



GEMSTONE
UNIVERSITY OF MARYLAND

GEMS 202 TEAM DYNAMICS AND RESEARCH METHODOLOGY FALL 2016

Tuesdays 4:30-6:00 pm 1202 EGR
Course web site: <http://myelms.umd.edu>

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Course Description:

GEMS202 is a two-credit course designed to foster an understanding of the dynamics of group behavior and basic research methodology. This experiential course will teach skills applicable to conducting Gemstone team research and writing a team thesis. Advanced Gemstone students serve as section leaders (SLs) and act as process consultants with the newly formed teams providing guidance, resources, wisdom of their own team experiences, and administrative support to this class and the Gemstone Program.

Course Objectives:

- Individual Objectives:
 - Learn about the research process, including the following: how to identify a research problem and write a research question; how to gather data to answer the research question; how to choose between quantitative, qualitative, or mixed methodologies and methods; how to employ data analysis techniques; and understand the Institutional Review Board's (IRB) and the Institutional Animal Care and Use Committee's (IACUC) submission procedures
 - Develop a basic understanding of research terms and methods, even those that don't pertain directly to your team's research project
- Team Objectives:
 - Learn more about your team's research problem by conducting a thorough literature review and identify ways for your team to create new knowledge on your topic
 - Begin to develop a justification for your team's study
 - Explore possibilities of grant funding, writing for publication, and attending an academic conference related to your team's topic
 - Become familiar with the appropriate research methods and writing style for your field
 - Gain experience collaborating as a team on written projects and develop a draft of your team's research proposal to be submitted and presented to your committee in the spring semester
 - Develop a set of team norms, which will guide all operations and decisions of your team, and learn methods for team organization and how to be a productive team member

Course Expectations:

- The success of this course relies heavily upon interaction and exchange of ideas among students and the instructors. Therefore, class attendance and participation are essential and required. **Please see the absence, tardiness, and late assignment policy on the next two pages.**
- Students are required to keep up with readings and assignments so they can provide informed contributions to assignments and the discussion components of the course.
- Students are required to read and respond to course-related email.

Maryland Honor Pledge:

Academic dishonesty is a serious offense, which will not be tolerated in this class and may result in suspension or expulsion from the Gemstone Honors Program, the Honors College, as well as the University. The University has a nationally recognized Honor Code, administered by the Student Honor Council. Unless you are specifically advised to the contrary, the Pledge statement **MUST** be handwritten or typed and signed on the front cover of all assignments submitted for evaluation in this course. For group projects, only one pledge needs to be written on the front cover, although all members must sign the document. The University of Maryland Honor Pledge reads:

"I (we) pledge on my (our) honor that I (we) have not given or received any unauthorized assistance on this assignment/examination."

More information on the honor pledge can be found at:
<http://shc.umd.edu/SHC/AICodeAndCaseProcess.aspx>.

Spiritual/Religious and/or Cultural Observances:

The University System policy on religious observances provides that students *should not be penalized because of observances of their religious beliefs; students shall be given an opportunity, whenever feasible, to make up within a reasonable time any academic assignment that is missed due to individual participation in religious observances* (for full policy see: <http://www.president.umd.edu/policies/iii510a.html>). Some class times are in close proximity or concurrent with spiritual/religious or cultural observances. We will make every attempt to avoid any conflicts. However, if a class date or assignment does create a conflict, please inform the instructors **in advance and in writing** so we can make appropriate arrangements.

ADA Statement:

In both compliance with and in the spirit of the Americans with Disability Act (ADA), we would like to work with you if you have a disability that is relevant to your work in this course. If you have a documented disability, please contact the instructors as soon as possible to discuss academic accommodations.

More information on academic accommodations for students with disabilities can be found at:
<http://www.counseling.umd.edu/DSS/registration.html>

Course Evaluation:

Your participation in the evaluation of courses through CourseEvalUM is a responsibility you hold as a student member of our academic community. Your feedback is confidential and important to the improvement of teaching and learning at the University as well as to the tenure and promotion process. CourseEvalUM will be open for you to complete your evaluations for fall semester courses in December. Please go directly to the website (www.courseevalum.umd.edu) to complete your evaluations starting December 1st. By completing all of your evaluations each semester, you will have the privilege of accessing online, at Testudo, the evaluation reports for the thousands of courses for which 70% or more students submitted their evaluations.

