

DSCI 4700 Business Process Analytics
AI-Enhanced Collaborative Learning Capstone
Dates are Subject to Change based on the schedule of guest speakers

Course Information

Course: DSCI 4700.001 – Analytics for Decision Making

Semester: Fall 2026

Meeting Time: Thursday, 2:25 p.m. – 5:15 p.m.

Location: BLB Room 073

Course Materials: Canvas at <https://unt.instructure.com>

Instructor Contact

Instructor: Kai Qin

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Office Hours: Upon request

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Coordinator: Dr. Victor Prybutok, CQE, CQA, CMQ/OE, PSTAT®

Phone: 940-565-4767

Office: BLB 319C

Office Hours: Upon request

Email: Use Canvas Inbox (Include "DSCI 4700" in subject line)

Response Time: ASAP but at least 24-48 hours during weekdays; email by Friday morning for weekend responses

Required Texts and Materials

Likely, you can find inexpensive used copies, but for your convenience, our bookstore will have all the materials.

Primary Text: *An Introduction to Six Sigma & Process Improvement (2nd edition)* by Evans/Lindsay (2015), Cengage Learning

Supplementary References:

- *The Six Sigma Way: Team Fieldbook* by Pande, Neuman & Cavanagh, McGraw Hill, 2002
- *Python Data Analytics* by Fabio Nelli, Apress (Less critical but available free through UNT Library)

Technology Requirements:

- Personal computer with reliable internet access
- Webcam, speakers, microphone

- Microsoft Office Suite
 - UNT Zoom Web Conferencing Tool
 - Access to AI tools (ChatGPT, Claude, or similar LLMs)
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Course Prerequisites

Should only be taken during your graduating semester

Prerequisites: BCIS 4660 or ACCT 4100 or LSCM 3960 or OPSM 3830; 2.7 UNT GPA (2.7 transfer GPA if no UNT courses taken); grade of C or better in all previous DSCI courses.

Course Description

From Catalog: Study of the analytics that underline the process of decision making and the information requirements of decisions; decision support tool selection, process improvement, and applications development.

More detail: This capstone course prepares students to work in AI-enhanced quality control environments where human expertise and artificial intelligence collaborate to solve complex business problems. Students work in multidisciplinary teams alongside AI tools (such as ChatGPT, Claude, or other LLMs) as collaborative partners to identify, analyze, and improve real-world business processes.

The course integrates three established pedagogical frameworks: Computer-Supported Collaborative Learning (CSCL), Human-AI Shared Regulation in Learning (HASRL), and AI-Enhanced Team-Based Learning. Students will master the balance between leveraging AI capabilities and maintaining human oversight, ethical reasoning, and professional judgment.

Through real-world iterative projects, teams will apply Six Sigma methodologies enhanced by AI-supported analytics, develop process improvement recommendations, and create implementation strategies that reflect current industry practices, where 78% of organizations now integrate AI into core operations. Emphasis is placed on transparent AI collaboration, ethical decision-making, and the development of human-AI partnership skills essential for modern quality control professionals.

Pedagogical Framework Integration

This course operates on three interconnected learning theories:

1. **Computer-Supported Collaborative Learning (CSCL):** Teams use digital platforms and AI tools to co-construct knowledge about quality control processes. AI serves as both a collaborative partner and a learning mediator.
2. **Human-AI Shared Regulation in Learning (HASRL):** Students develop metacognitive awareness of when to rely on AI support, when to apply human judgment, and how to synthesize both perspectives for optimal outcomes.
3. **AI-Enhanced Team-Based Learning (TBL):** Modified TBL structure where teams progress through AI-supported preparation, AI-enhanced readiness assessment, and AI-collaborative application phases.

Assessment Alignment: Each evaluation component measures competencies across all three frameworks, ensuring that students develop both technical skills and collaborative intelligence necessary for modern quality control and broader leadership.

