

Data Challenge/Interdisciplinary Collaboration

STA1383: Genap 2024

Time & Location	Lecture: Thursdays 8:00–9:40 AM in CCR 2.13, 2.14 Practicum: Thursdays 10:00–12:00 PM in CCR 2.11, 2.12
Instructors	1. Prof. Dr. Ir. Anik Djuraidah, M.S. 2. Dr. Bagus Sartono, S.Si., M.Si. 3. Dr. Yenni Angraini, S.Si., M.Si. 4. Akbar Rizki, S.Stat., M.Si. 5. Assoc. Prof. Dr. Eric Alan Vance 6. Laily Nissa Atul Mualifah, S.Si., M.Si.
Course Website	We will use the LMS for readings, assignments, and grading.
Readings	Readings posted on the LMS form the basis for student learning. Students will be tested on the readings at the beginning of each module.
Materials	At least one member per team must bring to class a laptop or tablet computer
Course Description	This course will educate and train students to become effective interdisciplinary collaborators. This course will provide enhanced research infrastructure for IPB University by beginning a new interdisciplinary collaboration center for applying statistics and data science. Students will learn and practice many of the collaboration skills necessary to be an effective statistician and data scientist. These skills are not typically taught in most statistics courses.
Overall Learning Goals	<p>Students will learn how to effectively collaborate with domain experts to apply statistics and data science to transform evidence into action for the benefit of society.</p> <p>Students will learn and practice skills in the following five components of the ASCCR (SPIKR) framework for interdisciplinary collaboration in statistics and data science: Attitude (Sikap), Structure (Pola pertemuan), Content (Isi), Communication (Komunikasi), and Relationship (Relasi).</p> <ul style="list-style-type: none">• The learning goal for Attitude (Sikap) is for students to adopt an Attitude of Collaboration that facilitates collaboration• The learning goal for Structuring meetings (Pola pertemuan) is for students to learn, practice, and apply the SABAR structure for collaboration meetings (Siapkan, Awali, Bekerja, Akhiri, Renungkan)

	<ul style="list-style-type: none"> • The learning goal for the Content or workflow of a project (Isi) is for students to learn, practice, and apply the K1K2K3 workflow (Kualitatif, Kuantitatif, Kualitatif) for collaboration projects • The learning goal for Communication (Komunikasi) is for students to develop a personal strategy for effective communication in interdisciplinary collaborations • The learning goal for Relationship (Relasi) is for students to develop a personal plan for strengthening relationships in interdisciplinary collaborations • Students will also learn metacognitive skills such as setting goals, giving effective feedback, working ethically, collaborating with and mentoring other students, and self-reflection.
Grading	Overall course grades will be determined by these three components: 50% Individual Performance, 30% Team Performance, 20% Team Management and Peer Evaluation.
Individual Performance	Individual tests/quizzes, homework assignments, course projects, and final presentations will determine the individual performance grade.
Course Projects	With your team, you will meet with two domain experts, use your statistics and data science expertise to help answer their research or business questions, and present the results to the class. You will produce written reports about your statistics and data science collaborations.
Final Project	Teams will present to the class one of their projects as their final project.
Team Performance	You will collaborate with your team throughout the semester. Team tests and assignments will determine the team performance component of your grade.
Team Management	You will provide qualitative and quantitative feedback for each of your teammates three times during the semester, which will determine each member's team management and peer evaluation grade.
Modules	<p>The course content is divided into the following five modules:</p> <ul style="list-style-type: none"> • <u>Module 1 – Fundamental communication and collaboration skills:</u> Team-based Learning; creating SMART goals; providing helpful feedback • <u>Module 2 – Attitude, Structure, and Content of statistical collaborations:</u> Leading effective meetings with the SABAR structure; learning and applying the K₁K₂K₃ process; recognizing and avoiding Type III errors • <u>Module 3 – Statistical communication:</u> Asking great questions; listening, paraphrasing, and summarizing to create shared understanding; non-verbal communication • <u>Module 4 – Explaining statistics to non-statisticians</u>

- Module 5 – Ethics, presentations, and relationships: Understanding ethical issues in statistics; presenting quantitative information; strengthening relationships.

Course Schedule

1. 25 Jan: Introduction to collaboration, intro to ASCCR SPIKR, LISA 2020 Global Network, meta-cognitive skills (SMART Goals and Feedback)
2. 1 Feb: Attitude
Liburan (one week) (begin finding projects)
3. 15 Feb: SABAR (meeting observation)
4. 22 Feb: SABAR practice: Siapkan, Awali, Berbuat, Akhiri, Renungkan
5. 29 Feb: QQQ, non-verbal communication
6. 7 Mar: Creating Shared Understanding, Listening Paraphrasing Summarizing, Asking Great Questions
7. (Selasa) 12 Mar: VCFS Video Coaching and Feedback Session
Midterm break
(two weeks)
8. 4 Apr: Explaining statistics to non-statisticians
Idul Fitri break
(two weeks)
9. 25 Apr: VCFS, Ethical discussions
10. 2 Mei: Presenting quantitative information (QMatrix), Assertion evidence structure for a poster presentation?
Liburan (one week)
11. 16 Mei: VCFS
Liburan (one week)
12. 30 Mei: Relationship, Reflection
13. (Rabu) 5 Jun:
14. 6 Jun:

Learning Goals and Objectives for Data Challenge/ Interdisciplinary Collaboration Course Genap 2024

Overall Learning Goal

Overall learning goal: Students will learn how to effectively collaborate with domain experts to apply statistics and data science to transform evidence into action for the benefit of society.