Absence, Tardiness, and Late Assignment Policy:

Students who need to be absent from class need to notify the instructors **IN ADVANCE** to ask for an approved excused absence. Absences will only be excused for the following reasons: health-related issues (see the university policy below), officially representing the university at an event (must have a note from the authorizing official), religious observances, or family emergency or death. Students who are unexcused from class on the day of a "major scheduled grading event" will not be allowed to make up the assignment and will receive a zero for the missed assignment. Please note that exams in other courses that conflict with GEMS202 class time do not constitute an excused absence or leaving early from GEMS202. University policy states that instructors who offer exams during non-class time are required to offer make up exams for students who have other classes during an exam period.

Any student who wishes to be excused for an absence from a single lecture, recitation, or lab that is not a "major scheduled grading event" (see pages 11-12) because of illness shall:

- a. Make a reasonable attempt to inform the instructors of his/her illness prior to the class; and
- b. Upon returning to class, present their instructor with a self-signed note attesting to the date of their illness. Each note must also contain an acknowledgment by the student that the information provided is true and correct. Providing false information to University officials is prohibited under Part 9 (h) of the Code of Student Conduct (V-1.00(B) UNIVERSITY OF MARYLAND CODE OF STUDENT CONDUCT) and may result in disciplinary action.

Students who experience more than one absence because of illness or experience illness during a "major scheduled grading event" (see pages 11-12) are required to provide written documentation of the illness from the Health Center or from an outside health care provider. In cases where written verification is provided, the Health Center or outside health care provider shall verify dates of treatment and indicate the time frame that the student was unable to meet academic responsibilities. No diagnostic information shall be given.

Individual participation points are awarded during each class meeting, and students who are tardy or leave early will lose participation points.

There will be a 10% reduction in points for every day an assignment is late. Assignments will not be accepted after one week past the due date.

Required Readings:

Gemstone theses and other articles posted to course Canvas site. No textbook purchase is required.

Silver, Nate. 2012. *The Signal and the Noise*, The Penguin Press. Selected sections only will be posted to Canvas.

Summary of Assignments:

Note 1: Section Leaders will assist in grading some assignments.

Note 2: Please remember that grades will not only reflect content, but also style, which includes but is not limited to: grammar, fluidity, and mechanics.

Note 3: All teams need to write for a general audience and will be graded on how well they do so. Work hard to present technical concepts and theories clearly to a wide range of people.

Class Participation (mostly individual grades)

Class participation is a critical component of success in this course and will be determined through a number of different means including in-class assignments, questions during lecture, and overall contribution during lecture and team breakout sessions. A quality learning experience rests heavily on a high degree of interaction and exchange of ideas among the students, instructors, and guest speakers. Points will be deducted for nonparticipation in lecture and small group discussions, tardiness, leaving early, or disruptive behavior.

Team Gemstone Participation and Reflection Paper (individual grade; Due: 10/4)

All students are expected to participate in Team Gemstone on their chosen day. Following this experience, students will be given a 1-2 page reflection assignment. In a few exceptional cases, students who could not attend and had notified the instructors PRIOR to the event will be given a 5-page make-up assignment. If you did not participate in Team Gemstone and were not excused, there is no make-up assignment.

Syllabus Quiz (individual grade)

Reviewing materials for course preparation is important to understand and apply knowledge from the course. A syllabus review quiz will occur at the beginning of the semester as a mechanism for assessing understanding of course materials and will be worth 10 points. Make-up quizzes will only be offered to individuals with excused absences.

Gemstone Thesis Critiques (individual grades)

As a research program, it is expected that all Gemstone students become excellent consumers of research. There will be two opportunities to critique existing Gemstone theses, which will be assigned by team. One critique will be of an assigned Gemstone literature review and a second critique will be of an assigned Gemstone methodology section. The entire team thesis will be available to the team as one example of a completed Gemstone thesis. For each assignment, you will be expected to read the thesis and provide an analysis of the strengths and weaknesses of the assigned section. Each assignment will be worth 25 points.