Learning Outcomes

AI Collaboration Competencies

By completing this capstone course, students will demonstrate competency in:

- Designing and implementing transparent AI collaboration protocols for quality control projects
- Applying the AI Assessment Scale (AIAS) to evaluate the depth and appropriateness of AI integration
- Documenting and reflecting on human-AI decision-making processes using the HASRL framework
- Distinguishing between AI-generated insights and human-validated conclusions in professional contexts

Professional Quality Control Skills

- Leading cross-functional teams in identifying and solving complex process improvement challenges
- Applying Six Sigma methodologies enhanced by AI-supported data analysis and visualization
- Developing implementation strategies that integrate traditional quality control with AI-enhanced monitoring
- Communicating findings and recommendations to diverse stakeholders, including AI collaboration methodologies

Ethical and Critical Thinking

- Evaluating the ethical implications of AI use in quality control decisions
- Demonstrating responsible AI usage with appropriate attribution, validation, and transparency
- Assessing the limitations and biases of both human judgment and AI-generated recommendations
- Designing quality control processes that maintain human oversight while leveraging AI capabilities

Use of Generative AI tools: This course recognizes that generative AI tools (such as ChatGPT, Gemini, Bard, Copilot, etc.) are becoming integral to modern business and professional life. You are required and encouraged to use these tools to aid your projects because it is the intent of this course to help prepare you for your future work environment. However, you must do so in a manner that upholds academic integrity and professional ethics.

The following principles should guide your use of these tools:

1. **AI as an Aid, Not an Author:** AI can be a powerful tool for brainstorming, outlining, summarizing information, and refining your writing. However, the final content of all presentations and reports must be your work, reflecting your analysis and judgment. Submitting AI-generated content as your own without significant revision and original thought not only violates the university's academic integrity policy but also deprives you of the intended learning experience this course provides.
2. **Verify Everything:** AI models can produce inaccurate, biased, or fabricated information (often called "hallucinations"). You are fully responsible for the accuracy of all facts, data, and claims in your submitted work. All information obtained from an AI tool must be independently verified using traditional, credible sources (e.g., academic journals, reputable news outlets, industry reports).

3. **Paraphrase and Cite:** Do not copy and paste text directly from an AI tool because these tools take text from other sources, so rewriting will avoid plagiarism. Use the output as a starting point, then rephrase and integrate the ideas into your writing. You are required to cite the AI tool in your work just like any other source.
4. **Full Transparency and Documentation:** For every assignment where you use an AI tool, you are required to submit an appendix titled "AI Acknowledgment." This appendix must detail:
 - **The AI Tool(s) Used:** The name and version of the specific tool(s) you used (e.g., OpenAI's ChatGPT, Google's Gemini, Microsoft Copilot).
 - **The Purpose:** A brief explanation of how you used the tool (e.g., "to generate an outline for the presentation," "to find potential counterarguments for our market analysis," or "to revise the introduction for clarity").
 - **The Prompt:** The exact text of the prompt(s) you used. This documentation will allow me to understand your process.
 - **The Revisions:** Briefly describe how you edited and verified the AI's output to make it your own.
 - **Failure to adhere to this policy is academic misconduct and will impact your grade.** If you have questions about the appropriate use of AI work, err on the side of over-documenting how AI was used.

