

# **DS 620: Machine Learning and Deep Learning**

## **School of Technology & Computing**

3 Credits, Graduate Course  
Spring 2021

*Access to the Internet is required.*

*All written assignments must be in Microsoft-Word-compatible formats.*

*See the library's APA Style Guide tutorial for a list of resources that can help you use APA style.*

## Faculty Information

Professional experience information for instructors is found under *Faculty Information* in the online course menu.

## Contact Information

Contact information for instructors is found under *Faculty Information* in the online course menu.

## Course Description

Machine Learning (ML), sometimes known as Statistical Learning, refers to a broad set of algorithms for identifying patterns in data to build models that might then be developed into a product. The availability of data, as well as the availability of computational processing power, have led to new and powerful techniques for large-scale learning called Deep Learning (DL). A data scientist should be aware of these types of algorithms, including challenges and methodologies that are unique to this type of learning. These methods are critical for data science. Data scientists should understand the algorithms they apply and make principled decisions about their use. This course will be focused heavily on projects and coding using ML and DL algorithms, with an in-depth description of the theory. Topics include general concepts of ML, supervised learning, unsupervised learning, mixed methods, and deep learning.

## Course Resources

Required and recommended resources to complete coursework and assignments are found on the course [Reading List](#). The reading list can be found under *Course Information* in Blackboard as well as from the library homepage (“Find Your Textbook” button).

**Note:** Required resources that must be purchased by the student are tagged “Purchase from a vendor of your choosing.” Required resources with a direct link, “Available through CityU Library”, are available electronically at no cost to students.

Students in Canada may purchase course resources from the [Canada Bookstore](#), and students outside the U.S. and Canada should contact their advisor or textbook coordinator for additional information.

## Course Outcomes

As a result of this course, students will know or be able to do the following:

- Understand foundational concepts in machine learning and deep learning.
- Apply machine learning algorithms following appropriate training and testing methodology.

- Apply deep learning models to a dataset using a deep learning toolkit.
- Analyze the performance of selected machine learning techniques.
- Evaluate deep learning approaches and select the most appropriate model for a given data set.
- Create a positive and informed perspective on the role of machine learning in Data Science.

## Grading Scale

The grades earned for the course will be calculated using City University of Seattle’s decimal grading system, found in the current University Catalog (<https://www.cityu.edu/catalog/>).

Grading rubrics with details on how each assignment will be graded are located under *Assignments* and/or in *My Grades* in the online course menu. Students should review the rubric for each assignment prior to completing their work in order to understand how it will be assessed.

OVERVIEW OF REQUIRED ASSIGNMENTS	% OF FINAL GRADE	POINTS
The Muddiest Point (MP)	5%	50 = 5 points * 10 modules
Concept Test (CT)	5%	50 = 5 points * 10 modules
Discussion Board (DB)	10%	100 = 10 points * 10 modules
Hands-On Skill (HOS)	20%	200 = 25 points * 8 modules
Programming Exercise (PE)	30%	300 = 30 points * 10 modules
Knowledge Check (KC)	10%	100 = 10 points * 10 modules
Team Project (TP)	20%	Proposal: 30 points Progress: 70 points Final Report: 70 points Final PPT: 30 points Subtotal: 200 points
<b>TOTAL</b>	<b>100%</b>	<b>1,000 points</b>

## Course Assignments and Grading

The instructor will provide grading rubrics that provide more detail as to how this assignment will be graded.

### The Muddiest Point (MP)

Before class, students are required to submit the Muddiest Point (MP) activity. The purpose of this activity is to stimulate student engagement. The instructor uses the MP to assess how students understood the required readings. The instructor also uses the MP to customize the lecture scope to implement Just-in-Time Teaching (JiTT). The MP consists of writing a brief reflective essay (<= 50 words) identifying the most confusing part (i.e., the MP) of the content covered in the upcoming module. If a student understood all concepts, the student needs to

explain the most exciting aspect. There is one multiple-choice question from the required reading to demonstrate that the student understood the required readings.