Team Presentation (team grade; Due 11/8)

Each team will give a presentation of the first draft of their research proposal. Teams will provide the class with an overview of their research plans to date, which will include a basic summary of their literature review, a discussion of the methodological approach they are considering for their research (including one or more method choices that they are considering using), as well as a plan for their progress towards completion of their thesis. Each team will have 5-7 minutes to complete their presentations and 2-3 minutes to answer questions. Team presentations must be posted to Canvas by 4:30pm on 11/8 and teams will be selected at random to present on 11/8 and 11/15, though all materials must be prepared in advance of 11/8.

Team Thesis Proposal Draft Project (team grade)

Although the completion of your team thesis is over two years away, many small steps are necessary for the implementation and success of your research study. The purpose of this assignment is to assist your team in developing a draft of the research proposal that you will present to your committee in February. This research proposal serves as the foundation for the thesis that you and your team will complete. The draft proposal your team will create during this course will clarify the topic you intend to investigate in the context of your literature review, introduce your rationale and reasoning for choosing this topic, formulate one or more research questions that arise from the topic, as well as pose a methodological approach and a description of the procedure your team will follow for the next two and a half years. During the course of the semester you will, as a team, write a first draft of your research proposal. This proposal is an essential part of defining and delimiting your study. It also helps ensure that ethical protocols for the completion of your research project are being followed. This is a requirement not only for the Gemstone Program, but for other research completed in academic and professional forums as well.

The essential elements of this proposal draft project assignment include:

1. Meeting with your assigned Gemstone librarian
2. Drafting...
 - a. An introduction to the research study including a description of the research problem and a thorough justification for the proposed study (Chapter 1)
 - b. A literature review (Chapter 2)
 - c. A methodology section (Chapter 3)
 - d. A timeline and budget for your proposed research (Appendix)

The Team Proposal Draft is broken down into several "subprojects" due at various points of the semester. The final outcome of this work will be a draft of your team's proposal. The length of the first draft of your team's thesis proposal should be approximately 30 to 40 pages in length (double-spaced, not including the

title page, references, or appendices). It should provide the distilled essence of the subprojects you will carry out during the semester, as well as some additional information (further explained below).

The “subprojects” are as follows:

1. Literature Review Paper (team grade; Due 9/27 submit via Canvas)

The purpose of this assignment is to write a draft of the literature review for the project, which will eventually become chapter 2 of your thesis. To complete this project there are several steps:

- **First Step:** In order to target the literature relevant to your study, your team must first begin to clarify the boundaries of your topic and to get as close as you can to your team’s *research problem*.
- **Second Step:** Your team must meet with your assigned librarian outside of class to become familiar with the many resources and the information the librarian can share with you. Ask the librarian to walk you through database searches on your research problem and topic area.
- **Third Step:** Using information collected by your team for the Summary of Resources, incorporate empirical studies and extant literature into themed areas to justify your research design and provide context for your study.
- **Fourth Step:** In class you will work on an outline for the literature review. This should be continued and revised outside of class as you work on the paper. Each project will have a unique structure to the literature review based on your field and the type of research being conducted. In general, each team will use their literature review to:
 1. Justify your research problem and question: Introduce the problem and explain why it is important? In general what has been done to try to solve it in the past? What are the weaknesses in the prior research or gaps in the overall literature on this topic that you can fill?
 2. Justify your research design and methods: Specifically, what prior research designs have been used to address this question? What established methods/theories are appropriate for your study? What measures/concepts/tools/materials have been tested or used in the past? What are their strengths and weaknesses? How do they apply to your project?
 3. Explain, based on the state of current research, how the findings of your project will contribute to the academic field in which you are working.

Paper requirements:

- Identify a writing and citation style that is appropriate for your field (APA, MLA, etc.). Indicate which style you are using on the upper right corner of the first page.
- Paper should be approximately 10 to 15 pages long (not including cover page and works cited page), double spaced, 12 pt. font, and include page numbers.
- Make appropriate use of headings and sub-headings as necessary and as appropriate for the writing style you’ve chosen.
- Include the Honor Pledge on the title page.
- Include a minimum of 20 academic sources (peer reviewed books and scholarly articles) that are properly cited in the text and in a works cited page (unless your style calls for citations through endnotes or footnotes). Many of these should come from your Summary of Resources assignment from GEMS102.