Assessment Structure

Assignment	Weight	Deliverables
Individual Homework/Case Studies	15%	5 individual project write-ups (1.5-3 pages each, double-spaced) reflecting on the project experience since the last submission: individual contributions, Six Sigma/DMAIC application at the current project phase, use of analytical and AI tools, and reflection on team experience. Submitted individually through Canvas. Due: Weeks 3, 5, 6, 10, 12 (Sept 3, Sept 17, Sept 24, Oct 22, Nov 5)
Team-Based Activities and Discussions	15%	In-class team engagement and 2 to 3-minute project updates in 10 weeks (Weeks 1, 2, 3, 4, 5, 6, 7, 10, 13, 14); each team presents 2-3 minutes
Mid-term Team Presentation & Report	25%	1 team presentation (12-15 min); teams are assigned to Session 1 (Week 8, Oct 8) or Session 2 (Week 9, Oct 15); 1 written report (5-10 pages) due from all teams in Week 8 (Oct 8)
Final Team Project Presentation & Report	25%	1 team presentation (20 min); teams are assigned to Session 1 (Week 16, Dec 3) or Session 2 (Week 17, Dec 10); 1 comprehensive report (10-15 pages, including a 2-page executive summary in the front) due Week 17 (Dec 10); peer evaluations due Week 17 (Dec 10)
Individual AI Collaboration Portfolio (Reflection Essay)	20%	13 weekly AI logs (Weeks 1-13; no logs during the final report and presentation weeks or Thanksgiving Break, Week 15). Submit logs grouped with reflection essays: Essay 1 (Week 4, Sept 10) includes logs 1-3; Essay 2 (Week 7, Oct 1) includes logs 4-6; Essay 3 (Week 11, Oct 29) includes logs 7-10; Essay 4 (Week 13, Nov 12) includes logs 11-13. 3 reflection essays plus 1 professional development plan (1.5-3 pages each, double-spaced) synthesizing and critically evaluating AI collaboration during the covered weeks (Weeks 4, 7, 11, 13); professional development plan is due (Week 13, Nov 12).

Grading Scale

- A: 90-100%
- B: 80-89%
- C: 70-79%
- D: 60-69%
- F: Below 60%

Note: All assessments include evaluation of appropriate AI integration, ethical considerations, and the effectiveness of human-AI collaboration.

Professional Engagement Expectations

This course treats you as emerging professionals. Regular, timely participation supports your team's progress and professional development. Each week, class sessions include three components: (1) a brief chapter overview by the instructor, (2) project discussion involving all teams, and (3) rotating presentations where 2-3 teams share detailed progress updates. Additionally, all teams submit a brief weekly progress document summarizing their current status and deliverables. This structure ensures consistent accountability while reducing the stress of formal presentations. Professional engagement includes:

- Active participation in AI collaboration exercises
- Constructive peer feedback on AI integration strategies
- Demonstrated growth in human-AI partnership skills
- Consistent presence and preparation for team workshops
- Participation in weekly project discussions, rotating team presentations, and timely submission of weekly progress documents

Attendance and Engagement:

This course runs as a workshop, which means your presence matters to people other than you. Your teammates depend on you each week for project momentum, input on the weekly progress document, and your share of the rotating presentations. Attendance is not separately recorded or graded; instead, your engagement shows up naturally in the work your team submits, in your contributions during project discussions, and in your peers' end-of-semester evaluations. Students who are routinely absent or disengaged should expect that to be reflected in their Team-Based Activities grade and peer evaluation outcomes.

Team Project Framework

AI-Enhanced Collaborative Project Structure

Teams will integrate AI tools into their process analysis and project development. All projects must:

- Include a documented AI use protocol established in Week 2
- Analyze data using both AI-assisted and traditional validation methods
- Document all AI-human interactions and lessons learned throughout the semester
- Present final results with discussion of ethical and interpretive challenges encountered

Team Formation and Management

- Teams of about 5 students with appointed or elected team leaders

- All team members must contribute as fully functional team members
- Teams will establish AI collaboration charters defining roles, responsibilities, and AI integration protocols

Project Requirements

- Selection of real-world quality control problems suitable for AI-enhanced analysis
- Application of Six Sigma DMAIC methodology with AI support
- Peer-reviewed literature review enhanced by AI research capabilities
- Professional written report plus comprehensive presentation
- Documentation of AI collaboration patterns and effectiveness

Team Performance and AI Collaboration Assessment

Team Performance Coaching

If challenges arise in team dynamics or AI collaboration effectiveness, we will initiate a professional development plan. This may include individual coaching, workload redistribution, or specialized learning plans, not immediate penalties. Our goal is to support growth and restore effective collaboration.

