DESIGN PROJECT DELIVERABLES

DESIGN PROJECT MILESTONES

Progress toward project deliverables will be captured through a series of 9 Project Milestones, culminating into the final submission and expo presentation.

SUMMARY OF DELIVERABLES FOR DESIGN PROJECT

DELIVERABLE	TYPE	DEADLINE	WEIGHT
MILESTONE 1: PROJECT IDEAS	Individual	Beginning of DS-3	3%
MILESTONE 2: TEAM DEVELOPMENT, CONTRIBUTION CHART	Team	End of DS-3	2.5%
MILESTONE 3: DESIGN PROPOSALS	Team	Beginning of DS-4	2.5%
MILESTONE 4: DESIGN CHOICE	Team	End of DS-4	5%
MILESTONE 5: PROOF OF PRINCIPAL	Individual	Beginning of DS-5	5%
MILESTONE 6: PROTOTYPE PLAN	Team	Beginning of DS-7	5%
MILESTONE 7: DESIGN REVIEW	Team	DS-7	5%
MILESTONE 8: ANALYSIS PLAN	Team	Beginning of DS-9	5%
MILESTONE 9: ECONOMIC ANALYSIS	Individual	Beginning of DS-10	5%
FINAL REPORT	Individual	April 3, 2019 11:59 pm	10%
FINAL EXPO PRESENTATION	Team	Week of March 30-April 3	10%

DESIGN PROJECT MILESTONE DELIVERABLES AND ASSESSMENT

MILESTONE 1: PROJECT IDEAS

Submission Type: Individual

Time Allotted: Own Time

Submission Deadline: Beginning of DS-3 (Jan 20-24)

Objectives and Requirements

In milestone 1, every student must individually review the 5 project challenges (A-E) and come up with a design plan for 3/5 of the project challenges. The design plan should demonstrate a clear understanding of the challenge, and should include a preliminary design with sketches, descriptions, etc. Some self-directed

background reading may be required, but the intention of this milestone is for every individual to put some background thought to several ideas alone before discussing with their assigned Teams.

Submission and Grading Details
Submission will include one page per design plan (3 pages total). Submission is through avenue to learn. Grading will be based on thoroughness of understanding of topics and challenges.

MILESTONE 2: TEAM DEVELOPMENT

Submission Type: Team
Time Allotted: DS-3
Submission Deadline: End of DS-3 (Jan 20-24)

Objectives and Requirements

Milestone 2 represents the demonstration of Team development and a plan for effective Team management. For milestone 2, Teams should create a project schedule, outline team meetings, each individual's role and responsibilities for each phase of the project, planned progression of tasks, and all project deadlines. In order to accomplish this, the Team will need to discuss the scope of the project and required components to achieving a successful design. Answering questions such as 'What is the overall aim of the project? What do we hope to achieve by the end?' may be helpful to lead this discussion.

Submission and Grading Details
By the end of DS-3, Teams should submit a complete project schedule that includes a Gantt Chart, and explanation of the scope of the project, and roles and responsibilities. Milestone 2 will be graded as a pass/fail.

MILESTONE 3: DESIGN PROPOSALS

Submission Type: Team
Time Allotted: DS-3
Submission Deadline: Beginning of DS-4 (Jan 27-31)

Objectives and Requirements

For Milestone 3, Teams must come up with design ideas for 2 of the 5 project challenges (A-E). Design ideas should include a clear explanation of how your design would solve the problem and any necessary conditions. It should also include sketches. Each design idea should be approximately one page in length.

Submission and Grading Details

Submission will include one page per design (2 pages total) submitted through Avenue to learn. Grading will be based on how well your solution would solve the problem, necessary considerations, and clarity of communication.

MILESTONE 4: DESIGN CHOICE

Submission Type: Team
Time Allotted: DS-4
Submission Deadline: End of DS-4 (Jan 27-31)

Objectives and Requirements

In milestone 4, the Team will decide on one project challenge to complete for their design project. The Team will submit a summary of the problem, and examples of solutions that have been presented in the scientific literature (peer-reviewed). A minimum of 3 peer-reviewed references must be included and cited appropriately. Design criteria, initial sketches (any format) and a potential equipment list should be developed.

