

**ENGR 4520/6520  
Fall 2025  
Term Paper/Presentation**

In this course you have become acquainted with a wide variety of separation and purification methods. A central concept is that the approach used to separate and purify any product depends on the specific chemical/physical characteristics of that product. Thus, different products follow vastly different routes of separation and purification that are influenced by chemistry, required purity and end-use, scale, and economics. Furthermore, so-called downstream processes must be integrated to achieve a final desired level of purity.

This assignment will be completed by teams of about 4 students. Members of each team will be assigned by course instructor in mid-October.

Your team is to select a product of **industrial interest**. Either select a specific compound (e.g., lysine, chymosin), a class of compounds (e.g., monoclonal antibodies,  $\beta$ -lactam antibiotics), or a complex biological product (e.g., starch, vaccine, a food). Your team must describe how that entity in its crude form is separated and purified to obtain the ultimate product. Because the product must be one of commercial relevance, your report should describe the processes used to purify your selected product on an industrial scale. Although numerous steps might occur in the actual process, you should focus on 2 or 3 key separation/purification processes, and describe these operations in depth. Clearly communicate why the particular processes employed are advantageous or well-suited to the product.

Important considerations:

- 1) *I am not interested in laboratory scale separation/purification for research purposes. Communicate on the commercial scale production of your compound.*
- 2) *This is not a design project. I want you to communicate how an actual product is separated and purified and why those steps are used. Do not describe some theoretical process based on your design.*
- 3) *I am not interested in the upstream manufacturing of the product. The manufacturing portion is only of interest in so far as it leads to impurities that must be removed from the final product.*

Evaluation will be based on:

- 1) a formal oral presentation of 14-16 minutes in length covering your findings
- 2) a written report (10-14 pages).

For the oral presentation and written report, the target audience is your peers (recently graduated engineers who have completed this course).

Evaluation:

Oral Presentation:	50%
Written Report:	50%

Due Dates:

Selection of Topic:	Wednesday, November 5, 2025 One group member should email me the proposed topic (with copy to team).
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Oral presentation:	8:00 – 11:00 am, Friday, December 5, 2025 Order by “drawing straws”
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Written report:	5:00 pm, Monday, December 8, 2025 The report should be emailed to me as a compiled pdf file with the last name of the group members included in the filename first (e.g., “Smith Johnson Adams BCHE 4520 Final Project.pdf”). (LATE REPORTS WILL ABSOLUTELY NOT BE ACCEPTED)
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