Peer Evaluation Process

All students complete final peer evaluations using a 1-5 scale, assessing:

- Traditional teamwork contributions
- AI collaboration facilitation skills
- Ethical AI use demonstration
- Professional communication and engagement

In addition to numeric ratings, each student submits a brief written peer feedback reflection (0.5–1 page) with their evaluations in Week 17. For each teammate, identify their most significant contribution to the project and one piece of constructive professional feedback. Then briefly assess your own contribution: what you did well and what you would improve. Written comments provide context for numeric ratings and will be used by the instructor when reviewing peer evaluation outcomes; they are not shared with teammates in identifiable form. Peer evaluations are incomplete without the written reflection.

Performance Standards:

- Team members averaging 4+ receive no penalty
- Team members averaging 2-3.9 receive 25-50% grade penalty
- Team members averaging below 2 receive 50-100% grade penalty

Students removed from teams will complete the remaining deliverables independently. This may impact team-based assessment opportunities, but individual work quality will be evaluated on its merits.

AI Integration and Ethics Framework

AI as Collaborative Team Member

AI is not just permitted; it is an essential collaborative partner in this course. Teams will use AI to enhance data analytics, quality control insights, and decision-making processes while maintaining human oversight and professional judgment.

Ethical AI Collaboration Standards

Teams must demonstrate:

- **Transparency:** All AI interactions documented with a rationale for AI tool selection and usage patterns

- **Validation:** Human verification of AI-generated insights using domain expertise and alternative methods
- **Attribution:** Clear identification of AI contributions in all deliverables with appropriate citation
- **Bias Awareness:** Regular assessment of potential AI biases and implementation of mitigation strategies
- **Human Agency:** Maintenance of human decision-making authority in all critical quality control decisions
- **Professional Responsibility:** Commitment to using AI to enhance rather than replace human professional judgment

AI Documentation Requirements

Students must maintain:

- Weekly logs of AI tool usage with specific prompts and outputs
- Reflection on AI collaboration effectiveness and lessons learned
- Documentation of how AI insights were validated or modified by human expertise
- Ethical consideration analyses for major AI-assisted decisions

Violation of AI ethics standards will result in penalties equivalent to those for academic dishonesty.

Course Policies

Technology Integration Policy

Laptops and mobile devices are essential tools for this AI-collaborative course. During team workshops and AI integration activities, the use of technology is required and encouraged. During instructor presentations, technology should be used purposefully to support learning (note-taking, real-time research, and AI assistance for understanding complex concepts). Recreational use during instruction is unprofessional and disrespectful to the instructor and classmates.

Academic Integrity with AI Integration

This course maintains the highest standards of academic integrity while embracing AI collaboration:

1. **Attribution Principle:** You take full responsibility for AI-generated materials as if you produced them yourself; ideas must be attributed, and facts must be verified.
2. **Surpass AI Standard:** AI-generated submissions alone cannot achieve passing grades. Students must demonstrate value-added human insight, analysis, and professional judgment that surpasses AI capabilities.
3. **Documentation Requirement:** A portion of your grade evaluates your documentation of AI use throughout the course. Undocumented AI use will result in grade penalties.

Assessment and Submission Policies

- **No make-ups for missed work without a documented emergency**
- **Assignments due as specified and no late submissions accepted**
- All written work: 2.0-line spacing, 12-point Times New Roman font, professional cover page
- Use APA style for citations and references
- Turnitin is used to help students review work and improve writing quality

Acceptable Student Behavior

Student behavior that interferes with an instructor's ability to conduct a class or other students' opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. Students engaging in unacceptable behavior will be directed to leave the classroom and the

instructor may refer the student to the Dean of Students to consider whether the student's conduct violated the Code of Student Conduct. The University's expectations for student conduct apply to all instructional forums, including University and electronic classroom, labs, discussion groups, field trips, etc. The Code of Student Conduct can be found at deanofstudents.unt.edu/conduct.

Course Schedule

Subject of change based on guest speaker availability and team progress. Class sessions follow a workshop format: the instructor provides a brief chapter overview, followed by project discussion involving all teams and rotating presentations where every team shares detailed updates each week. With 10-11 teams, each team will present approximately 2-3 minutes.

