdisciplinary Research In the Life Sciences	Harvard University (Broad Institute, etc) University of Michigan Stanford University (BIOX)
Topic 9	Scientific Equipment Competitors	Thermo/Fisher Scientific, Inc. Applied Biosystems Affymetrix
Topic 10	Intellectual Property and Patent Regulation	US Patent Agency EU Patent Agency Chinese Patent Agency

**Business of Biology  
BA 518/HMP 630**

**Summary Report**

**Course Synopsis:**

The health care and life sciences industry is undergoing profound and transformative change both here in the U.S. and around the globe. The interactive effects of discoveries in the life sciences, advances in medical and information technology, and the emerging new consumerism is revolutionizing the industry creating new business opportunities and a new age of medicine. This multi-disciplinary course explores the consequences of transformative change on the future of business and industry, medicine and health, and the complex ethical and legal issues that face individuals and society. The course provides an overview of the collaborative research enterprise in the Age of Biology; the promise of personalized medicine and the challenge for the biopharmaceutical industry; the economic realities of the industry and the latest trends in venture investing; and the effort to finally bring health care into the digital age. Students have the opportunity to work together on a group research project plus explore a topic of choice in depth in an individual paper.

**Course Credits:** 2.25

**Course Schedule:** Fall "A" Term

**Enrollment by School /College:**

<i>School</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>
Engineering	3	1	7
Business	42	15	14
Medicine		4	10
Public Health	5		8
Pharmacy		3	2
School of Info			1
Law	1		
Other Science (Rackham)		4	7
<i>Total Students</i>	<i>51</i>	<i>27</i>	<i>49</i>

**Student Evaluations (3 year average 2004 – 2006; on a scale of 1-5)**

- 4.82 Upon entering, I had a strong interest in taking this class.
- 4.50 The instructor expected a high level of academic excellence on the part of the Students
- 4.68 Overall, this is an excellent course
- 4.81 Overall quality of the instructor's job in teaching this course

### **Sample Student Comments:**

“As a scientist, this course opened my eyes to how our economy is dealing with medical needs & advancing technology. It was invaluable to work with business students in the group project & to get a feel for how collaborations between business & science work.”

“Covered many topics and interesting dilemmas facing the healthcare industry. The mix of student backgrounds gave a richer experience.”

“This was one of the best courses I have taken here so far. It was especially great having other students from different backgrounds in the class.”

“What went well in the course for me was the interaction between business & science students, class discussions on topics presented and the amount learned from case studies.”

“Exceeded my expectations in terms of quality of course materials, lectures and in particular, guest lectures and multidisciplinary approach. It should be a semester long course! Loved this course and wished that there were more multi-disciplinary courses like it.”

“I appreciated the interaction with other students and the instructors, both in and outside of class. I thought the lecturers were thoughtfully chosen. I like the structure of doing group projects and I was happy with the environment that the instructors fostered to encourage group discussion. I also appreciated the accessibility of the instructors. Often I left class feeling invigorated by the discussion and frustrated to have to go back to the lab. You may have converted a scientist into a future MBA.”

“This course was quite useful either for beginner without science background or professional to know more about commercialization practice of discovery.”

“It would be great to have a life sciences PhD/MBA program. The need is there and Michigan B-School is revolutionary enough to stat the trend.”

**Vegter, Katrina**

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**From:** Wright, David  
**Sent:** Friday, March 23, 2007 1:59 PM  
**To:** Barry, Elizabeth; Hall, Bill  
**Cc:** Vegter, Katrina; Plantinga, Evonne  
**Subject:** Curriculum Committee and BA 518 -- Business of Biology

At the March 2007 meeting of the Curriculum Committee your proposal to cross-list BA 518 -- Business of Biology with the School of Engineering was approved.

Congratulations and best of luck with continued success for this course.