<b>Criteria</b>	<b>% of Grade</b>
Participation	30%
Writing	40%
Citation	10%
Correctness	20%
<b>TOTAL</b>	<b>100%</b>

### **Concept Test (CT)**

The instructor poses a problem based on key concepts of a lecture. After reflecting on the problem, students submit their response and the instructor review them without providing a correct answer. Students discuss their thought process and solution with a peer. Students then commit to an answer and re-submits their responses. Instructor reviews responses and thought processes with the correct or most compelling answer.

<b>Criteria</b>	<b>% of Grade</b>
Engagement	100%
<b>TOTAL</b>	<b>100%</b>

### **Discussion Board (DB)**

A student posts an answer to a weekly discussion topic in Discussion Board. The student also posts a response to two other students' posts by the end of each module. Comments and questions should be clear and thoughtful, with correct grammar, spelling, and punctuation. The instructor will grade the quality of your discussion postings on both content and response.

<b>Components</b>	<b>% of Grade</b>
Participation	50%
Writing	50%
<b>TOTAL</b>	<b>100%</b>

### **Hands-on Skill (HOS)**

The instructor will assign hands-on skill exercises to a pair of students in class or individually online. Students pair up and practice exercises to learn specific programming languages, application programming interfaces (APIs), or tools related to the programming assignments or virtual labs. Two quizzes measure hands-on skills acquired.

<b>Criteria</b>	<b>% of Grade</b>
Skill Exercise	70%
Engagement	20%
Correctness	10%
<b>TOTAL</b>	<b>100%</b>

## Programming Exercise (PE)

The students must individually perform the programming exercise. Programs must be executable and robust. Non-executable programs will not receive any credits. Programs should deliver correct answers on all valid input and produce comprehensible error messages on invalid input. Programs also run correctly on all test data given within an assigned period. Students should write programs that are easy for other people to read.

Criteria	% of Grade
Program Execution	40%
User Requirement	40%
Program Documentation	20%
<b>TOTAL</b>	<b>100%</b>

## Knowledge Check (KC)

Weekly quizzes measure knowledge concepts acquired. Focus on the underlying principles and concepts rather than memorization to solve the quizzes.

Criteria	% of Grade
Correctness	100%
<b>TOTAL</b>	<b>100%</b>

## Team Project (TP)

Teams consist of three to four students. Each team will use an instructor-approved topic relevant to the course.

The paper is to be between 6 and 7 pages. The required template for class submissions comes from international organizations, the Education Special Interest Group and the Computing Education + Information systems Applied Research. ([EDSIG/CONISAR](#)). The instructor may recommend teams submit their paper to conferences. Submissions are optional and will not impact the course grade. Additional revisions may be required after the course.

Three report templates and one presentation template are provided. The file name consists of team project number, team number, and the list of your team members. For example, "TP01 T03 Sam John Mark."

- TP01 for the proposal - "TP01 T0X Author1 Author2 Author3.docx"
- TP02 for the progress report - "TP02 T0X Author1 Author2 Author3.docx"
- TP03 for the final report - "TP03 T0X Author1 Author2 Author3.docx"
- TP04 for the final presentation slide - "TP04 T0X Author1 Author2 Author3.pptx"

As in any scholarly writing, students should not merely copy information from another author. Students should use evidence to support the contentions they have drawn from their findings and critically analyze related literature. In essence, each paper needs to be an analytical paper, not a summary of readings.

In addition, a team slide deck presentation is required.

- The presentation consists of 15+4 slides: 15 slides for content and 4 slides for cover, agenda, key reference, and Q&A.
- The PPT template is provided. Your team can change design and color.
- A presentation video (15 minutes) is required.
- A demo video (a maximum of 1-2 minutes) may be included. The demo time is included in the 15 minutes presentation.

Four submissions are required according to the following schedule:

- Proposal (1 page; 30 points) - Starting (Module 1) & Ending (Module 3)
- Progress Report (3-4 pages; 70 points; graded after the proposal has been submitted) - Starting (Module 4) & Ending (Module 7)
- Final Report (6-7 pages; 70 points; graded after the progress has been submitted) - Starting (Module 8) & Ending (Module 10)
- Final PPT (15+4 slides, 30 points; graded after the final report has been submitted) - Starting (Module 8) & Ending (Module 10)

Students are expected to use the assigned readings, videos, and other materials throughout the quarter. Students will need to utilize additional sources that were not assigned by the professor. While stylized after an industry report, nonetheless, students are expected to employ APA formatting of citations, footnotes, and bibliography. Students must cite the sources of all ideas, facts, and information used that are not their own, even if they have put the information into their own words. Failure to do so is plagiarism, although the oversight is unintentional. To avoid plagiarism, check <https://library.cityu.edu/howto/apa-writing/avoid-plagiarism/>.