Specific Learning Objectives

1. Students will demonstrate proficiency in interdisciplinary collaboration skills in the classroom
2. Students will demonstrate proficiency in meta-cognitive skills associated with interdisciplinary collaboration.
3. Students will demonstrate proficiency in interdisciplinary collaboration skills during actual collaborations with domain experts.

Interdisciplinary Collaboration Skills in the Classroom

Students will learn and practice skills in the following five components of the ASCCR (SPIKR) framework for interdisciplinary collaboration in statistics and data science: Attitude (Sikap), Structure (Pola pertemuan), Content (Isi), Communication (Komunikasi), and Relationship (Relasi)

Attitude (Sikap)

The learning goal for Attitude (Sikap) is for students to adopt an Attitude of Collaboration that facilitates collaboration.

By the end of the second week of the course, students will be able to:

1. Describe and evaluate attitudes about collaboration in the three categories of Saya-Anda-Kita
2. Reflect on their own attitudes about collaboration and evaluate whether they facilitate or detract from collaboration
3. Associate behaviors with common attitudes about collaboration
4. Describe the importance of attitudes in collaboration
5. Generate strategies for how to change one's own attitudes
6. Develop a personal plan to adopt an Attitude of Collaboration.

By the end of the course, students will describe their personal Attitude of Collaboration, state how it has evolved (i.e., identify which attitudes changed and why they changed), evaluate the impact of their attitudes on interdisciplinary collaborations, and update their personal plan to strengthen their Attitude of Collaboration.

Structuring meetings (Pola pertemuan)

The learning goal for Structuring meetings (Pola pertemuan) is for students to learn, practice, and apply the SABAR structure for collaboration meetings (Siapkan, Awali, Bekerja, Akhiri, Renungkan).

By the end of the fourth week of the course, students will be able to:

1. Design a personal checklist for how to prepare for a collaboration meeting
2. Summarize the required elements for the meeting Awali. Practice and demonstrate the key conversations: greeting, explanation of structure, time conversation, wanted conversation, willing/able, longer timeframe, transition to work.
3. Summarize the required elements for the meeting Akhiri. Practice and demonstrate the key conversations: discussion of whether the initial wants were addressed and what the key decisions made were, next step action items, timeline for next steps and prompt for next meeting, send written summary to domain expert.
4. Design a personal checklist for reflecting on the meeting, i.e., what questions will they ask themselves at the end of every meeting?

Content or workflow of projects (Isi)

The learning goal for the Content or workflow of a project (Isi) is for students to learn, practice, and apply the K₁K₂K₃ workflow (Kualitatif, Kuantitatif, Kualitatif) for collaboration projects.

By the end of the fifth week of the course, students will be able to:

1. Generate a personal example of committing a Type III error and diagnose why the error occurred.
2. For several example SDS collaborative projects (and academic presentations), identify and summarize the K₁, K₂, and K₃ stages of the project.

By the end of the course, students will be able to summarize the K₁, K₂, and K₃ stages of their collaborative projects. They will be able to explain the importance of creating shared understanding of K₁ before moving on to K₂, and the importance of completing K₃ before declaring the project to be finished.

Communication (Komunikasi)

The learning goal for Communication (Komunikasi) is for students to develop a personal strategy for effective communication in interdisciplinary collaborations.

The focus of Weeks 6, 7, and 8 will be on four strategies for communication. By the end of the eighth week, students will be able to:

1. Apply the concepts of creating shared understanding (CSU) to their personal communications. Students will:
 - a. Describe the concept of CSU in their own words
 - b. Generate an example of a time the student did (or did not) create shared understanding with someone else
 - c. Evaluate the consequences of creating (or not) CSU
 - d. Generate another example of a time someone did not (or did) create CSU and what the consequences were.
2. Apply the concepts of asking great questions to their personal communications. Students will:
 - a. Categorize questions as Bad, OK, Good, or Great and determine what makes one question better than another.
 - b. Compose three questions a statistician might ask during a collaboration meeting. Rewrite them to become great questions. Explain why those questions are great questions.
 - c. Ask someone (outside of class) a great question. What was the reaction or response of the other person? How did that response make the student feel?
3. Apply the concepts of listening, paraphrasing, summarizing to their personal communication. Students will:
 - a. Determine which listening, paraphrasing, and summarizing tips are personally useful and which are not.
 - b. Practice listening, paraphrasing, and summarizing conversations in statistical collaborations.
 - c. Generate tips or advice for more effective listening, paraphrasing, and summarizing.
4. Apply the concepts of explaining statistics to non-statisticians to their personal communication. Students will:
 - a. Use the ADEPT (BIDAK) (Bahasa sederhana, Ilustrasi, Diagram, Analogi, Keterangan Teknik) method to explain statistical concepts to non-statisticians.
 - b. Reflect on how useful the components of ADEPT (BIDAK) were.
5. Demonstrate effective nonverbal, written, and oral communication. Students will:
 - a. For each project, write an initial meeting summary and a final project summary.
 - b. Incorporate feedback from the domain expert to improve the meeting and project summaries.

