Front Matter (Maximum: 12 Points)	
Title Page **2:** The title page should be descriptive and specific, including the project title, the course name 'ME195B Senior Design Project II' with the section number (e.g., Section 01), the instructor's name, the full names of all team members (indicate the name of the team lead), the department name, 'Charles W. Davidson College of Engineering', 'San José State University', and the date of submission. The title page should not include a page number. **1:** The title is adequate but may lack specificity or completeness, missing at least one required element or containing an error—such as omitting the course name, team member names, or date of submission.	
Abstract (One paragraph, 250-300 words) **3:** Clear and concise summary of all required elements: project scope, purpose, methods and procedures, key results, and performance outcomes, including specification or expectation fulfillment. **2:** Partial summary covering project scope and purpose, with unclear or missing descriptions of methods, results, and performance outcomes. **1:** Lack of clarity or completeness in the description of project scope, purpose, methods, or results. Omission of one or more key elements or presence of a list of activities without meaningful presentation of results or performance. *Use Roman numerals for page numbering starting from the cover page through Chapter 1. The page number begins on the cover page but should not be displayed on the cover page itself.*	
Executive Summary (One page with at least one figure) **3:** Clear summary of project objectives, background, methods, key results, and conclusions. Emphasis on technical outcomes and achievement of design goals. Professional organization and writing, limited to one page, with inclusion of a figure or photo effectively representing the core of the project. **2:** Coverage of most key elements with occasional omission (e.g., background or outcome). Presence of disorganization or unclear content. Minor grammar or formatting errors. General professionalism and approximate one-page length, with possible absence of a figure. **1:** Omission of multiple key elements such as objective, method, figure or photo, and results. Disorganization and vagueness with weak technical content. Major grammar and formatting errors with informal or unprofessional tone.	
Acknowledgement (advisable: 100 to 250 words) **1:** Expression of gratitude to individuals and organizations for significant contributions to the project, including professors, sponsors, technicians, fellow students, friends, and relatives.	
Table of Contents **1:** Inclusion of section and subsection titles with corresponding page numbers. Neatness and consistency in formatting.	
List of Figures (required if the report contains more than 3 figures) **1:** Inclusion of captions and page numbers for all figures. Consistent formatting and accurate alignment of captions as shown beneath figures in the text. Recommendation for inclusion of chapter numbers in figure numbering (e.g., Figure 2.1 for the first figure in Chapter 2).	
List of Tables (required if the report contains more than 3 tables) **1:** Inclusion of captions and page numbers for all tables. Consistent formatting and accurate matching of captions as presented above tables in the text. Use of table numbers incorporating corresponding chapter numbers (e.g., Table 3.2 for the second table in Chapter 3).	
Introduction Section (Chapter 1) **8:** Comprehensive coverage of all required sections: background, motivation, objectives, specifications, customer needs, significance, societal and technological impact, teamwork, and Gantt chart. Strong understanding of engineering principles and alignment with ABET outcomes (SO1, SO2, SO5) and GE Area S. Clear definition of objectives and specifications with supporting rationale and expected outcomes. Effective distribution and explanation of team roles. Inclusion of a detailed and readable Gantt chart. Professional tone and technical accuracy in writing.	

