Course Title: CATALYST Seminar
Instructor: Director of MCS Core Education and Director of MCS Integrative Learning
Course Number: 38-100
Cross Listing: NA
Prerequisites: None
Semesters Offered: Spring Mini 4 only
Semester Length: Mini
Course Offering Frequency: Every Spring semester
Suggested Days and Times: Two class meetings (start and end of mini) plus one or more individual meetings with instructor. Engagement with instructors and among students will also occur throughout the course using online learning mechanisms.
Evaluation Type: Letter grade
Course Unit Justification: 3 units: 5 hours in total class meetings and ~35 hours in outside class self-directed learning activities
Target Population: Required for all MCS first-year students who failed or did not complete 38-101 and all non-MCS students who plan to transfer to MCS for the following Fall semester.
Anticipated Enrollment: 15-20

Rationale for Course:
The MCS first-year seminar (EUREKA) equips new students with foundational knowledge, skills and perspectives that will support their development as emerging scientists and scholars at the university. EUREKA is a required course for all MCS students, and serves as a critical (and in some cases singular) vehicle through which several of the outcomes associated with the MCS core education are met. The proposed CATALYST course is designed to ensure that those outcomes are still met for MCS students who either did not successfully complete EUREKA or who are transferring into MCS from another CMU college or another university. Given that these students will not be entering first-year students, the EUREKA course content is being modified to reduce its focus on promoting a successful transition from high school learning to college learning, while addressing the other course emphases through a series of self-directed activities.

Logistics for the course:
The three-unit CATALYST seminar will feature two course meetings (one at the beginning of the mini and one at the end). Here, students will engage in orientation to and debrief of the course themes and course content, as well as the MCS core education and MyCORE. A set of self-directed active and reflective experiences designed to operationalize the core material from the EUREKA course, will be completed by the students. These experiences will be framed through the use of a variety of online communication strategies, including video messages, blogs, and chats. The course will culminate with students delivering a short five-minute presentation on a multidisciplinary science topic that will demonstrate their ability to integrate the various themes of the course.
Core outcomes:
This course contributes to satisfying multiple MCS core outcomes including:
2. Critically assess their current state of knowledge and expertise and acquire new knowledge in pursuit of both specific scientific goals and new intellectual interests broadly throughout their lifetime.
3. Communicate effectively via oral, visual, and written formats with an understanding of the perspectives and expectations of diverse audiences, including those within their chosen discipline, outside that discipline (but within STEM), and non-scientists.
6. Recognize and explain the importance of at least one current research topic in a STEM field outside of their major.
12. Engage in recursive, reflective processes to assess their own levels of physical, emotional, and social wellness and then to choose activities that promote these aspects of wellness.
13. Engage in recursive reflective processes to balance multiple endeavors by setting priorities and managing time in academic, meta-curricular, and personal dimensions.
14. Recognize ethical issues and appreciate the complexities of interrelationships among them, and the use of information in ethical and legal manners.

Facilities: Classroom for 15-20 people
Textbook: Assigned readings
Assessment: Participation (25%), assignments through MyCORE, (50%) and final presentation (25%)

Course Catalogue Description:
The CATALYST seminar will equip transfer students to MCS, as well as those students who did not successfully complete the EUREKA seminar, with foundational knowledge, skills and perspectives that will support their development as emerging scientists and scholars. During the seminar, students will be presented with opportunities and experiences designed to help them frame how the MCS curriculum aspires to shape their evolving identities in the areas of scholar, person, professional and citizen, while also engendering a sense of excitement about science and scientific inquiry. The seminar will offer information and strategies that are employed both by successful students and by successful scientists in optimizing their approach to work and life, with a key focus on areas such as cognitive learning skills, research, teamwork, goal setting, time management, community engagement, ethics, resources and assessment. Additionally, the seminar will introduce first-year students to the learning outcomes and requirements associated with the MCS core curriculum, with a particular emphasis on the self-directed ENGAGE courses and the role of the MyCORE e-portfolio system in documenting and framing student growth and development.

Learning Objectives: At the end of the course, students should be able to:
• Identify the important traits and characteristics of successful scientists and mathematicians embolden their burgeoning excitement in the sciences
• Understand the expectations associated with the self-directed aspects of the CORE Curriculum
- Initiate a process for recursive self-assessment to promote personal well-being, academic success, and ethical decision making
- Develop strategies for leveraging personal strengths toward effective and successful team participation
- Understand fundamentals of effective oral and written communication
- Develop proficiency with MyCORE

### Topics Covered:

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<tr>
<th>Week</th>
<th>Topics</th>
<th>Activities / Homework</th>
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<tbody>
<tr>
<td>1</td>
<td>Intro to course&lt;br&gt;MyCORE (E-portfolio)&lt;br&gt;New MCS Core Education&lt;br&gt;Goals Setting / Time Management</td>
<td>Write essay on goals and aspirations in MCS&lt;br&gt;Read “Why Spend Time Scheduling?”&lt;br&gt;Develop weekly schedule based on reading&lt;br&gt;Write essay on managing academics</td>
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<td>2</td>
<td>Metacognition and Learning Skills</td>
<td>Complete Learning Skills Inventory&lt;br&gt;Watch video segments of main lecture from EUREKA&lt;br&gt;Write responses on operationalizing new strategies and skills following video segments&lt;br&gt;Compute “Metacognitive Self-Regulation” score&lt;br&gt;Complete an exam wrapper using an exam already taken this semester</td>
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<td>3</td>
<td>Relationships w/ Science Faculty&lt;br&gt;Science Presentation Project Launch</td>
<td>Read “Building Relationships with Faculty”&lt;br&gt;Write a set of interview questions&lt;br&gt;Conduct an MCS faculty interview&lt;br&gt;Write a reflection essay on the interview&lt;br&gt;Watch Project Description video&lt;br&gt;Complete Project Worksheet</td>
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<td>4</td>
<td>Teamwork&lt;br&gt;Information Literacy</td>
<td>Complete Strengths Quest inventory&lt;br&gt;Read Strengths Quest results&lt;br&gt;Participate in online structured group discussion about classmate’s results&lt;br&gt;Read “Information Literacy”&lt;br&gt;Complete “Beginning Research”, “Internet Tools” and “Article Review Worksheets” for project&lt;br&gt;Read “Oral Presentation for Team Projects”</td>
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<tr>
<td>5</td>
<td>Wellness</td>
<td>Complete MCS Wellness Inventory&lt;br&gt;Write reflection essay on inventory results&lt;br&gt;Conduct research on presentation topic</td>
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|   | Ethics | **Read “Making Choices: A Framework....”**  
|   |        | **Write a response essay to scenario**  
|   |        | **Participate in online structured group discussion**  
|   |        | **about classmate’s scenario responses**  
|   |        | **Create draft slides for presentation**  
|   | Presentation Skills  
   | Post-Graduation Planning | **Read “Oral Communication” and “Using Visual Aids”**  
|   |        | **Complete a slide review meeting at the GCC**  
|   |        | **Submit final slides for presentation**  
|   |        | **Write essay on current post-graduation planning**  
|   | Science Presentations | **Conduct presentation (with Q&A)**  
|   |        | **Submit peer evaluations**  
|   |        | **Submit FCE** |