### **Project Description: Implementing Machine Learning and Deep Learning Algorithms**

Students demonstrate competency implementing the machine learning and deep learning algorithms determined by the instructor.

### **Team Project (TP) Report**

The student will provide a report formatted based on a template provided by the instructor. Students are required to improve the writing iteratively and incrementally every week. The revision will always happen during a quarter. Students will add new required sections to the existing paper every week.

The final report is the culmination of applied research and activities conducted throughout the quarter. The final report/paper provides a detailed problem and its solution likely to be encountered by a company or organization described in a case study supplied by the student.

<b>Criteria</b>	<b>% of Grade</b>
Structure	20%
Content	30%
Writing	30%
Reference	10%

Collaboration	10%
<b>TOTAL</b>	100%

### **Team Project (TP) Presentation**

The student will report on the research outcomes, development, or other project efforts to an academically appropriate committee in a public forum. The nature of the presentation content will determine the specific makeup of the audience. The student will choose the format of the presentation, in consultation with the advisor. The layout and design must be appropriate and adequate to represent the outcomes of the effort. While students must make some form of a visual presentation, the presentation of the results may include publishing in a refereed publication, publication in a trade or popular magazine or journal, broadcast in an appropriate medium, or, in exceptional cases, limited dissemination within a closed community.

Each presenter will have 15 minutes for presentation and 5 minutes for questions and answers. Each presenter must keep the total presentation time limit strictly.

<b>Criteria</b>	<b>% of Grade</b>
Structure	20%
Visual Presentation	30%
Verbal Quality & Engagement	30%
Team Collaboration	20%
<b>TOTAL</b>	100%

## **Course Policies**

Course policies on topics such as *Late Assignments*, *Participation*, and *Professional Writing* are found under *Course Information* in the online course menu. Students are responsible for reviewing and applying these policies while enrolled in this course.

## **University Policies**

Students are responsible for understanding and adhering to all of City University of Seattle's academic policies. The most current versions of these policies can be found in the [University Catalog](#) that is linked from the CityU Web site.

### **Non-Discrimination & Prohibition of Sexual Harassment**

City University of Seattle adheres to all federal, state, and local civil rights laws prohibiting discrimination in employment and education. The University is committed to ensuring that the education environment is bounded by standards of mutual respect and safety and is free from discriminatory practices.

In the U.S., the University is required by Title IX of the Education Amendments of 1972 to ensure that all of its education programs and activities do not discriminate on the basis of sex/gender. Sex include sex, sex stereotypes, gender identity, gender expression, sexual

orientation, and pregnancy or parenting status. Sexual harassment, sexual assault, dating and domestic violence, and stalking are forms of sex discrimination, which are prohibited under Title IX and by City University of Seattle policy. City University of Seattle also prohibits retaliation against any person opposing discrimination or participating in any discrimination investigation or complaint process internal or external to the institution. Questions regarding Title IX, including its application and/or concerns about noncompliance, should be directed to the Title IX Coordinator. For a complete copy of the policy or for more information, visit <https://my.cityu.edu/titleix> or contact the Title IX Coordinator.

In Canada, in compliance with the British Columbia Human Rights Code, the Alberta Human Rights Act, WorksafeBC, and the Workers' Compensation Board of Alberta, the University believes that its environment should at all times be supportive and respectful of the dignity and self-esteem of individuals. Discrimination, harassment and bullying conduct, whether through person to person behaviour or via electronic communications such as email or social media is not acceptable and will not be tolerated. As an educational institution, it is our responsibility to cultivate an environment of excellence, equity, mutual respect and to recognize the value and potential of every individual. The University will take all necessary steps to meet or exceed the requirements of the law to prevent discrimination, harassment and bullying. The Respectful Workplace Policy for the prevention of discrimination, harassment and bullying policy and procedure can be found at <https://www.cityu.edu/discover-cityu/about-cityu/> under the Policies section or at <https://www.cityuniversity.ca/about/>.