Week	Date (Thursday)	Focus & Activities	Deliverables / Due Dates
1	08/20/2026	Project Proposal Development Chapters 1-3: Introduction to DMAIC Collaborative project proposal creation with AI assistance	Due: Form Teams by end of the class (Will do this during class)
2	08/27/2026	Milestone 1: Project Proposal Chapter 4 - Process Measurement and Project Relevance	Due: Project Proposal (Milestone 1, in class)
3	09/03/2026	AI-Enhanced Process Analysis Chapter 5 - Process Analysis and Project Relevance Supplementary: Skim Team Fieldbook Chapters 7-10 (Measure Phase)	Due: Individual HW1
4	09/10/2026	Individual Team Consultations Small team appointments with instructor	Due: Reflection Essay 1
5	09/17/2026	Milestone 2: Data Collection & AI Analysis Chapter 6 - Process Improvement and Project Relevance Supplementary: Skim Team Fieldbook Chapters 11-14 (Analyze Phase)	Due: Individual HW2
6	09/24/2026	Advanced AI Integration Chapter 7 - Process Control and Project Relevance	Due: Individual HW3
7	10/01/2026	Milestone 3: Solution Development Chapter 8 - Design for Six Sigma and Project Relevance Supplementary: Skim Team Fieldbook Chapters 15-18 (Improve Phase)	Due: Reflection Essay 2
8	10/08/2026	Mid-term Team Presentations - Session 1	Due: Mid-term Team Presentation & Written Report (teams in Session 1 present)
9	10/15/2026	Mid-term Team Presentations - Session 2	Due: Mid-term Team Presentation (teams in Session 2 present) Written report
10	10/22/2026	Implementation Planning with AI Chapter 9 - Implementing Six Sigma and Project Relevance Supplementary: Skim Team Fieldbook Chapters 19-21 (Control Phase)	Due: Individual HW4
11	10/29/2026	Team Project Work Day	Due: Reflection Essay 3
12	11/05/2026	Team Project Work Day	Due: Individual HW5;
13	11/12/2026	Team Workshop Final Report Preparation Final report completion with AI assistance	Due: Reflection Essay 4 / Professional Development Plan

14	11/19/2026	AI Collaboration Reflection & Course Synthesis Reflect on team-AI dynamics and learnings	
15	11/26/2026	Thanksgiving Break - NO CLASS (UNT break Nov 23-29)	
16	12/03/2026	Final Team Project Presentations - Session 1 (UNT pre-finals day)	Final Presentations (Group 1)
17	12/10/2026	Final Team Project Presentations - Session 2 (UNT finals week Dec 7-11)	Final Presentations (Group 2); Due: Final Team Project Report Peer evaluation

Student Perceptions of Teaching

Student feedback is important and an essential part of participation in this course. The student evaluation of instruction is a requirement for all organized classes at UNT. The survey will be made available during weeks 13 and 14 of the long semesters to allow students to evaluate how this course is taught. Students will receive an email from "UNT SPOT Course Evaluations via IASystem Notification" (no-reply@iasystem.org) with the survey link. Students should look for the email in their UNT email inbox. Simply click on the link and complete the survey. Once students complete the survey, they will receive a confirmation email that the survey has been submitted. For additional information, please visit the spot website at www.spot.unt.edu or email spot@unt.edu.

Emergency Procedures

Severe Weather

Seek shelter in designated areas: Basement rooms 055, 077, 090, and restrooms; First floor rooms 170, 155, and restrooms.

Fire/Bomb Threat

Evacuate immediately to south side of Crumley Hall, grassy area west of parking lot 24. Persons with mobility impairments should move to designated refuge areas.