2. Draft/Methodology Team Paper (team grade; Draft 1 Due: 10/20, Draft 2 Due: 11/1; submit both via Canvas)

This assignment will build upon the research question(s) you have developed earlier in this course. The methodology is your team's proposed "plan of action" regarding how you will carry out your study. Guided by course readings as well as activities and relevant topics reviewed in class, your team will develop a draft of the third chapter of your proposal, which will become the basis for the third chapter of your thesis. The methodology of your study will be defined in this assignment, as well as the methods your team will employ in order to answer your research question. This paper should be approximately 10 to 15 pages in length and include appropriate citations where needed. In addition, please be sure to edit your paper so that it uses correct grammar and mechanics throughout and reads fluidly even though different team members may be writing different sections.

Please address the following questions:

- What research questions guide the study?
- If you are using the scientific method, what is your research hypothesis?
- Describe your proposed research design (e.g. experimental lab research, field research, survey research, case study, mixed methods, etc.). If applicable, describe why the chosen design is the best for the project. (If your team is unsure whether or not to include this information, please ask the course instructors.)
- What type of data do you need to answer the research questions? Where will you find these data (including a description of your sample, if applicable)? How will you collect these data? Walk the reader through your research process step by step. Include as many details as you can at this point. If you already have lab protocols, include them as appendices.
- Will your team break-up into sub-teams? If so, how will you divide the work?
- What are your anticipated results? What do you hope to find?
- Why will the anticipated results be an important contribution to the research field (i.e., what gaps in knowledge will be filled or what problems will be addressed)?
- If applicable: What extraneous/confounding variables need to be addressed (or at least acknowledged depending on the project design)?

The team will submit a first draft electronically by noon on Thursday, October 20th. ****Note that this due date is between class 8 and class 9, we are doing this so you have time to continue working on the methodology paper during class 8.** You will receive a peer review from another team in class on October 25th and will turn in a revised draft on November 1st. The goal of the peer review is for you to receive feedback that will help you improve your paper so the methodology is clear, well-organized, and addresses all the aspects of your research process. The first draft is expected to be clean and complete on 10/20. The first draft represents $\frac{1}{3}$ of the grade for this assignment, so it should meet the page limit, follow all rules of style, and address all of the required questions.

3. Team Research Proposal Draft (team grade: Due 12/6; submit via Canvas)

The first two subprojects will lead up to the final portion of the overall project for this semester: a draft of your team research proposal. Your team will refine its draft proposal over January break, and it will be reviewed in February 2017 by Dr. Coale, Dr. Skendall, your team's mentor, your team's librarian, and experts in your team's area of interest. This final team project for this class is the culmination of your team's work over the course of the semester, producing one fluid document that introduces the research problem and justifies why the proposed study is worth doing, reviews relevant literature to your topic, and outlines the methodological approach that your team plans to utilize. Please see examples of strong work from past teams on the library DRUM site, <http://drum.lib.umd.edu/handle/1903/9070>. The sections below are the minimum expectations for a Gemstone team's thesis proposal. **However, if your mentor prefers different content or another format, please talk to the instructors *no later than Tuesday, November 15, 2016*. We are happy to work with your team and mentor to devise a thesis proposal that fits your needs and still fulfills the Gemstone requirements—we just ask for**

advance notice. Also, if the alternative format of your proposal is written exclusively for specialists, you must include a separate executive summary for the general reader.

The proposal draft should be organized in the following manner:

Abstract

The abstract is a brief (no longer than 120 words) summary of the contents of the document. It should identify the purpose of the paper, the major points that are covered, and any future research directions that have been identified. Generally speaking, it is the last portion of the paper that is written although it is placed before the first section. It is titled "Abstract."

Chapter 1: Introduction

This section introduces your research problem, the specific project, and the research questions and hypotheses you and your team wish to investigate. It will include a basic context and a justification for the research as well as highlights of the sections to follow. It should make clear why your proposed study is worth doing. You need to clearly answer the question, "Who cares?" Include any relevant definitions and provide a clear introduction to your thesis proposal.

Chapter 2: Literature Review

This section is the literature review of your study and should be a REVISED version of your initial literature review assignment. Because this final paper is a draft, it will continue to grow over your time in the program. However, it is necessary to create a flowing and well-organized document in this section. Whatever method you choose, make sure that the organization of the literature review makes logical sense and you make clear how the literature serves as a context for your study.