Relationship (Relasi)

The learning goal for Relationship (Relasi) is for students to develop a personal plan for strengthening relationships in interdisciplinary collaborations.

By the end of the course, students will be able to:

1. Describe the importance of relationships in collaborations
2. Identify opportunities in ongoing projects to strengthen relationships
3. Identify signs of strong and weak relationships.

Meta-cognitive skills

By the end of the course, students will have improved their metacognitive skills such as setting goals, giving effective feedback, working ethically, collaborating with and mentoring other students, and self-reflection.

By the end of the course, students will be able to:

1. Create SMART goals for themselves for the semester (in this class), until graduation, and five years after graduation
 - a. Identify the five elements of SMART goals: Specific, Measurable, Attractive, Realistic, and Time-bound
 - b. Distinguish between instrumental and terminal goals and critique goals (theirs and others') through this lens.
2. Give effective and helpful feedback
 - a. Describe what aspects of feedback make it helpful.
 - b. Demonstrate giving effective feedback by giving two pieces of feedback and reflecting on how helpful the feedback was and how the person reacted to receiving the feedback.
3. Learn about and practice ethical statistics and data science practice
4. Mentor others: By the end of the course, students should be able to effectively collaborate with and mentor other students by adopting an attitude of wanting to be of help or service, asking great questions, and giving effective feedback.
5. Effectively self-reflect. Students will demonstrate this by reflecting on many aspects of collaboration throughout the course and reflecting on how their practice of reflection affected how well they achieved their goals for the course.

Data Challenge: Statistics and Data Science Collaboration Preliminary Course Schedule/Syllabus for Genap 2024

	Class Date	Class Topics	Main classroom activities	Pekerjaan Rumah	Notes, Readings
1	25 Jan 8:00-9:40 10:00-12:00	Introduction, metacognitive skills (SMART goals, feedback)	Opening Plan: 45 min lecture about collaboration and LISA 2020 Global Network Learning Goals and Objectives Helpful Feedback Goals Introduction to TBL Describe projects and process	SMART goals Practice giving feedback Pre-semester survey	Readings #1: 1. ASCCR, 2. Syllabus 3. Feedback 4. SMART goals 5. Team-Based Learning
2	1 Feb	iRAT1/tRAT1 Attitude	iRAT1 Create teams of 4 tRAT Discussion of attitude Team application exercises Work on team attitude assignment	Attitude survey Compare attitudes with teammates Generate new attitudes and identify behaviors	Readings #2: SABAR and K1K2K3.

			Remind students of new readings for Meeting #3		
	8 Feb	Liburan		Advertise for projects	
3	15 Feb	SABAR, Meeting observation	Lecture, team discussion, Meeting Observation, Team discussion	Meeting observation (K1K2K3 and SABAR)	
4	22 Feb	SABAR Practice	Role plays	Find projects and meet with domain expert	Read about Type III errors
5	29 Feb	K1K2K3 (Type III errors) Project discussions (examples) Nonverbal Communication	Brief K1K2K3 lecture. Team exercises Discuss projects (K1K2K3 examples) Nonverbal discussion/exercises	Examples of personal Type III errors	Readings #3: CSU and AGQ
6	7 Mar	Creating Shared Understanding Asking Great Questions Listening, Paraphrasing, Summarizing	Brief lecture/review Role plays (practice ASQ, LPS, CSU) about K1 Project Discussions	Initial draft of personal communication plan	
7	12 Mar	VCFS	VCFS Project discussions		Readings #4: Explaining statistics
	21/28 Mar		Midterm Break		
8	4 Apr	Statistical Explanations (ADEPT)	Practice explaining (team exercises) Project discussions	Explain statistics to non-statisticians	Readings #5: Ethics, Presentations, Relationships
	11/18 Apr	IDUL FITRI			
9	25 Apr	Ethics VCFS	Ethics mini-lecture, team exercises Project discussions		
10	2 Mei	Presenting quantitative info, Poster presentation style	QMatrix lecture Poster planning Project discussions		
	9 Mei	Liburan			
11	16 Mei	VCFS	VCFS Project discussions		
	23 Mei	Liburan			
12	30 Mei	Relationships, Reflection, Post-survey			
13	5 Jun		Project discussions		
14	6 Jun		Project discussions		
		Final Project Poster Presentations			