6: Coverage of most required sections with moderate depth. Clear background and objectives with limited rationale or detail. Partial alignment with ABET outcomes and societal relevance. Listing of team roles with minimal explanation. Inclusion of Gantt chart with limited readability. General clarity in writing with minor technical or organizational issues. **4:** Underdevelopment or absence of several required sections. Vagueness or generality in background information and design specifications. Minimal discussion of ABET outcomes, customer needs, and societal context. Unclear definition or uneven distribution of team responsibilities. Missing or overly simplistic Gantt chart. Lack of clarity, organization, or consistency in writing tone. **2:** Absence or severe weakness in most required elements. Lack of clear objectives, specifications, and justification. Omission of meaningful reference to ABET outcomes and societal or technological relevance. Undefined or vague teamwork roles. Missing or unusable Gantt chart. Lack of clarity, technical content, and structural organization in writing. *Use third-person tone throughout the report. Use Arabic numerals for page numbering starting from Chapter 1 through the end of the report*	
<u>Literature Review, Current Status, and Theoretical Background Section (Chapter 2)</u> **16:** Comprehensive organization and structure of the chapter. Clear explanation of theoretical background and relevant engineering principles (ABET SO1). In-depth review of existing solutions with well-researched examples, technologies, outcomes, and limitations (ABET SO7). Demonstration of understanding of current field challenges. Proper citation of all sources using a consistent style. Clarity, technical accuracy, and strong structure in writing. **12:** Coverage of most required components with solid technical content. Inclusion of theoretical background and engineering principles with limited depth. Literature review with relevant examples of existing solutions and partial discussion of outcomes and limitations. Identification of some current challenges. Generally proper citation of references. Overall clarity in writing with minor issues in organization and detail. **8:** Partial coverage of key elements. Superficial treatment or limited depth in theoretical background. Incomplete or unclear analysis in the literature review of existing methods. Minimal or vague discussion of outcomes and limitations. Limited identification of technical challenges. Inconsistent or incomplete citation of sources. Occasional lack of clarity and coherence in writing. **4:** Absence or poor development of major components. Vagueness or inaccuracy in theoretical background. Minimal literature review with lack of technical depth and limited understanding of existing work. Omission of meaningful discussion on limitations and challenges. Missing or improper citation of references. Disorganization in writing and lack of technical rigor.	
<u>Design Requirements and Concept Development (Chapter 3)</u> **25:** Clear presentation of design concept advantages and disadvantages, supported by simulations, calculations, or experimental results. Complete and detailed CAD models, drawings, and documentation. Inclusion of budget considerations, applicable codes, and standards. Justification of design choices with technical soundness and strong alignment with ABET SO2 and SO4 outcomes through thorough evaluation and clear explanation. **20:** Adequate use of simulations and theoretical calculations with limited justification of design. Partial optimization of design elements. Moderate effectiveness in the use of sketches, drawings, and photographs to communicate design and performance details. Reasonable concept selection with moderate depth and partial alignment with engineering standards and ABET SO2 and SO4 outcomes. **15:** Incomplete justification of design choices with insufficient documentation. Missing or poorly executed CAD drawings. Minimal integration of ABET SO2. Superficial concept evaluation with weak connection to ABET SO4. Vague cost analysis and limited discussion of codes and standards. **10:** Absence of alternative concepts with limited justification of design decisions. Incomplete documentation and missing or low-quality CAD drawings. Weak or missing connections to ABET SO2 and SO4. Minimal or inaccurate technical content. Lack of detail in cost analysis and superficial mention of applicable codes without implementation. **5:** Lack of alternative design concepts and absence of justification. Minimal documentation with limited or missing CAD drawings. Missing, unclear, or inaccurate alignment with ABET outcomes, technical content, cost analysis, and engineering standards.	
<u>Microcontroller and Electronic System Interface (Chapter 4)</u>* **8:** Use of microcontrollers and electronic components discussed and justified. Block diagram of electronic circuits included. Appropriate use of data acquisition documented.	

5: Adequate discussion of electronic elements with incomplete justification of component selection and data acquisition setup. **3:** Poor documentation or absence of electronic components and data acquisition setup. **This chapter may not be applicable to some projects.*	
Prototyping, Fabrication and Assembly (Chapter 5) **10:** Clear description of all materials and fabrication processes, such as 3D printing and CNC machining. Thorough documentation of assembly procedures with supporting visuals or drawings. Complete and accurate bill of materials and cost table, demonstrating full cost accounting and economic feasibility. Detailed discussion of construction challenges and corresponding solutions. Clear articulation of the prototype's societal benefits and explicit statement of compliance with safety, environmental, and engineering codes. Strong demonstration of alignment with ABET SO2 and SO4. **7:** General description of materials and fabrication processes with limited detail or clarity. Adequate discussion of assembly procedure with partial visual support. Mostly complete bill of materials and cost table with minor omissions. Brief mention of construction challenges with limited elaboration. Basic treatment of cost-effectiveness and societal relevance. Partial development of connections to safety, engineering codes, and ABET SO2 and SO4 outcomes. **4:** Poor or missing descriptions of materials, fabrication methods, and assembly procedures. Incomplete bill of materials and cost table with multiple omissions. Minimal or absent discussion of construction challenges. Lack of demonstration of cost-effectiveness and societal benefits. Absence of reference to safety, environmental, or engineering standards. Little to no evidence of consideration for ABET SO2 or SO4.	