Sources should include empirical studies (research that provides qualitative or quantitative evidence to address theoretically based hypotheses), academic journal articles (not newspapers), books, and textbooks that are relevant to the topic. The use of non-scholarly websites is not acceptable. The literature review should summarize the relevant literature and citations should be interspersed liberally within the text. Please see the handbook for your specific writing style (APA, MLA, etc.) for more guidelines on academic writing for your field. For instance:

"Smith and Jones (1994) found that pointed sticks are hazardous to the unprotected human eye. However, Brown (1995) found that safety glasses cut down the risk of eye injury in pointed stick manufacture by 90%. Johnson (1995) recommends the use of plexiglass as the ideal compound to use in constructing safety glasses for this purpose. However, none of the articles or books that we found after an extensive search considered the possibility of using slightly blunter sticks..."

Avoid using direct quotations. Direct quotations should be used only in rare circumstances where an idea is expressed so articulately the statement would lose content if altered. Instead, ideas should be paraphrased (not just reworded) and incorporated into a larger discussion. Again, all borrowed ideas or paraphrased sources need to be cited in the text.

Chapter 3: Methodology

The third chapter is the place where the methodology and methods of your study are explicitly described. Although your team may not have come to a conclusion on what exactly you will be doing, try to describe the most logical procedure you may take. This is the section where you and your team describe HOW you will carry out your future research efforts methodologically. If

it is not possible to describe just one methodological approach at this stage of the game, feel free to describe several options if you would like. What we are looking for is that you apply the research design knowledge you have gained to your project. You are welcome to gather ideas from the course readings and workshops. If your group gets stuck, make an appointment to see the instructors or ask your mentor for her or his opinion.

You should thoroughly REVISE your methodology paper for this section, and include the following additional components:

- How will you analyze data? Please note that we are not looking for a detailed description of statistical methods at this point. We realize that you will have been only recently introduced to methodologies and methods, and we do not expect you to include the minutia of the statistical tools used in your analysis. We are looking for an application of the information you learned throughout GEMS202 and GEMS296. How will you make meaning of your data to answer your research question?
- What are the limitations of your research study? Please keep in mind that limitations are not only challenges in collecting data that you anticipate encountering along the way. They are also the threats to validity that your methodology overlooks. For example, a limitation of survey research would not only be the difficulty in recruiting participants or the challenge of increasing response rates, but also response rate bias or the validity of surveys as an accurate measure of your variable.

Appendices

Please include:

- a chronological timeline outlining in some detail the essential tasks to be completed that will lead to the successful completion of the team's thesis
- a detailed budget of projected expenses
- a glossary

Format, Style and Length

The research paper should be typed and follow the appropriate academic research writing style that is conventional for your main field of study (see NOTE ON STYLE below). The length of this paper should total approximately 30 to 40 pages (not including title, abstract, references, or appendices). Your team may find it challenging to pare this paper down, however, it is a necessary skill to learn, particularly if you eventually submit your work for publication.

NOTE ON STYLE:

Because the Gemstone Program is a multidisciplinary program and the types of research projects span multiple academic disciplines, traditions and majors, we will not require that your team adhere to one research writing format, such as APA 6th edition (American Psychological Association). There are several styles of writing research such as *Chicago*, *MLA*, *MLS*, and others. Please consult with your Team Mentor and Librarian to receive guidance and direction on which research writing style is most appropriate for your study.

Although the Gemstone Program will leave it to your team, your mentor, and your librarian to decide which style to follow, we do require that you do adhere to *some* research writing style. Because of the requirements of the larger academic community, it is necessary to follow a style for many academic exercises such as journal writing, proposal writing, grant writing, conference presentations and the like. Note that your final thesis must be formatted following the University's Electronic Thesis and Dissertation guide. This material can be found online at: https://www.gradschool.umd.edu/sites/gradschool.umd.edu/files/uploads/etd_style_guide_2014.pdf. Note that this format will override some requirements for citation styles, such as margin width, headers, footers, and cover pages.

