



Creativity Considered CCST-SHU 132: Course Syllabus¹

Professor Adam Brandenburger

Vice Chancellor Jeff Lehman

Overview

We hear every day about the importance of creativity in our lives, careers, and societies — its importance for personal development, for the generation of new ideas, forms, and expressions, for the work of organizations, large or small in scale, science and technology or arts and culture-focused, in the private or public sector. And yet, it is important to ask: Can creativity be usefully studied or is it, in fact, something best left to life, luck, or other factors that may determine one's creative self? The premise of this course is that, while not taking away from what can be called the magical aspect of creativity, we can benefit from considering creativity in some detail.

Another premise of the course is that there is merit in considering creativity across very different areas of human enterprise — science, art, business, government, and more. Implicit in this premise is the assumption that while creativity is manifested in many different ways, there are some common characteristics of creative identities, thinking, and work which we can find and put into practice.

A detailed consideration of creativity across various areas of human enterprise is the subject matter of this course.

Course Structure

The course will adopt two-pronged approach to considering creativity. We will look together at a range of writing on the subject of creativity. The readings address four questions:

¹ This syllabus has benefitted greatly from the commitment to learning made by the students who have taken earlier versions of the course. Discussions of concepts and creators in the classroom and beyond, and suggestions and ideas offered even after the course had ended, were extremely valuable and are gratefully acknowledged. Please note that some real-time adjustments may be made as the course progresses.

1. What is the reason everyone is talking about creativity?
2. What constitutes a creative identity?
3. What are some guides to creative thinking and doing?
4. What can science tell us about creativity?

We will also develop semester-long projects on people (“creators”) who have produced important breakthroughs in the arts, sciences, technology, business, or elsewhere. This way, the readings are supplemented with examinations of real people and their creative endeavors. At the same time, the projects are informed by some general ideas and concepts, so that they become not just descriptions but also analyses of the creators in question.

Sessions

- Class 1: Introduction
- Class 2: What is the reason everyone is talking about creativity?
- Class 3: What constitutes a creative identity?
- Class 4: Presentations on creators I
- Class 5: What constitutes a creative identity contd.?
- Class 6: What are some guides to creative thinking and doing?
- Class 7: Presentations on creators II
- Class 8: What are some guides to creative thinking and doing contd.?
- Class 9: What are some guides to creative thinking and doing contd.?
- Class 10: Presentations on creators III
- Class 11: What can science tell us about creativity?
- Class 12: Presentations on personal lessons
- Class 13: Presentations on personal lessons contd.
- Class 14: Conclusion

Learning Objectives and Outcomes

The course is designed to achieve several objectives and outcomes.

- i. There is a common prevailing narrative about creativity — a narrative that emphasizes the quest for novelty, certainty of purpose, the role of the individual spirit, freeing of oneself from constraints, and so on. While not denying that there is truth in this narrative, we believe that it is an incomplete picture and that there are also other characteristics to be found underneath creativity. The course will help students develop an expanded narrative about creativity --- one that looks at the importance of paying close attention to what already exists as well as the new, of being fluid and open to exploration, of thinking and working in groups as well as individually, of operating under constraints as well as free of them, and more.
- ii. We all carry around stories of our favorite (often, famous) creators. Often, these creators will be people who worked or work in our own areas of interest — a writer or artist, say, if we are in the humanities, or, perhaps, a scientist or mathematician, if these are more our areas of interest, or an entrepreneur, or a leader. The course will cover creators from all these domains. It will therefore help students broaden their knowledge and appreciation of creative work across domains.

iii. The course is an exploration of creativity out there in the world — as we study creators and writings about creativity. The course is also designed to help students gain a deeper understanding of their existing and evolving creative selves and, importantly, to help everyone gain greater confidence in their own creative capacities.

iv. Through readings, class discussions, project work, presentations, and a final essay, students will practice and further develop their general critical reading and thinking skills, and their effectiveness in listening, communicating, and writing.

General Information

1. Library and Research Services

The Library is available to support your research needs, and provides access to 14,000 print resources, 2,000 DVDs, and 1,000 databases (including over a million e-books, as well as streaming audio & video and image databases). Librarians with expertise in fields such as Business, Economics, Humanities, Science (STEM), and Social Sciences are available in-person and online to help you with your research. Services include:

- one-to-one consultations to help you with your research projects
- reference Desk hours in the library for immediate help with finding & using resources
- workshops throughout the semester on research strategies, special databases, academic integrity, and using citation tools

Visit the Library on the 4th floor, or go to shanghai.nyu.edu/library to learn more.

