CH402 Chemical Engineering Process Design Capstone Problem Deliverables

1. Letter of Transmittal.
2. Cover Page including required title, "Technical & Economic Proposal - Closing Critical Gaps to Enable a Circular Plastics Economy."
3. Executive Summary (500-600 words).
4. Table of Contents.
5. Table of Figures.
6. Table of Tables.
7. Brief Design Description (500-600 words).
8. Process Details.
    a. Process flow diagram (PFD) for process and utilities areas.
    b. Material balance for major streams including mass rate, composition, and key thermal properties.
    c. Sized equipment list (See DP4 for an example).
9. Economics. See Appendix 1, Part 9.0 Economics.
    a. Capital cost estimate.
    b. Variable Cost estimate.
    c. Fixed Cost estimate
10. Process Safety. See Appendix 1, Part 10.0.
    a. Minimizing Environmental Impacts.
    b. P&ID with controls and alarms.
    c. Pressure relief valve sizing.
    d. Failure rate analysis.
    e. Personnel exposure risk.
    f. Atmospheric detonation of distillation inventory.
    g. Hazard and Operability Study (HAZOP) of the largest distillation column.
11. Problem 1 Only: CO_2 Emissions Calculations
    a. Selection of CO_2 Source.
    b. Reduction of CO_2 Emissions

12. Problem 2 Only: Recommendations for Improving the Bali Sorting Facility.
    a. Recommendations for closing the Quantity Gap.
    b. Recommendations for closing the Quality Gap.
    c. Recommendations for closing the Affordability Gap.
13. Conclusions
14. Appendices.

15. Additional descriptions of these sections and how to construct them can be found in Chapter 11 of Peters, Timmerhaus, and West.

16. **Final submission must be in electronic format (PDF and MS-Word). The full report must be 50 pages or less, including all text, appendices, and graphics.**