## **Religious Accommodations**

City University of Seattle has a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The University's policy, including more information about how to request an accommodation, is available in the University Catalog and on the my.cityu.edu student portal. Accommodations must be requested by the 20% mark of this course (e.g. day 14 of a ten-week course, day 7 of a 5-week course) using the Religious Accommodations Request Form found on the student dashboard in the my.cityu.edu student portal.

## **Academic Integrity**

Academic integrity in students requires the pursuit of scholarly activity that is free from fraud, deception and unauthorized collaboration with other individuals. Students are responsible for understanding CityU's policy on academic integrity and adhering to its standards in meeting all course requirements. A complete copy of this policy can be found in the [University Catalog](#) under *Student Rights and Responsibilities* on the page titled *Academic Integrity Policy*.

## **Attendance**

Students taking courses in any format at the University are expected to be diligent in their studies and to attend class regularly.

Regular class attendance is important in achieving learning outcomes in the course and may be a valid consideration in determining the final grade. For classes where a physical presence is required, a student has attended if they are present at any time during the class session. For

online classes, a student has attended if they have posted or submitted an assignment. A complete copy of this policy can be in the [University Catalog](#) under *Student Rights and Responsibilities* on the page titled *Attendance*.

### **Final Assignment Due Date**

Final assignments for each class at CityU must be due on or before the final date of the course as indicated in the university's course information system. Due dates that extend beyond the final date of the course may negatively impact tuition funding for students.

## **Support Services**

### **Disability Services Accommodations Statement**

Students with a documented disability who wish to request academic accommodations are encouraged to contact Disability Support Services to discuss accommodation requests and eligibility requirements. Please contact Disability Support Services at [disability@cityu.edu](mailto:disability@cityu.edu) or 206.239.4752 or visit the [Disability Support Services](#) page in the my.cityu.edu portal. Confidentiality will be observed in all inquiries. Once approved, information about academic accommodations will be shared with course instructors.

### **Library Services**

CityU librarians are available to help students find the resources and information they need to succeed in this course. Contact a CityU librarian through the [Ask a Librarian](#) service, or access [library resources and services online](#), 24 hours a day, seven days a week.

### **Smarthinking Tutoring**

CityU students have access to free online tutoring offered through Smarthinking, including writing support, from certified tutors 24 hours a day, seven days a week. Contact CityU's Student Support Center at [help@cityu.ed](mailto:help@cityu.ed) to request a user name and password.

## **Rubrics for DS 620**

### **The Muddiest Point (MP) Rubric**

#### **Description**

Before class, students are required to submit the Muddiest Point (MP) activity. The purpose of this activity is to stimulate student engagement. The instructor uses the MP to assess how students understood the required readings. The instructor also uses the MP to customize the lecture scope to implement Just-in-Time Teaching (JiTT). The MP consists of writing a brief reflective essay (<= 50 words) identifying the most confusing part (i.e., the MP) of the content covered in the upcoming module. If a student understood all concepts, the student needs to explain the most exciting aspect. There is one multiple-choice question from the required reading to demonstrate that the student understood the required readings.

### Rubric Detail

100%	Levels of Achievement			
Criteria	Below Standard	Approaching Standard	At Standard	Exceeds Standard
<b>Graduate Percentage Scale</b>	<b>0.00%-68.74%</b>	<b>68.75%- 86.24%</b>	<b>86.25%-93.74%</b>	<b>93.75%-100%</b>
<b>Participation</b> <b>Weight 30%</b>	No submission	Late submission	On-time submission	On-time submission
<b>Writing</b> <b>Weight 40%</b>	No submission. Submission states the concept without explanation and shows grammatically incorrect in many places.	Submission states the concept without justification and shows partially grammatically correct.	Submission clearly states the concept and justifies why the topic was exciting or clearly explains what the student could not understand.	Submission clearly states the concept and justifies why the topic was exciting or clearly explains what the student could not understand. In addition, the submission is 50 words or less and shows critical thinking.
<b>Citation</b> <b>Weight 10%</b>	Does not include quote or citation.	Quote is included but the citation is incorrect or does not expand on the represented idea.	Quote is included with correct citation. The quote helps to explain the represented idea.	Quote is included with correct citation. The quote expands upon and explain the represented idea.
<b>Correctness</b> <b>Weight 20%</b>	Submission does not answer the questions correctly or fails to answer the question.	Submission does not answer the questions correctly or fails to answer the question.	Submission answers the questions correctly.	Submission answers the questions correctly.

