Final Project

There are two MDDs mentioned in the final project: 50 mg/day and 100 mg/day. This was a typo.

Please use **100 mg/day MDD** for all your calculations, specifications and project. I have provided an example of the IND as a reading. You will need to provide a similar IND for your final project. However, I have removed a few sections form the requirement. Please ONLY provide the sections listed in the checklist below.

1. You need to provide the information listed in slides 10 and 14 of lecture 21. The **chemistry manufacturing and controls section only** is what I want - not any other sections. The section details required is presented below as a checklist. ***I will use the list provided below as a checklist. If you miss something in this list it will be automatically deduct points.***
2. You do no need to provide an IB for this final project. You need to provide the CMC section of an IND.
3. You have to assume a Phase 1 study. The reason I say this is because the level of detail and the specifications will be catered for Phase 1 study. Please use the information I provide in the lecture as a guide.
4. On slide 11 - I provide the two formulations I want you to use.
5. The reference standard would discuss the purity of the reference standard and the batch being used. So you would include the data for the reference std provided.
6. Composition section will discuss the amount/type/role/quality std of each excipient added to the active ingredient (drug substance). Formulation section would discuss the actual formulation (whether its tablet or injectable) and its route of administration. If its injectable it would discuss how it will be administered in the patient. Eg whether it needs to be diluted or not - using IV bags or syringes etc.
7. The manufacturing process describes the synthesis of the drug substance in the drug substance sections (Sections S) or how the active was formulated to make capsules or solution for injection in the drug product section (Sections P).
8. Control of materials briefly describes the starting materials used to manufacture the active drug substance and their vendor and purity information.
9. When you don't have the information - eg Manufacturer, reference standard - then just make it up and let me know about it (as a foot note or ref note).
10. A lot of the information you are looking for below is provided in the literature paper I provided as a reading. For instance characterization (NMR, MS) is in the literature paper. Impurities and batch data information was provided in the lecture.
11. Control of drug product includes the specifications for drug product and justification for specs. This is similar to assignment 4 you did. Difference is assignment 4 was for drug substance (which you will include in drug substance sections) and this will be specifications for drug product. We have discussed the differences for oral versus parenteral drug product formulations in the lectures. For both drug substance and drug product sections you will need

to provide a justification of each test using data and calculations in the justification of specification section.

12. The final project lecture indicates the formulations you need to discuss. You need to provide a generic manufacturing process for the capsules and solution for injection in the drug product manufacturing process sections.

You will be using the route provided in the Metopimazine paper (provided as a reading) as your manufacturing process to make the drug substance. The paper at the end in the experimental section also provides details about the characterization regarding NMR etc.

CHECKLIST FINAL PROJECT

Section 3.2.S DRUG SUBSTANCE
☐3.2.S.1 General Information
☐3.2.S.1.1 Nomenclature
☐3.2.S.1.2 Structure
☐3.2.S.1.3 General Properties
☐3.2.S.2.1 Manufacturer
☐3.2.S.2.2 Description of Manufacturing Process and Process Controls
☐3.2.S.2.3 Control of Starting Materials
☐3.2.S.3 Characterization
☐3.2.S.3.1 Elucidation of Structure and Other Characteristics
☐3.2.S.3.2 Impurities
☐3.2.S.4 Control of Drug Substance
☐3.2.S.4.1 Specification
☐3.2.S.4.2 Analytical Procedures
☐3.2.S.4.4 Batch Analyses
☐3.2.S.4.5 Justification of Specification
☐3.2.S.5 Reference Standards or Materials
☐3.2.S.6 Container Closure Systems
☐3.2.S.7 Stability

3.2.P DRUG PRODUCT – **Formulation 1**
☐3.2.P.1 Description and Composition of the Drug Product
☐3.2.P.2 Pharmaceutical Development
☐3.2.P.3.1 Manufacturer
☐3.2.P.3.2 Batch Formula
☐3.2.P.3.3 Description of Manufacturing Process and Process Controls
☐3.2.P.4 Control of Excipients
☐3.2.P.4.5 Excipients of Human or Animal Origin
☐3.2.P.4.6 Novel Excipients
☐3.2.P.5 Control of Drug Product
☐3.2.P.5.1 Specification
☐3.2.P.5.2 Analytical Procedures
☐3.2.P.5.4 Batch Analyses
☐3.2.P.5.5 Characterization of Impurities

☐3.2.P.5.6 Justification of Specification
☐3.2.P.6 Reference Standards or Materials
☐3.2.P.7 Container Closure Systems
☐3.2.P.8 Stability

3.2.P DRUG PRODUCT – **Formulation 2**
☐3.2.P.1 Description and Composition of the Drug Product
☐3.2.P.2 Pharmaceutical Development
☐3.2.P.3.1 Manufacturer
☐3.2.P.3.2 Batch Formula
☐3.2.P.3.3 Description of Manufacturing Process and Process Controls
☐3.2.P.3.4 Controls of Critical Steps and Intermediates
☐3.2.P.4 Control of Excipients
☐3.2.P.4.5 Excipients of Human or Animal Origin
☐3.2.P.4.6 Novel Excipients
☐3.2.P.5 Control of Drug Product
☐3.2.P.5.1 Specification
☐3.2.P.5.2 Analytical Procedures
☐3.2.P.5.4 Batch Analyses
☐3.2.P.5.5 Characterization of Impurities
☐3.2.P.5.6 Justification of Specification
☐3.2.P.6 Reference Standards or Materials
☐3.2.P.7 Container Closure Systems
☐3.2.P.8 Stability

Rubric to be used for grading: Out of 130 points

Criteria	**Ratings (points)**			**Points**
Checklist for Drug substance	Does not meet expectations (0)	Meets some expectations (10)	Meets all expectations (20)	20
Manufacturing Section	Does not meet expectations (0)	Meets some expectations (2)	Meets all expectations (4)	4
Specifications	Does not meet expectations (0)	Meets some expectations (4)	Meets all expectations (8)	8
Justification of Specifications	Does not meet expectations (0)	Meets some expectations (4)	Meets all expectations (8)	8
Checklist for Formulation 1	Does not meet expectations (0)	Meets some expectations (10)	Meets all expectations (20)	20
Manufacturing Section	Does not meet expectations (0)	Meets some expectations (2)	Meets all expectations (4)	4
Specifications	Does not meet expectations (0)	Meets some expectations (4)	Meets all expectations (8)	8
Justification of Specifications	Does not meet expectations (0)	Meets some expectations (4)	Meets all expectations (8)	8
Checklist for Formulation 2	Does not meet expectations (0)	Meets some expectations (10)	Meets all expectations (20)	20
Manufacturing Section	Does not meet expectations (0)	Meets some expectations (2)	Meets all expectations (4)	4

Specifications	Does not meet expectations (0)	Meets some expectations (4)	Meets all expectations (8)	8
Justification of Specifications	Does not meet expectations (0)	Meets some expectations (4)	Meets all expectations (8)	8
Format, layout, and Language	Does not meet expectations (0)	Meets some expectations (2.5)	Meets all expectations (5)	10

Late penalty: 10% deduction for each day up to 3 days. After 3 days the grade will be 0.