2. Tutoring and Writing Support

The Academic Resource Center (ARC) provides tutoring and support to students looking to reach their highest academic potential. Students can schedule a meeting, or drop by, for any of the following:

- individual and small-group tutoring in over 30 STEM and Business & Economics courses
- individual writing consultations at any stage of the writing process
- academic coaching in areas such as time management, reading & note-taking strategies, exam preparation, and goal setting
- workshops on writing, academic skills, and technologies
- group study and conversation circles (students are also welcome to study on their own in the comfortable, supportive atmosphere of the ARC)

3. Moses Center for Student Accessibility

If you will require academic accommodation of any kind during this course, you must notify me at the beginning of the course (or as soon as your need arises) and provide a letter from the Moses Center for Student Accessibility (mosescsa@nyu.edu) verifying your registration and outlining the accommodations they recommend. For more information, visit the CSA website: <https://www.nyu.edu/students/communities-and-groups/student-accessibility.html>.

4. Attendance

Attendance in all classes is required. If you are unable to attend a class, please let us know in advance so we can talk about how you can catch up. If you are sick and need to miss more

than a week of classes, you should speak to the Health & Wellness Office to obtain an excused absence.

5. Academic Integrity

Students should read and adhere to the NYU Shanghai policy on academic integrity as described in the current NYU Shanghai Academic Bulletin.

Name Pronunciation and Pronouns

NYU students now have the ability to include their pronouns and name pronunciation in Albert. I encourage you to share your name pronunciation and pronouns this way. Please utilize this link for additional information: [Pronouns & Name Pronunciation](#).

Religious Observances and Other Absences

NYU's [Calendar Policy on Religious Holidays](#) states that members of any religious group may, without penalty, absent themselves from classes when required in compliance with their religious obligations. You must notify me in advance of religious holidays or observances that might coincide with exams, assignments, or class times to schedule mutually acceptable alternatives. Students may also contact religiousaccommodations@nyu.edu for assistance.

NYU is committed to ensuring an equitable educational experience for all students regardless of identity or circumstances and strives to recognize the obligations its students have outside of school. Please review all class dates at the start of the semester and review all course requirements to identify any foreseeable conflicts with exams, course assignments, projects, or other items required for participation and attendance. If you are aware of a potential conflict, please contact me as soon as possible to discuss any potential conflicts to determine whether/how they can be accommodated.

Inclusive Learning Environment

This course strives to support and cultivate diversity of thought, perspectives, and experiences. The intent is to present materials and activities that will challenge your current perspectives with a goal of understanding how others might see situations differently. By participating in this course, it is the expectation that everyone commits to making this an inclusive learning environment for all.

Schedule

Class 1: Introduction

Assignment: In preparation for our first class, please read through the syllabus, which will give you the overall picture of how the course will unfold.

In class, we will do self-introductions and share our motivations for joining this semester-long consideration of creativity. So, please give some thought in advance to how you want to introduce yourself.

Please then prepare:

- a. Kyna Leski, *The Storm of Creativity*, MIT Press, 2015, Chapter 1 (“Creativity as Storm”). (You can find book excerpts in the relevant unit — Class #1, Class #2, ... — on our Brightspace site.)
- b. Scott Barry Kaufman and Carolyn Gregoire, *Wired to Create: Unraveling the Mysteries of the Creative Mind*, Perigee, 2015, Preface and Introduction (“Messy Minds”).
- c. Massimo Bottura, *Osteria Francescana*, Phaidon Press, 2014, excerpt.
- d. “Massimo Bottura | Talks at Google,” at <https://www.youtube.com/watch?v=hFkNx2UQGNQ>.

The reading from *The Storm of Creativity* offers a metaphor for the creative process, namely, that of a storm. Please think about a metaphor of your own for creativity, write half a page describing your metaphor, and come to class ready to read and share.

In the reading from *Wired to Create*, the authors review and then reject a classic four-stage model of creativity (preparation, incubation, illumination, verification). Why do the authors reject this model, and what do they mean by emphasizing instead the “messiness” of creativity? What does the word “duality” mean? List all the places in the reading you can find where the authors talk about dualities exhibited by the creative mind. Come to class ready to explain the role that the authors say each duality plays in creativity.

