Supporting Documentation:

Faculty-In-Charge: Prof. James F. Leary, email: jfleary@purdue.edu, Office: BRK 2021  
Course Details: meets Tuesdays and Thursdays at 1:30 – 2:45 PM in BME (MJIS 1083)  
Office hours: By appointment

Lectures on NanoHub at:  [http://nanohub.org/resources/11877](http://nanohub.org/resources/11877)  
Course website at:  [http://web.ics.purdue.edu/~jfleary/nanomed2014](http://web.ics.purdue.edu/~jfleary/nanomed2014)

Lecture Topics and Schedule:

*Week 1 (August 26 & 28)*  
Introduction to course/course requirements – Assignment 1 DUE August 27 before 23:59:59  
**Lecture 1:** Need for new perspectives on medicine  
+ **Paper #1 – distributed** on August 28 **due Sept. 16**

*Week 2 (September 2 & 4)*  
**Lecture 2:** Designing nanomedical systems  
**Lecture 3:** Theranostics and molecular imaging

*Week 3 (September 9 & 11)*  
**Lecture 4:** Cell targeting and its evaluation  
**Lecture 5:** Nanomaterials for core design

*Week 4 (September 16 & 18)  Paper # 1 Review due September 16*  
**Lecture 6:** Normal & facilitated cell entry mechanisms  
September 18 – NO CLASS (Dr. Leary out of town)

*Week 5 (September 23 & 25)*  
**Lecture 7:** Assessing nanoparticles  
**Lecture 8:** Surface chemistry: attaching targeting and therapeutic molecules to the core  
+ **Paper review #2 distributed** on September 16 **due on October 16**

*Week 6 (September 30 & October 2)*  
**Lecture 9:** Challenges of proper drug dosing with nanodelivery systems  
**Lecture 10:** Nanodelivery of therapeutic drugs/genes & molecular biosensor feedback control

*Week 7 (October 7 & 9)*  
**Lecture 11:** Assessing nanotoxicity at the single cell level  
**Lecture 12:** Assessing Drug Efficacy and Nanotoxicity at the Single Cell Level
Week 8 (October 14 & 16) Paper review 2 due on October 16
October 14 – NO CLASS (October Break)
October 16 – Review session: Bring your questions!

+ Title & Abstract (approx. 250 words) for Class Project due on October 16

+ Paper review 3 distributed on October 16 due on November 4

Week 9 (October 21 & 23)
October 21 (In-class EXAM 1) (covering through Lecture 10)
Lecture 13: Designing nanodelivery systems for in-vivo use, issues of biodistribution

Week 10 (October 28 & 30)
In class discussion of Guest Lecture video of Animal testing of nanodelivery systems (Prof. Debbie Knapp)
Lecture 14: Designing/evaluating integrated nanomedical systems

Week 11 (November 4 & 6)
Lecture 15: GMP and issues of quality control manufacturing,
Lecture 16: FDA and EPA regulatory issues

Week 12 (November 11 & 13) Paper Review 3 due on November 4
November 11 Review session for final exam
November 13 Exam 2 (In-class Final Exam) (covering through Lecture 11-16)

Week 13 (November 18 & November 20) Written Project reports DUE November 18
Nov. 18 In class Original Research Proposal Presentations – 2 students
Nov. 20 In class Original Research Proposal Presentations – 2 students

Week 14 (November 25 & 27)
Nov. 25 In class Original Research Proposal Presentations – 2 students
Nov. 27 (NO CLASS- Thanksgiving Break)

Week 15 (December 2 & 4))
December 2 In class Original Research Proposal Presentations – 2 students
December 4 In class Original Research Proposal Presentations – 2 students

Week 16 (December 9 & 11)
Dec. 9 In class Original Research Proposal Presentations – 2 students
Dec. 11 In class Original Research Proposal Presentations – 2 students (LAST CLASS!)

See next page for Grading and Required materials
**Grade Assessment:**

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<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Literature Reviews (3)</td>
<td>30 %</td>
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<tr>
<td>Project – Original Individual Research Proposal</td>
<td>30 %</td>
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<tr>
<td>Exam 1</td>
<td>15 %</td>
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<tr>
<td>Exam 2</td>
<td>15 %</td>
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<tr>
<td>Class attendance (required) and class participation</td>
<td>10 %</td>
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**Required Materials:**

- Required text – None
- Required viewing of scheduled videotaped lectures at: [http://nanohub.org/resources/11877](http://nanohub.org/resources/11877)
- Come to class prepared to discuss Lecture Questions associated with each lecture
- Required reading of assigned papers for three written reviews
- Suggested reading for each lecture topic – these will help you with your Project and thesis research, so read as many as you can!