### Concept Test (CT) Rubric

#### Description

The instructor poses a problem based on key concepts of a lecture. After reflecting on the problem, students submit their response and the instructor review them without providing a correct answer. Students discuss their thought process and solution with a peer. Students then commit to an answer and re-submits their responses. Instructor reviews responses and thought processes with the correct answer.

#### Rubric Detail

100%	Levels of Achievement			
Criteria	Below Standard	Approaching Standard	At Standard	Exceeds Standard

<b>Graduate Percentage Scale</b>	<b>0.00%-68.74%</b>	<b>68.75%- 86.24%</b>	<b>86.25%-93.74%</b>	<b>93.75%-100%</b>
<b>Engagement</b> <b>Weight 100%</b>	Submission does not show an answer or shows an answer without justification.	Submission shows an answer with justification, but there is no peer student engagement.	Submission includes an answer, justification, and peer engagement.	Submission includes an answer, justification, and peer engagement with critical thoughts.

### Discussion Board (DB) Rubric Description

A student posts an answer to a weekly discussion topic in Discussion Board. The student also posts a response to two other students' posts by the end of each module. Comments and questions should be clear and thoughtful, with correct grammar, spelling, and punctuation. The instructor will grade the quality of your discussion postings on both content and response.

#### Rubric Detail

100%	Levels of Achievement			
<b>Criteria</b>	<b>Below Standard</b>	<b>Approaching Standard</b>	<b>At Standard</b>	<b>Exceeds Standard</b>
<b>Graduate Percentage Scale</b>	<b>0.00%-68.74%</b>	<b>68.75%- 86.24%</b>	<b>86.25%-93.74%</b>	<b>93.75%-100%</b>
<b>Participation</b> <b>Weight 50%</b>	Submission does not post answer and responses.	Submission answers the question and posts responses to only one student.	Submission answers the question and posts response to two students.	Submission answers the question with references and posts responses to more than two students.
<b>Writing</b> <b>Weight 50%</b>	No submission.	Submission posts responses with spelling errors, grammar errors, and punctuations.	Submission is coherent with only two spelling or grammar errors.	Submission is coherent and grammatically correct with no errors.

### Hands-on Skill (HOS) Rubric

#### Description

The instructor will assign hands-on skill exercises to a pair of students in class or individually online. Students pair up and practice exercises to learn specific programming languages, application programming interfaces (APIs), or tools related to the programming assignments or virtual labs. Two quizzes measure hands-on skills acquired.

### Rubric Detail

100	Levels of Achievement			
Criteria	Below Standard	Approaching Standard	At Standard	Exceeds Standard
<b>Graduate Percentage Scale</b>	<b>0.00%-68.74%</b>	<b>68.75%- 86.24%</b>	<b>86.25%-93.74%</b>	<b>93.75%-100%</b>
<b>Skill Exercise</b> <b>Weight 70%</b>	Submission does not show answers or shows answers without evidence.	Submission shows answers with minimal evidence.	Submission shows answers with some evidence.	Submission shows answers with full evidence.
<b>Engagement</b> <b>Weight 20%</b>	Student does not engage in the exercise.	Student engages minimally in the exercise.	Student engages fully in the exercise.	Student mentors the other student to learn and succeed.
<b>Correctness</b> <b>Weight 10%</b>	Answers none or 57.49% less of the questions correctly.	Answers 57.50% above or 76.24% less of the questions correctly.	Answers 76.25% above or 93.74% less of the questions correctly.	Answers 93.75% above or all the questions correctly.