Watch the video about Massimo Bottura, famous restaurateur and chef, read the excerpt from *Osteria Francescana*, and note any dualities he mentions.

Note: You do not need to submit anything before class.

Class 2: What is the reason everyone is talking about creativity?

This week’s readings talk about creativity in the world of work. But, some of the readings put more emphasis on creativity as a way to guard against changes coming to the current world of work, while other readings put more emphasis on enhanced future opportunities for creativity.

Please prepare:

- a. Ken Robinson, *Out of Our Minds: Learning to be Creative*, Capstone, rev. edition, 2011, Chapter 1 (“Out of Our Minds”).
- b. Ken Robinson, “Do Schools Kill Creativity?” 2006, at https://www.ted.com/talks/ken_robinson_says_schools_kill_creativity.
- c. Marcos Lima, “No, Artificial Intelligence Won’t Steal Your Children’s Jobs — It Will Make Them More Creative and Productive,” *The Conversation*, February 2018, at <http://theconversation.com/no-artificial-intelligence-wont-steal-your-childrens-jobs-it-will-make-them-more-creative-and-productive-91672>.
- d. Garry Kasparov, *Deep Thinking: Where Machine Intelligence Ends and Human Creativity Begins*, John Murray, 2017, Chapter 11 (“Human Plus Machine”), pp.244-248.
- e. “AlphaGo - The Movie,” 2017, at <https://www.youtube.com/watch?v=WXuK6gekU1Y>.

Go through the readings, and watch the Ken Robinson video, and note the different arguments the different authors make about the future relationship between new technologies and humans. Also, come to class ready to suggest other reasons — not only ones within the world of work — why creativity is being talked about so much at the moment.

Dip into the documentary “AlphaGo - The Movie” of the 2016 match between AlphaGo, a computer Go program developed by Google DeepMind, and world champion Go player Lee Sedol. What does the documentary tell us about sources of creativity in the coming years?

You do not need to submit anything before class.

Note: At the end of class, we will go through the plans for your course project, and for the first project deliverable.

After class: You will each start the process of choosing a creator, whom you will study during the course. As you make your choice, please remember that creators work in many different fields — arts, sciences, technology, business, elsewhere (creators are not only artists!). You can choose someone who is famous, or not. Either is fine. Likely, the person you choose has some special meaning for you (e.g., as a role model?). Be sure to have some personal investment in your choice, so that your project takes on real significance for you.

Class 3: What constitutes a creative identity?

This week, we will begin to assemble some views of what constitutes a creative identity.

Please prepare:

a. Adam Grant, *Originals: How Non-Conformists Move the World*, Viking, 2016, Chapter 1 (“Creative Destruction”), pp.1-14.

b. Bruce Nussbaum, *Creative Intelligence: Harnessing the Power to Create, Connect, and Inspire*, HarperCollins 2013, pp.3-9.

c. George Orwell, “Why I Write,” *Gangrel* magazine, Summer 1946, at <http://gutenberg.net.au/ebooks03/0300011h.html#part47>.

d. Twyla Tharp, *The Creative Habit: Learn It and Use It for Life*, Simon & Schuster, 2003, Chapter 3 (“Your Creative DNA”), pp.35-44.

What picture of an “original” (defined as a creator who takes action) does the reading from *Originals* paint? What qualifications or amendments would you make to this picture?

The reading from *Creative Intelligence* pushes back against the notion of creativity as made up of “aha” moments. How else does the reading view creativity?

Four “great motives” for writing are described in the essay “Why I Write.” What does the essay say about the relative importance of these various motives and about the relationships among them?

The reading from *The Creative Habit* talks about the “creative DNA” which people possess. In preparation for an in-class exercise, list the three dimensions of this DNA as discussed by the

author. Come up with your own examples of artists who occupy different places on each of these dimensions.

Class 4: Presentations on creators I

By now you should have narrowed down your choice of creator to study during the course. Please discuss your choice with us, before fully committing.

For class, please prepare a presentation — with slides — on your creator. (We will be sure to budget time for comments and questions on each presentation.) Email your slides in PDF form to adam.brandenburger@stern.nyu.edu. In your presentation, you should brief the class about the creator you chose and, importantly, about your motivation for choosing this person.

Class 5: What constitutes a creative identity contd.?

This week, we will continue assembling some views of what constitutes a creative identity. Most of the materials for this week are about the sciences (rather than the arts, as previously).

Please prepare:

- a. Stuart Firestein, *Ignorance: How It Drives Science*, Oxford University Press, 2012, Introduction and Chapter 1 (“A Short View of Ignorance”).
- b. “Richard Feynman — The Uncertainty of Knowledge,” at https://www.youtube.com/watch?v=QkhBcLk_8f0.
- c. Oren Harman and Michael Dietrich, *Dreamers, Visionaries, and Revolutionaries in the Life Sciences*, The University of Chicago Press, 2018, Chapter 13 (“Jane Goodall: She Dreamed of Tarzan”) and Chapter 5 (“Jonas Salk: American Hero, Scientific Outcast”).
- d. Kyna Leski, *The Storm of Creativity*, MIT Press, 2015, Chapter 2 (“Unlearning”), pp.11-18.
- e. Beau Lotto, “The Neuroscience of Creativity, Perception, and Confirmation Bias,” 2017, at <https://www.youtube.com/watch?v=vR2P5vW-nVc>.

In the excerpt from *Ignorance*, the author offers a positive view of ignorance and its role in scientific work. What is this view? Please also watch the video of famous physicist Richard Feynman on a philosophy of science and life based on an attitude of enlightened ignorance.

Go through the reading from *Dreamers, Visionaries, and Revolutionaries in the Life Sciences* and document some characteristics of the two scientists described there.

In the reading from *The Storm of Creativity*, the author talks about “unlearning.” What is unlearning and what is her argument for its importance to creativity?

Watch the video by neuroscientist Beau Lotto. Relate what he says about how the brain faces uncertainty to what the authors in a. through d. say about the unknown.

Class 6: What are some guides to creative thinking and doing?

This week, we will begin to assemble some examples of writing that suggest specific techniques to foster creativity.

Please prepare:

- a. Charles Duhigg, *Smarter, Faster, Better*, Heinemann, 2016, Chapter 7 (“Innovation: How Idea Brokers and Creative Desperation Saved Disney's *Frozen*”).
- b. Maria Popova, “The Art of Discovering and Combining: Ada Lovelace on the Nature of the Imagination and Its Two Core Faculties,” *The Marginalian*, December 2015, at <https://www.themarginalian.org/2015/12/10/ada-lovelace-imagination/>.
- c. Maria Popova, “What Is Creativity? Cultural Icons on What Ideation is and How It Works,” *The Marginalian*, September 2013, at <https://www.themarginalian.org/2013/09/06/what-is-creativity/>. (In this reading, concentrate on the parts that talk about combination.)
- d. Austin Kleon, *Steal Like an Artist: 10 Things Nobody Told You About Being Creative*, Workman, 2012, Chapter 1 (“Steal Like an Artist”).

In the reading from *Smarter, Faster, Better*, what techniques does the author describe as having been employed to produce a movie that upended the customary storyline (from good vs. evil to love vs. fear)?

The readings “The Art of Discovering and Combining: Ada Lovelace on the Nature of the Imagination and Its Two Core Faculties” and “What Is Creativity? Cultural Icons on What Ideation is and How It Works” mention many creators from many fields who put combining as central to creative work. Identify different modes of combinatory thought suggested there.

Go through the reading from *Steal Like an Artist* and list the techniques the author suggests for arriving at the “mashups” and “remixes” which he considers the essence of new ideas.

Class 7: Presentations on creators II

Please prepare two pieces of material for this week. Both will speak to the creative identity of the individual you have chosen to study during the course.

- a. The first piece of material is a mini-essay you will write, drawing on our readings and discussions around creative identity (Classes #3 and #5) and using these to come up with some hypotheses about your chosen individual’s creative identity. Please be sure to make detailed use of the relevant class readings and discussions, but, also important, do not just be formulaic in their application. The mini-essay should be 2-3 pages long. Please email it in PDF form to adam.brandenburger@stern.nyu.edu, prior to Class #7.
- b. The second piece of material is a mini-presentation on the same topic as in a., which you will give in Class #7. Please prepare a presentation — with slides — on your creator. (We will be sure to budget time for comments and questions on each presentation.) Email your slides in PDF form to adam.brandenburger@stern.nyu.edu. Your slides should mirror your essay in a. above. That is, they should focus on hypotheses about your chosen individual’s creative identity. You do not need to reintroduce your individual, since you gave us an introduction in Class #4.