Submission and Grading Details

Submission should include i) a summary of the problem that was selected, ii) example solutions from the scientific literature, iii) design criteria, initial sketches and potential equipment list. If sensors other than the ones listed in course package are needed, a clear justification should be submitted to support the choice. This should be submitted on Avenue to learn by the end of DS-4.

MILESTONE 5: PROOF OF PRINCIPLE

Submission Type: Individual
Time Allotted: DS-5
Submission Deadline: Beginning of DS-5 (Feb 3-7)

Objectives and Requirements

In milestone 5, individuals (in own time prior to DS-5) will come up with a proof of principle for 2-3 design ideas for their chosen challenge.

Submission and Grading Details

Individuals will submit two pages outlining proof of principle for the 2-3 design ideas. The format is flexible but should provide enough detail to begin testing proof of principal design ideas with Team in DS-5. Grading will be based on feasibility of ideas presented, appropriate considerations, and communication of ideas.

MILESTONE 6: PROTOTYPE PLAN

Submission Type: Team
Time Allotted: DS-6 and Own Time
Submission Deadline: Beginning of DS-7 (Feb 24-28)

Objectives and Requirements

For milestone 6, Teams will come up with a preliminary design and protocol that solves the chosen problem. Teams will draft a detailed solution that meets your defined criteria. Along with drafting a solution, you will prepare a rough prototype and a presentation that will be presented to a mid-term design review panel.

Submission and Grading Details
Submission will be on Avenue to Learn and will include a summary of your preliminary design, how it solves the problem at hand and how it meets the design criteria.

MILESTONE 7: DESIGN REVIEW

Submission Type: Team
Time Allotted: DS-7
Submission Deadline: During DS-7 (Feb 24-28)

Objectives and Requirements

Milestone 7 represents the mid-term design review. Teams will prepare and present a 5 minute presentation to a panel of experts for feedback. The design presentation should include a brief summary of the challenge, your approach and prototype, how your prototype meets design criteria and your analysis plan.

Submission and Grading Details
Teams will be graded based on feasibility of their prototype design and communication during the design review.

MILESTONE 8: ANALYSIS PLAN

Submission Type: Team
Time Allotted: DS-7 and DS-8
Submission Deadline: Beginning of DS-9 (Mar 9-13)

Objectives and Requirements

In milestone 8, Teams will address any feedback or concerns provided by the design review and finalize their design and plan for analysis. The analysis plan will include a clear description of the particular outcome

data/variables required for their design, any specific data acquisition requirements, and all data processing details including filtering and manipulation of acquired data for desired outcome.

Submission and Grading Details

Teams will submit a document (Avenue to learn) that outlines the feedback provided in the design review and how this feedback was taken into consideration for final design and analysis plan decisions. The document will include the final prototype description as well as a detailed plan for the analysis component of the project.

MILESTONE 9: ECONOMIC ANALYSIS

Submission Type: Individual

Time Allotted: DS-8 and DS-9

Submission Deadline: Beginning of DS-10 (Mar 16-20)

Objectives and Requirements

In milestone 9, each student will individually assess the financial feasibility and considerations of their design. The report provided will outline financial viability and changes/alterations that could be made to improve financial viability. This will include a justified estimate of cost of production and sustainability of design, as well as an analysis of the market, competition and demand.

Submission and Grading Details

Submission will be on avenue to learn and will include an individual 2 page financial report.

DESIGN PROJECT FINAL REPORT AND EXPO

Submission Type: Team

Time Allotted: Own Time

Submission Deadline: Expo will be week of March 30 – April 3, 2019. Final Report due April 3, 2019.

Final submission of the project will include a written submission (technical report), as well as an Expo style demo and presentation.

1. Technical Report (IEEE Format): Each Team will submit a final technical report in IEEE format that will include a description of the challenge, design criteria, prototype and analysis details, and a full explanation of how the design successfully addresses the challenge and the feasibility of the design. CAD drawings and analysis code should be included in Appendices. A further Appendix should include a breakdown of Team member roles, responsibilities, and contributions to the project. Sections of the report should include Abstract, Introduction and Background Theory, Methods, Results, Discussion, Conclusions, References, Appendices.

2. Presentation: Each Team will create a poster for the final showcase that will highlight the design process, the final designs and pictures of the prototype. A demo of the working prototype will be presented along with the poster at the final showcase.