### Programming Exercise (PE) Rubric

#### Description

The students must individually perform the programming exercise. Programs must be executable and robust. Non-executable programs will not receive any credits. Programs should deliver correct answers on all valid input and produce comprehensible error messages on invalid input. Programs also run correctly on all test data given within a reasonable amount of time. Students should write programs that are easy for other people to read.

#### Rubric Detail

100%	Levels of Achievement			
Criteria	Below Standard	Approaching Standard	At Standard	Exceeds Standard
<b>Graduate Percentage Scale</b>	<b>0.00%-68.74%</b>	<b>68.75%- 86.24%</b>	<b>86.25%-93.74%</b>	<b>93.75%-100%</b>

<b>Program Execution</b>  <b>Weight 40%</b>	No program submission. Submitted. However, the program is not executable at all.	The program is partially executable on all test data without any error or warning messages.	The program is fully executable on all test data with limited error, warning, or interactions messages.	The program is fully executable on all test data with meaningful error, warning, or interaction messages.
<b>User Requirement</b>  <b>Weight 40%</b>	The program does not meet valid user requirements at all.	The program partially meets valid user requirements. The program does not meet invalid user requirements at all.	The program fully meets valid user requirements. However, the program partially meets invalid user requirements.	The program fully meets valid and invalid user requirements.
<b>Program Documentation</b>  <b>Weight 20%</b>	The program does not show comments. The program does not follow programming style.	The program partially shows comments. The program partially follows programming style.	The program fully shows comments. However, the program partially follows programming style, vice versa.	The program fully shows comments. At the same time, the program fully follows programming style.

**Knowledge Check (KC) Rubric Description**

Weekly quizzes measure knowledge concepts acquired. Focus on the underlying principles and concepts rather than memorization to solve the quizzes.

**Rubric Detail**

100%	Levels of Achievement			
<b>Criteria</b>	<b>Below Standard</b>	<b>Approaching Standard</b>	<b>At Standard</b>	<b>Exceeds Standard</b>
<b>Graduate Percentage Scale</b>	<b>0.00%-68.74%</b>	<b>68.75%- 86.24%</b>	<b>86.25%-93.74%</b>	<b>93.75%-100%</b>
<b>Correctness</b>  <b>Weight 100%</b>	Answers none or 57.49% less of the questions correctly.	Answers 57.50% above or 76.24% less of the questions correctly.	Answers 76.25% above or 93.74% less of the questions correctly.	Answers 93.75% above or all the questions correctly.

**Team Project (TP) Report Rubric Description**

The student will provide a report formatted based on a template provided by the instructor. Students are required to improve the writing iteratively and incrementally every week. The revision will always happen during a quarter. Students will add new required sections to the existing paper every week.

**Rubric Detail**

100%	Levels of Achievement			
<b>Criteria</b>	<b>Below Standard</b>	<b>Approaching Standard</b>	<b>At Standard</b>	<b>Exceeds Standard</b>
<b>Graduate Percentage Scale</b>	<b>0.00%-68.74%</b>	<b>68.75%- 86.24%</b>	<b>86.25%-93.74%</b>	<b>93.75%-100%</b>
<b>Structure</b> <b>Weight 20%</b>	Does not utilize template format.	Sometimes adheres to template, falls short or exceeds page count.	Frequently adheres to template. Follows page count.	Displays mastery of template qualities, able to fit formulated ideas and diagrams into template.
<b>Content</b> <b>Weight 30%</b>	Student does not use resources or evidence to support the topic, or those used are not relevant or scholarly. Information used is summarized or generalized rather than analyzed.	Student uses a limited range of resources and evidence to support topic, some of which lack relevance and scholarship. Interpretation or application of how the evidence supports the topic is lacking or generalized.	Student incorporates an appropriate variety of relevant scholarly resources and evidence to support almost every point. Student provides some interpretation and explanation of how the evidence supports the topic.	Student incorporates an appropriate variety of relevant scholarly resources and evidence to support every point. Student provides full interpretation and explanation of how the evidence supports the topic.
<b>Writing</b> <b>Weight 30%</b>	Ideas are unclear, lack detail, and/or random. Paper/presentation has no or minimal organization. Ideas appear to be arranged in a random order. Few or inappropriate transitions between paragraphs/ideas,	Writing contains spelling, punctuation, and/or grammatical errors that may temporarily confuse the reader, but do not generally impede the overall understanding. Sentence	Writing contains spelling, punctuation, and/or grammatical errors, but these do not impede understanding. Sentences are generally clear, well structured, and focused, but some may be	Writing is almost entirely free of spelling, punctuation, and/or grammatical errors. Sentences are varied, clearly structured, carefully focused, and fit assignment's purpose and