Draft Proposal Grading Rubric

The Proposal Draft will be graded out of 100 points:

TOPIC	POINTS
Abstract	5
Chapter 1: Introduction	20
Chapter 2: Literature Review	25
Chapter 3: Methodology	25
Appendices: Timeline/Budget	10
References	5
Research Style Formatting	5
Writing Style	5
TOTAL	100

Assignment and Grading	Due Date	Total Points
Participation (individual grade)	Up to 5 points/class will be earned for participation in lecture and team break-out sessions Up to 60 points will be earned for four in-class, break-out room assignments	130
Syllabus Quiz (individual grade)	Week 2 (September 6 th)	10
Lit Review Critique	Week 3 (September 13 th)	25
Team Proposal: Literature Review (team grade)	Week 5 (September 27 th)	60
Team Gemstone Participation & Reflection Paper	Week 6 (October 4 th)	30
Methodology Critique	Week 7 (October 11 th)	25
Methodology Paper (team grade)	Draft 1: Week 8 (Thursday, October 20 th) – worth 20 pts. – submit electronically by noon Draft 2: Week 10 (Tuesday, November 1 st) – worth 40 pts. – submit electronically	60
Team Presentation (team grade)	Weeks 11 (November 8 th), 12 (November 15 th)	60
Team Proposal: Completed Draft (team grade)	Week 15 (December 6 th)	100

Total Points Possible During the Semester = 500

488-500	=	A+	383-397	=	C+
463-487	=	A	362-382	=	C
448-462	=	A-	348-361	=	C-
433-447	=	B+	298-347	=	D
413-432	=	B	0-297	=	F
398-412	=	B-			

Schedule of Topics, Assignments and Due Dates:

Week	Date	Topics	Reading/Video Due	Assignment Due
1	8/30	Introduction and Course Overview, Research, Research Proposal, Team Organization		
2	9/6	Working in Teams <i>Team Gemstone (9/10 and 9/11)*</i>	Syllabus	Syllabus Quiz In-class assignment #1, Team Resume* <i>(Bring personal resume to class)</i>
3	9/13	The Fundamentals of the Research Process, Identifying a Research Problem and Question <i>Team Gemstone Debrief and Team Development</i>	Assigned Gemstone Thesis Chapters 1 and 2 Signal and the Noise – Introduction (p. 1-17)	Lit Review Critique In-class assignment #2, Research Problem/Question*
4	9/20	Approaches to Research http://www.ted.com/talks/uri_alon_why_truly_innovative_science_demands_a_leap_into_the_unknown		
5	9/27	Accountability and Team Research <i>Pros and Grows</i>		Literature Review Paper
6	10/4	Data, Measurement, and Statistics and Hypothesis Testing and Validity Writing a Methodology Paper	Assigned Gemstone Thesis Chapters 3 and 4	Team Gemstone Reflection
7	10/11	Product Development		Methodology Critique
8	10/18	Protocol Workshops (IRB, IACUC, Lab Safety, Intellectual Property, Grants)	Recommended Reading: The Belmont Report— For Teams Seeking IRB Guide to Care and Use of Lab Animals—For Teams Seeking IACUC HHMI Guide to Data and Lab Management—For Teams Working in a Lab	Methodology Paper <i>*due electronically by noon Thursday 10/20</i>

9	10/25	Methodology Peer Review		In-Class Assignment #3, Methodology Peer Review*
10	11/1	Professional Development Workshops (Searching for Grants, Attending Conferences, Writing for Publication, Applying for patents, Leadership in Teams)		Edited Methodology Paper
11	11/8	Team Proposal Presentations		Team Presentations*
12	11/15	Team Proposal Presentations <i>Jr. Colloquia (11/16 - 11/17)</i>		Team Presentations*
13	11/22	New Lab Researcher Safety Training (in place of 2 hour New Laboratory Researcher for Undergraduates Training)		Online prerequisites include: <ul style="list-style-type: none"> • Chemical hygiene (~30 minutes) • Hazardous waste (~15 minutes) • Introduction to Biosafety (~15 minutes) • Introduction to Laboratory Exposure Controls (~45 minutes)
14	11/29	Daring Greatly: Risk, Teamwork, and Abandoning Perfectionism http://www.ted.com/talks/brene_brown_listening_to_shame#t-226736		Work on Research Proposal Draft and Finalize Expert for Proposal Meeting
15	12/6	The Road Ahead, Next Steps, & Course Evaluations		Team Research Proposal Draft; In-class assignment #4, Next steps*

* Major Scheduled Grading Event. Please refer to the attendance policy on page 2 if you must miss class on one of these days.

GEMS202 SL Information & Breakout Rooms

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