Academic Ethics and Professional Standards

The UNT College of Business and ITDS Department expect ethical behavior at all times. Academic integrity is essential and will be enforced through:

- **Comprehensive academic integrity education** integrated with AI collaboration training
- **Clear documentation standards** for all AI-assisted work
- **Collaborative learning emphasis** that distinguishes between appropriate AI assistance and academic dishonesty
- **Professional development focus** preparing students for ethical AI use in workplace environments

According to UNT Policy 18.1.16, Student Academic Integrity, academic dishonesty occurs when students engage in behaviors including, but not limited to, cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in academic penalties or sanctions ranging from admonition to expulsion from the University. Violations of AI documentation requirements or undisclosed AI use will be treated as academic dishonesty and may result in course failure and referral to appropriate university offices.

Students must read and understand UNT's Student Standards of Academic Integrity policy. Academic dishonesty will result in course failure and referral to appropriate university offices.

AI-Specific Academic Integrity Guidelines

- All AI contributions must be documented and attributed
- Teams share responsibility for ethical AI use
- Validation of AI outputs is required for all critical decisions
- Plagiarism includes undocumented use of AI-generated content

University Support and Accommodation

UNT makes reasonable academic accommodations for students with disabilities. Students seeking accommodation must register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide a student with an accommodation letter to be delivered to faculty to begin a private discussion regarding one's specific course needs. Students may request accommodations at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Students must obtain a new letter of accommodation for every semester and meet with each faculty member before implementation in each class. For additional information, see the ODA website at disability.unt.edu

This syllabus represents a commitment to innovative, ethical, and professionally relevant education. Together, we will explore the future of human-AI collaboration in quality control while maintaining the highest standards of academic excellence and professional preparation.

Course structure and deadlines subject to change to accommodate guest speaker availability and optimize learning outcomes.

Appendix: Assignment Grading Rubrics

Individual Homework/Case Studies (15%)

Purpose: These five write-ups assess your ability to reflect critically on your own project work: what you contributed, how Six Sigma/DMAIC concepts applied at the current project phase, how you used analytical and AI tools, and what you learned from the team experience since your last submission.

Criteria (Weight)	Excellent (90-100%)	Satisfactory (70-89%)	Needs Improvement (0-69%)
Specificity of Contribution (30%)	Concrete, verifiable account of individual work since last write-up; names specific deliverables, decisions, and actions	Generally identifies own contributions; some specifics but partly generic	Vague or team-level description; cannot distinguish own work from team's
DMAIC/Six Sigma Connection (30%)	Accurately identifies current project phase; correctly applies course concepts to actual project decisions; explains why methods fit	Identifies phase; applies concepts with minor imprecision; connections present but underdeveloped	Misidentifies phase or misapplies concepts; course material mentioned but not connected to project
AI & Analytical Tool Reflection (25%)	Evaluates which tools were used and why; describes validation of outputs; honestly assesses what worked and what didn't	Describes tool use with some evaluation; limited discussion of validation or failures	Lists tools without evaluation; no validation discussion; uncritical
Team Experience & Growth (15%)	Insightful reflection on team dynamics and own role; identifies a specific lesson and how it changed behavior	Adequate reflection; acknowledges team experience; lesson stated but general	Superficial or absent reflection; complaints without insight

Submission Requirements:

- Submit via Canvas by specified deadline
- Include AI Collaboration Log documenting all AI tool usage
- Late submissions: No late submissions will be accepted

Team-Based Activities and Discussions (15%)

Purpose: These in-class activities assess collaborative problem-solving, AI-enhanced teamwork, and application of concepts in real-time. Each team will be expected to report their progress in every class.

Criteria (Weight)	Excellent (90-100%)	Satisfactory (70-89%)	Needs Improvement (0-69%)
Team Collaboration (35%)	Actively contributes, supports teammates, facilitates discussion, exemplary team player	Contributes regularly; cooperative; participates in discussions	Minimal contribution; does not engage teammates; passive role
Problem-Solving (35%)	Demonstrates critical thinking; proposes creative solutions; applies concepts effectively	Adequate problem-solving; applies concepts; solutions are reasonable	Limited problem-solving ability; fails to apply concepts; weak solutions
AI-Human Balance (30%)	Optimal integration of AI tools and human judgment; validates AI suggestions; demonstrates HASRL principles	Uses AI appropriately; some validation; generally balanced approach	Over-reliance on AI or underutilization; no validation; poor balance

Activity Types:

- DMAIC case analysis exercises
- Process mapping workshops
- AI-assisted root cause analysis
- Team problem-solving challenges

Mid-term Team Presentation & Report (25%)

Purpose: Teams present their project selection, problem definition, data collection strategy, and initial AI-enhanced analysis.