Class 8: What are some guides to creative thinking and doing contd.?

This week, we will continue assembling examples of writing that suggest techniques to foster creativity.

Please prepare:

- a. Adam Brandenburger, "Strategy Needs Creativity," *Harvard Business Review*, March-April 2019, at <https://hbr.org/2019/03/strategy-needs-creativity>.
- b. David Kadavy, *The Heart to Start: Win the Inner War & Let Your Art Shine*, Kadavy, Inc., 2017, Chapter 8 ("The Fortress Fallacy"), Chapter 9 ("Inflating the Investment"), and Chapter 10 ("The Linear Work Distortion").
- c. Sarah Lewis, *The Rise: Creativity, The Gift of Failure, and the Search for Mastery*, Simon & Schuster, 2014, pp.61-70.
- d. Julia Cameron, *The Artist's Way: A Spiritual Path to Higher Creativity*, TarcherPerigee, 25th Anniversary edition, 2016, pp.9-24 ("The Basic Tools").

The article "Strategy Needs Creativity" offers a set of prompts (contrast, combination, constraint, context) for creative thinking. Relate each of these prompts to topics previously discussed in the course.

Go through the excerpts from *The Heart to Start*, to be ready to practice the techniques described there in an in-class exercise.

The excerpt from *The Rise* talks about a notion of "surrender" in the face of formidable challenges. Relate this notion to that of "strategy from constraint" in the first reading and to notions in the second reading.

The excerpt from *The Artist's Way* recommends two regular practices to help unlock creative ideas and work. Think about other regular practices which you think could operate in a similar way.

Class 9: What are some guides to creative thinking and doing contd.?

This week, we will switch focus from creativity at the individual level to creativity at the level of the group.

Please prepare:

- a. Isaac Asimov, "On Creativity," 1959, at <https://www.technologyreview.com/s/531911/isaac-asimov-asks-how-do-people-get-new-ideas/>.
- b. Keith Sawyer, *Group Genius: The Creative Power of Collaboration*, Basic Books, rev. edition, 2017, Chapter 4 ("From Groupthink to Group Genius").
- c. Andre Walton, "Resolving the Paradox of Group Creativity," *Harvard Business Review*, January 2016, at <https://hbr.org/2016/01/resolving-the-paradox-of-group-creativity>.

What are the different roles proposed in the essay "On Creativity," for individual thinking and group discussion, respectively, when seeking cross-connections between ideas?

What is the argument advanced in the reading from *Group Genius* for why groups may encounter problems in performing creative work? What is the argument advanced in “Resolving the Paradox of Group Creativity” for this possibility? Compare the two arguments, and also compare the solutions to this issue which the two readings propose.

Class 10: Presentations on creators III

Please prepare two pieces of material for this week. Both will speak to ways of creative thinking and doing for the individual you have chosen to study during the course.

a. The first piece of material is a mini-essay you will write — drawing on our readings and discussions around creative thinking and doing (Classes #6, #8, and #9) and using these to come up with some hypotheses about your chosen individual’s ways of creative thinking and doing. Please be sure to make detailed use of the relevant class readings and discussions, but, also important, do not just be formulaic in their application. The mini-essay should be 2-3 pages long. Please email it in PDF form to adam.brandenburger@stern.nyu.edu, prior to Class #10.

b. The second piece of material is a mini-presentation on the same topic as in a., which you will give in Class #10. Please prepare a presentation — with slides — on your creator. (We will be sure to budget time for comments and questions on each presentation.) Email your slides in PDF form to adam.brandenburger@stern.nyu.edu. Your slides should mirror your essay in a. above. That is, they should focus on hypotheses about your chosen individual’s ways of creating and doing.

Class 11: What can science tell us about creativity?

This week, we will delve a little into what neuroscientists can tell us about creativity.

