Graduate Skill Development to Meet 21st Century Challenges

Course Number: MCB 529, Section GSD
Credit Hours: 1 credit hour
In-Person Sessions: Monday 3:30 – 4:50 pm, Burrill Hall 7*
*COVID-Related Note: If we have to go remote, you will be notified by email and a Zoom link will be provided.

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There is one recommended text: The Art of Scientific Storytelling, by Rafael E. Luna, Ph.D.. All additional course materials will be supplied by the instructor.

Course Rationale
This course is intended for graduate students working towards a Ph.D. in the biomedical or biophysical sciences.

Students will build skills to (1) work in interdisciplinary and diverse teams; (2) orally communicate research findings; and (3) proactively advance their professional development towards a chosen career path. Emphasis will be placed on conducting original research with rigor and attention to societal impact, while also building transferrable professional skills, including communications, leadership, and project management. The overarching course objective is to prepare students to address pressing challenges of our time as they take their place in the modern STEM workforce.

Competencies developed in this course address the recommendations of NASEM’s 2018 and 2019 Consensus Reports: Graduate STEM Education for the 21st Century & The Science of Effective Mentoring in STEMM. Instruction draws from two evidence-based training curricula: Entering Research (Macmillan Press, 2019); and Entering Mentoring (WH Freeman, 2015). AMS is a contributing author to the Entering Research curriculum.

Course Objectives
At the end of the course students will be able to:

- Design and deliver an effective and logically coherent oral presentation of their research
- Steward responsible research efforts with consideration of societal impacts
- Establish and maintain productive working relationships, including “mentoring-up” with current research advisors
- Communicate effectively in intra- and interdisciplinary teams
- Communicate to bridge personal and cultural differences
- Develop skills to advance equity and inclusion in the research environment
- Build self-efficacy and coping-skills to promote professional success
- Proactively explore and pursue career opportunities
- Prepare and manage an Individual Development Plan (IDP)
<table>
<thead>
<tr>
<th>Semester Week – Zoom Session Date</th>
<th>Topic(s)</th>
<th>In-Class Activities*</th>
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| **Week 1 – Jan 24**              | Course objectives & rationale; Preparation for group-based problem solving | • Constructive/Destructive Group Behaviors\(^{(A)}\)  
• Setting Ground Rules for the Group\(^{(A)}\)  
• Introduction to the Framing Funnel\(^{(I)}\) |
| **Week 2 – Jan 31**              | Thinking logically & communicating like a scientist | • Framing Funnel Group-Share on Wu et al., 2013\(^{(A)}\)  
• Map Your Research to the Framing Funnel\(^{(ST)}\) |
| **Week 3 – Feb 7**               | Designing a talk & using storytelling to engage the audience; Considering your audience; Seeking & incorporating feedback | • Art of Oral Presentation\(^{(I)}\)  
• Responding to Feedback\(^{(CS)}\)  
• Using Rubrics for Evaluation\(^{(A)}\) |
| **Week 4 – Feb 14**              | Slide feedback | • Pair-Share Slides/Get & Give Feedback\(^{(ST)}\) |
| **Week 5 – Feb 21**              | Practice talks & feedback | • Pair-Share Practice Talks/Get & Give Feedback\(^{(ST)}\) |
| **Week 6 – Feb 28**              | Final recorded oral presentation and slide deck *due by 3:00 pm* | |
| **Week 7 – March 7**             | Research rigor & responsibility | • Responsible Conduct of Research\(^{(I)}\)  
• Notebook Page Exchange-Can You Decipher This?\(^{(A)}\)  
• Keeping the Data Complete\(^{(CS)}\) |
| **Week 8 – March 21**            | Introduction to “Mentoring Up”; Establishing & maintaining effective communications | • What Does Mentoring Mean?\(^{(A)}\)  
• Busy Mentor\(^{(CS)}\)  
• Identifying Different Communication Styles\(^{(A)}\)  
• Say It a Different Way\(^{(A)}\) |
| Week 9 – March 28 | Aligning expectations in working relationships | • Stuck<sup>(CS)</sup>  
  • Symptoms of Misaligned Expectations<sup>(A)</sup>  
  • Strategies for “Mentoring Up”/ Developing SMART Goals for Your Mentoring Relationships<sup>(A)</sup> |
| Week 10 – April 4 | Challenges facing diverse teams | • Assumptions<sup>(A)</sup>  
  • Challenges Facing Diverse Teams<sup>(CS)</sup>  
  • Microaggression Worksheet<sup>(A)</sup> |
| Week 11 – April 11 | Addressing equity & inclusion | • Impacts of Bias<sup>(A)</sup>  
  • Strategies for Inclusion<sup>(A)</sup> |
| Week 12 – April 18 | Building research self-efficacy & achieving independence | • Self-Efficacy: What Is It, How Do You Build It?<sup>(I)</sup>  
  • Significant Research Moment<sup>(A)</sup>  
  • Pathway to Independence<sup>(A)</sup> |
| Week 13 – April 25 | Pursuing professional development | • Individual Development Plans<sup>(I)</sup>  
  • Networking Your Way to the Job You Want<sup>(A)</sup> |
| Week 14 – May 2 | Time management; Course reflection | • Balancing Competing Demands<sup>(CS)</sup>  
  • Managing Time Using the Urgent Versus Important Grid<sup>(I)</sup>  
  • Reflection and Action Items<sup>(A)</sup> |

*<sup>(I)</sup> Instruction; <sup>(A)</sup> Activity; <sup>(CS)</sup> Case Study; <sup>(ST)</sup> Synchronous Task*
Instructor’s Expectations for Class Participation
This course is designed to promote dialogue and group-based problem-solving and, therefore, demands full student participation in all class discussions and activities. The unique perspectives that you share by being an active participant will bring value and depth to our discussions, allowing us to generate impactful outcomes together. Throughout the course, you will be asked to engage in earnest self-reflection and proactive planning to advance your professional development. In all our interactions, we will be thoughtful, respectful, and professional. If we deviate from these expectations, then we will work to find an effective path forward.

Assessment of Course Performance (125 points possible)
- Student participation in class discussions and preparedness for class discussions (assumes on-time attendance): 28 points
- Quality and completeness of pre-class assignments: 17 points
- Oral presentation: 60 points broken down as follows
  o Preparation (30 points)
    ▪ Logic mapping
    ▪ Slide development
    ▪ Practice talk
  o Feedback provided to a partner (10 points)
  o Final presentation (20 points)
    ▪ Quality of slides
    ▪ Oral presentation
- IDP preparation: 20 points

Attendance is required. Only pre-discussed absences will be excused, and a make-up activity will be assigned. The make-up activity must be completed to receive full participation credit for that class day. Unexcused absences will result in loss of all participation credit for the missed class.

Final grades: A >90%, B >80%, C >70%

Statement on Academic Integrity
According to the Student Code, ‘It is the responsibility of each student to refrain from infractions of academic integrity, from conduct that may lead to suspicion of such infractions, and from conduct that aids others in such infractions.’ Please know that it is the instructor’s responsibility to ensure that the academic integrity policy of the University is upheld. The policy can be found at: https://studentcode.illinois.edu/article1/part4/1-401/.

Statement on Disability Accommodations
To ensure that disability-related concerns are properly addressed from the course onset, students with disabilities who require assistance to participate in any aspect of this class should notify the instructor as soon as possible.