Components:

- **Presentation:** 12-15 minutes (+ 3 minutes Q&A)
- **Written Report:** 5-10 pages (double-spaced, 12pt Arial, not including appendices)

Criteria (Weight)	Excellent (90-100%)	Satisfactory (70-89%)	Needs Improvement (0-69%)
Problem Definition (20%)	Clear, measurable problem statement; well-justified scope; demonstrates business impact	Adequate problem definition; reasonable scope; shows relevance	Vague problem; poor scope definition; limited business connection
DMAIC Framework (20%)	Comprehensive Define/Measure phases; appropriate tools applied; methodical approach	Adequate Define/Measure phases; basic tools applied	Incomplete DMAIC phases; inappropriate tools; disorganized
Data Collection (15%)	Robust data collection plan; appropriate sample size; valid measurement system	Adequate plan; reasonable sample; basic measurement approach	Weak plan; insufficient sample; flawed measurement
AI Integration (15%)	Excellent AI documentation; validation demonstrated; optimal human-AI balance; AIAS Level 4-5	Good AI documentation; some validation; appropriate balance; AIAS Level 3	Poor AI documentation; no validation; inappropriate balance; AIAS Level 1-2
Presentation Quality (15%)	Professional delivery; clear visuals; excellent timing; engages audience; confident Q&A	Adequate delivery; acceptable visuals; reasonable timing; handles Q&A	Poor delivery; weak visuals; timing issues; struggles with Q&A
Report Quality (15%)	Professional format; comprehensive; clear writing; proper citations; no errors	Acceptable format; complete; readable; citations present; few errors	Poor format; incomplete; unclear writing; missing citations; many errors

Required Report Sections:

- Executive Summary
- Problem Statement and Business Context

- Define Phase: Project Charter, SIPOC, VOC Analysis
- Measure Phase: Data Collection Plan, Measurement System Analysis
- AI Collaboration Documentation and AIAS Assessment
- Team Contribution Statement
- References and Appendices

Final Team Project Presentation & Report (25%)

Purpose: Teams present their complete Six Sigma project including analysis, solutions, and implementation plans with demonstrated AI-human collaboration.

Components:

- **Presentation:** 20 minutes (5 minutes Q&A)
- **Written Report:** 10-15 pages including 2 pages executive summary (double-spaced, 12pt Arial, not including appendices)

Criteria (Weight)	Excellent (90-100%)	Satisfactory (70-89%)	Needs Improvement (0-69%)
Complete DMAIC (20%)	All five phases thoroughly executed; advanced tools applied; rigorous methodology	All phases completed; appropriate tools; solid methodology	Incomplete phases; basic tools only; weak methodology
Analysis Quality (20%)	Sophisticated statistical analysis; valid conclusions; insightful interpretations; strong root cause identification	Adequate analysis; reasonable conclusions; satisfactory root cause analysis	Weak analysis; questionable conclusions; poor root cause identification
Solutions & Implementation (20%)	Creative, feasible solutions; detailed implementation plan; realistic timeline; comprehensive risk mitigation	Reasonable solutions; adequate implementation plan; basic risk assessment	Weak solutions; vague implementation; no risk assessment
AI-Human Collaboration (15%)	Exemplary AI integration; systematic validation; demonstrated HASRL mastery; AIAS Level 5; ethical considerations addressed	Good AI integration; validation present; AIAS Level 3-4; ethics considered	Limited AI integration; minimal validation; AIAS Level 1-2; ethics not addressed
Presentation Excellence (15%)	Polished, professional delivery; outstanding visuals; perfect timing; captivates audience; expertly handles Q&A	Professional delivery; good visuals; appropriate timing; competent Q&A	Unprofessional; poor visuals; timing problems; weak Q&A
Report Excellence (10%)	Executive-level quality; comprehensive documentation; flawless writing; extensive	Professional quality; complete documentation; clear writing; adequate citations	Unprofessional; incomplete; poor writing; insufficient citations