Please prepare:

a. Scott Barry Kaufman, “The Real Neuroscience of Creativity,” *Scientific American*, August 2013, at <https://blogs.scientificamerican.com/beautiful-minds/the-real-neuroscience-of-creativity/>.

b. Roger Beaty et al., “Robust Prediction of Individual Creative Ability from Brain Functional Connectivity,” *Proceedings of the National Academy of Sciences*, 2018, at <https://doi.org/10.1073/pnas.1713532115>; summarized at <https://www.sciencedaily.com/releases/2018/01/180117163954.htm>.

c. Manoush Zomorodi, “What Boredom Does to You: The Science of the Wandering Mind,” *Nautilus*, October 26, 2017, at <http://nautil.us/issue/53/monsters/what-boredom-does-to-you>.

d. Manoush Zomorodi, “How Boredom Can Lead to Your Most Brilliant Ideas,” 2017, at https://www.ted.com/talks/manoush_zomorodi_how_boredom_can_lead_to_your_most_brilliant_ideas.

The article “The Real Neuroscience of Creativity” mentions three brain networks as being important to neural processes underlying creativity. What does the article say about how these networks interact? How does this network view differ from older views of how the brain functions during creative activity? Read also the *Science Daily* summary of the article “Robust Prediction of Individual Creative Ability from Brain Functional Connectivity.” (Of course, you

can also read the complete article, if you want to go further.) This article talks about “synchrony” across the three networks.

Read the article “What Boredom Does to You: The Science of the Wandering Mind,” which talks in more detail about the Default Mode Network. Also watch the associated video. What does the author say about the various roles which this network — and, more generally, mind-wandering — may play in our lives?

Class 12: Presentations on personal lessons

This week or the week after, you will each give a presentation sharing what you have learned during the course about creativity in general and your own creative self in particular. Cover where the readings, the class discussions, and your study of a creator have brought you in your thinking. Talk here in terms of “before” and “after,” i.e., compare where your thinking was back before the course began with where it is now. Please prepare a 20-minute slide presentation. Email your slides in PDF form to adam.brandenburger@stern.nyu.edu, prior to class #12 or Class #13.

Also, to be handed in by the start of our final class (Class #14), is an individual essay elaborating on your Class #12 or Class #13 presentation. That is, this essay, like your presentation, will draw on the readings, the class discussions, and your study of a creator to reflect on what you have learned during the course about creativity in general and your own creative self in particular. The expectation is that your essay will be approximately 10 pages in length. Please email it in PDF form to adam.brandenburger@stern.nyu.edu, prior to Class #14.

Remember that, as before, your presentation and your essay should be closely aligned in terms of structure, even though they differ in format. In addition, you can view your presentation as an opportunity to ‘test-drive’ your essay as you are working on it.

Class 13: Presentations on personal lessons contd.

We will continue with final presentations.

Class 14: Conclusion

We will work together to summarize the course.

Deliverables and Grading

Each student will choose a creator to study during the course. You will write some essays on your creator, and you will also prepare and share with the class some presentations about your creator.

Each student will introduce their creator via a presentation.

Each student will write two mini-essays during the course. The first mini-essay will use ideas from class to examine the creative identity of the individual you have chosen to study. The second mini-essay will use ideas from class to examine some of the ways of creative thinking and doing exhibited by the individual you have chosen to study. Both mini-essays will be accompanied by presentations.

Each student will write a final essay — drawing on the readings, the class discussions, and your study of a creator — which reflects on what you have learned during the course about creativity in general and your own creative self in particular. The final essay will be accompanied by a presentation.

Grading:

Presentations will comprise 20 percent of your overall grade, mini-essays 20 percent, final essay 40 percent, and class participation 20 percent.

Grading of the presentations and essays will be according to the criteria: (i) organization and clarity of the oral or written material; (ii) accuracy and depth in use of concepts from the course; and (iii) power and originality of insights provided. Grading of class participation will be according to: (i) level of pre-class preparation indicated by comments made in class; (ii) engagement in discussion in class of assigned materials; and (iii) engagement in feedback in class on fellow students' work.

The grading scale for the course is from A to F, where the grades indicate:

A: excellent organization and clarity in all work, accurate and in-depth use of concepts, powerful and original insights, well-prepared and effective class contributions

B: good performance with respect to these same criteria, with sound general grasp and good-but-not-always-excellent content and engagement evidenced

C: satisfactory performance with respect to these criteria, with basic understanding and engagement evidenced

D: passable performance with respect to these criteria, with superficial understanding and limited engagement evidenced

F: unsatisfactory performance with respect to these criteria