	and ideas are not developed clearly. Does not appropriately respond to the assignment.	structure is generally correct, but may be wordy, unfocused, repetitive, or confusing. There is some use of relatively vague, general, or inappropriate words.	awkward or ineffective. Usually uses words accurately and effectively, but sometimes may be too general.	audience. Words chosen for their precise meaning and an appropriate level of specificity is used.
<b>Reference</b> <b>Weight 10%</b>	More than 10 errors in APA document formatting (including: punctuation, capitalization, title page, numbers, use of abbreviations, biased language, pronoun errors, headers/footers, levels of heading).	Between 5 and 10 errors in APA document formatting (including: punctuation, capitalization, title page, numbers, use of abbreviations, biased language, pronoun errors, headers/footers, levels of heading).	Between 0 and 4 errors in APA document formatting (including: punctuation, capitalization, title page, numbers, use of abbreviations, biased language, pronoun errors, headers/footers, levels of heading).	No errors in APA document formatting (including punctuation, capitalization, title page, numbers, use of abbreviations, biased language, pronoun errors, headers/footers, levels of heading).
<b>Collaboration</b> <b>Weight 10%</b>	Disengaged, misses deadlines, and fails to support team.	Minimally contributes to team effort. Contributes when asked.	Performs tasks as assigned, on time.	Completes all material on or ahead of time. Assists other team members, leads activities, and picks up unfinished tasks.

### Team Project (TP) Presentation Rubric

#### Description

The student will report on the research outcomes, development, or other project efforts to an academically appropriate committee in a public forum. The nature of the presentation content will determine the specific makeup of the audience. The student will choose the format of the presentation, in consultation with the advisor. The layout and design must be appropriate and adequate to represent the outcomes of the effort. While students must make some form of a visual presentation, the presentation of the results may include publishing in a refereed publication, publication in a trade or popular magazine or journal, broadcast in an appropriate medium, or, in exceptional cases, limited dissemination within a closed community.

Each presenter will have 15 minutes for presentational and 5 minutes for questions and answers. Each presenter must keep the total presentation time limit strictly.

#### Rubric Detail

100%	Research Paper - Levels of Achievement			
<b>Criteria</b>	<b>Below Standard</b>	<b>Approaching Standard</b>	<b>At Standard</b>	<b>Exceeds Standard</b>
<b>Graduate Percentage Scale</b>	<b>0.00%-68.74%</b>	<b>68.75%- 86.24%</b>	<b>86.25%-93.74%</b>	<b>93.75%-100%</b>
<b>Structure Weight 20%</b>	Does not utilize template format.	Sometimes adheres to template, falls short or exceeds page count.	Frequently adheres to template. Follows page count.	Displays mastery of template qualities, able to fit formulated ideas and diagrams into template.
<b>Visual Presentation Weight 30%</b>	High text content, no visual pictures, spelling errors, relies on slide for presentation	Reading slides, little visual content, spelling errors diagrams, pictures, engaging material	Slides contain written info without errors, some visual content, elaborated upon by presenter	Visually appealing, minimal words all spelled correctly, innovative designs, animation
<b>Verbal Quality &amp; Engagement Weight 30%</b>	Monotone, reads from slides, goes significantly over or under presentation time. No eye contact.	Wordy, mumbles, relies on slides to prompt presentation. Minimal eye contact.	Relies on slides, explain wording on slides to present. Good tonal modulation. Good eye contact.	Uses slides to give visual cues to presentation. Well prepared, cohesive verbiage. Engaging presenter uses eye contact and voice modulation.
<b>Collaboration Weight 20%</b>	Disengaged, misses deadlines, and fails to support team.	Minimally contributes to team effort. Contributes when asked.	Performs tasks as assigned, on time.	Completes all material on or ahead of time. Assists other team members, leads activities, and picks up unfinished tasks.