Criteria (Weight)	Excellent (90-100%)	Satisfactory (70-89%)	Needs Improvement (0-69%)
	citations; publication-ready		

Required Report Sections:

- Executive Summary
- Complete DMAIC Documentation (all five phases)
- Statistical Analysis and Results
- Solutions and Recommendations
- Implementation Plan with Timeline and Budget
- Control Plan and Sustainability Strategy
- Comprehensive AI Collaboration Documentation (AIAS and HASRL)
- Lessons Learned and Reflections
- Team Contribution Statement and Peer Evaluations
- References and Appendices

Individual AI Collaboration Reflection (20%)

Purpose: This portfolio demonstrates individual growth in AI-enhanced quality control practices, reflecting on human-AI collaboration throughout the semester.

Portfolio Components:

- **AI Collaboration Logs:** Weekly documentation of AI tool usage
- **Reflection Essays:** 3 essays on AI collaboration experiences
- **Professional Development Plan:** Future goals for AI-enhanced quality control work

Criteria (Weight)	Excellent (90-100%)	Satisfactory (70-89%)	Needs Improvement (0-69%)
AI Logs Completeness (25%)	All weeks documented; detailed entries; includes prompts, outputs, validation methods; demonstrates systematic tracking	Most weeks documented; adequate detail; basic tracking present	Many weeks missing; insufficient detail; poor tracking
Reflection Depth (30%)	Deep, critical reflection; demonstrates growth; connects theory to practice; addresses challenges and successes; metacognitive awareness evident	Adequate reflection; shows some growth; makes connections; acknowledges challenges	Superficial reflection; limited growth shown; weak connections; minimal self-awareness
Analysis (25%)	Sophisticated analysis of AI-human decision; applies HASRL framework; evaluates ethical dimensions; actionable insights	Adequate analysis; uses framework; considers ethics; provides insights	Weak analysis; framework misapplied; ethics ignored; limited insights
Professional Development (20%)	Specific, achievable goals; realistic timeline; demonstrates strategic thinking about AI-enhanced career; addresses skill gaps	Reasonable goals; adequate planning; considers AI in career	Vague goals; weak planning; limited career consideration

Reflection Essay Guidelines (each 1.5–3 pages, double-spaced, submitted with the corresponding AI logs):

- **Essay 1:** Getting Started with AI Collaboration (Week 4; covers logs 1–3): Which AI tools did you and your team choose, and what drove those choices? How has your team's AI use protocol from Week 2 shaped how you work? Describe one instance where AI clearly helped and one where it fell short or misled you. What will you do differently in the next phase?

- **Essay 2:** Recalibrating the AI-Human Balance (Week 7; covers logs 4–6): As your project moved into measurement and analysis, where did AI add real analytical value, and where did human judgment have to override it? Describe a specific case where you validated (or failed to validate) an AI output and what happened. Has your division of labor between AI and human work shifted since Essay 1, and why?
- **Essay 3:** Synthesis and Critical Evaluation (Week 11; covers logs 7–10): Looking across the midterm presentation and solution development, how has your collaboration with AI changed since Week 1? Identify one ethical or interpretive challenge you encountered (bias, over-reliance, attribution, fabricated output) and how you handled it. Where did AI genuinely improve your project's quality, and where would the work have been better without it?
- **Essay 4:** Professional Development Plan (Week 13; covers logs 11–13): What AI-collaboration skills have you built this semester, and what gaps remain? Set 2–3 specific, achievable goals for developing AI-enhanced quality control skills after this course, with a realistic timeline. How do you expect human-AI collaboration to shape the career you're preparing for?