Testing Results and Appendices (Chapter 6) **20:** Thorough documentation of testing plan, experimental setup, and methodology addressing all critical design functions and performance aspects, with clear description of multiple operating conditions. Effective use of data acquisition tools and inclusion of calculations for experimental uncertainty, errors, and confidence intervals. Clear and professional presentation of testing results through high-quality figures and tables. Effective data analysis using tools such as FFT, MATLAB, LabVIEW, or Excel. Comprehensive evaluation of prototype performance against defined specifications and design criteria. **15:** Partial coverage of major design aspects in the testing plan, with limited attention to critical areas. Adequate description of methodology and operating conditions. Effective use of data acquisition with minimal computer-based analysis. Generally clear presentation of results through figures and tables, with occasional imprecision in labeling or interpretation. Reasonable analysis connecting results to design criteria, with limited treatment of experimental uncertainty. **10:** Partial coverage of key design aspects in the testing setup, with insufficient detail and lack of clarity in methodology. Weak integration of data acquisition and absence or minimal use of computer-based analysis. Inclusion of figures and tables with limited clarity. Superficial discussion of results with weak linkage to design criteria. **5:** Minimal testing implementation. Absence of data acquisition and missing calculations of experimental uncertainty. Inadequate presentation of results with little or no analytical interpretation.	
Conclusions, and Recommendations for Further Work **5:** Clarity, thoroughness, and strong support in conclusions based on design, simulations, calculations, performance, and experimental results. Effective alignment of outcomes with design specifications, applicable codes and standards, safety protocols, and professional expectations. Insightful reflection on team collaboration and project limitations. Specificity and feasibility in recommendations for future improvements. **4:** Partial support of conclusions by results and analysis. Superficial evaluation of design performance and cost. General acknowledgment of team collaboration and project limitations without clear articulation. Broad or incomplete recommendations for future work.. **3:** Lack of clarity in conclusions or limited support from results. Superficiality or inconsistency in the evaluation of design performance, cost analysis, and team collaboration. Inadequate identification of project limitations and vague proposals for future improvements. **2:** Minimal development of conclusions and recommendations. Weak linkage between results and design objectives. Absence or underdevelopment of reflection on collaboration, cost analysis, and project limitations. **1:** Absence or inadequacy of conclusions and recommendations. Lack of evaluation of performance, cost, and teamwork. Failure in identifying limitations and proposing meaningful directions for future development.	

References **3:** Proper formatting of references in IEEE citation style throughout the report. Accurate correspondence between in-text citations and the reference list. Relevance of sources and strong support for technical content, indicating thorough research effort. **2:** General relevance of references with inconsistent citation in IEEE style. Presence of formatting errors and mismatches between in-text citations and the reference list. Partial demonstration of research effort on the project. **1:** Scarcity, absence, or irrelevance of references. Noncompliance with IEEE citation style or complete omission of citations. Lack of evidence of background research.	
Spelling, Grammar, Organization, Neatness **8:** Minimal grammar and spelling errors (no more than five). Clear organization with consistent formatting, correct numbering of pages, titles, subtitles, figures, and tables. Proper placement of figure captions below figures and table titles above tables. High-quality visuals and precise, professional writing demonstrating strong attention to detail. **6:** Moderate grammar and spelling errors (no more than ten), with minor issues in page numbering or figure/table numbering. Adequate organization with some formatting inconsistencies and presentation flaws. **4:** Excessive grammar and spelling errors (more than fifteen), with major issues in page numbering and figure/table numbering. Misplacement or inconsistent formatting of captions and titles. Poor organization and lack of neatness, reducing readability and professionalism.	
Total	**/115**

Comments: