

EML2322L – Design & Manufacturing Laboratory Design Project Schedule for Summer 2021

This schedule provides a weekly guide to remain on track for the course project. Estimated times for a four person group working diligently and regularly attending TA hours are shown on the following page. Three member groups are compensated for the extra work invested by each member on the second design report.

LECTURE DATE	PROJECT ACTIVITY FOR THE WEEK
May 11 (week 1)	Read Design Project and Design Report Template (DRT) handouts thoroughly Complete background research (if you'd like to check you've understood the fundamental concepts, take the Background Research Quiz .) Brainstorm methods / mechanisms to solve the design project; roughly sketch ideas <i>Ask instructor/TAs for help as you have questions about the project and your design ideas</i>
May 18 (week 2)	Create detailed conceptual design sketches and written description Collaborate with group on cover page, introduction, and report assembly Read common errors section of the DRT and avoid noted weaknesses as you proofread report for content, grammar, format, and digitizing problems Copy final concept sketches for next week's assignment (evaluation matrices) Install the latest version of SolidWorks on your computer (<i>see EML2023 TAs for help</i>) <i>Ask instructor/TAs for help as you have questions about your design ideas</i>
May 25 (*) (week 3)	Submit first design report (DR1) promptly by the beginning of lab Make representative models of your DR1 ball manipulators, ball hoppers or bucket manipulators, and ball release mechanisms, as instructed in the DR2 instructions Perform motor speed & torque calculations using lecture notes and Excel template off course website to select motors; this will be submitted & graded week 5 in lab Review the example mobile platform decision matrix to understand the need to provide thorough and traceable justification data when comparing and selecting the best concept Create objective definitions and weighting factor justifications for each subsystem for TA evaluation at the beginning of next week's lab *** Please bring laptops with SW, Word & Excel to each scheduled team meeting and lab session from this point onward ***
June 1 (week 4)	Submit proof of representative model testing promptly by the start of lab Submit objective definition & weighting factor definitions promptly by the start of lab TA evaluates objective definitions and weighting factor justifications for each subsystem Create evaluation matrices for (at least) mobile platform and ball manipulator to compare and select the best ideas; these two matrices will be submitted for grading next week in lab and should be 100% COMPLETE with all supporting data
June 8 (*) (week 5)	Submit first DR2 (containing 2 matrices) for grading promptly by the beginning of lab Implement feedback obtained during grading of first two evaluation matrices Finish remaining matrices for submission by the beginning of next week's lab Proof DR2R for content, grammar, format, and digitizing problems
June 15 (*) (week 6)	Submit DR2R promptly by the beginning of lab Design motor mounts and wheel hubs using design guides and lecture notes on mechanical power transmission; create, proof and print GOOD detail drawings; pair up on the design of these components so everyone gets some design and checking experience and your team generates better final designs and drawings
June 22 (week 7)	SUMMER BREAK – HAVE FUN, BE SAFE

**LECTURE
DATE**

PROJECT ACTIVITY FOR THIS WEEK / WEEKEND

June 29
(week 8)

Submit **motor mount and wheel hub detail drawings** by the beginning of lab
TA evaluates **motor mount and wheel hub designs / detail drawings**
Create **assembly models** using part models off course website for OTS items such as
motors, wheels, 80/20 and associated hardware, the control box, etc.
Finish **remaining design work and assembly models**

July 6
(week 9)

Submit **COMPLETE assembly model** at least 1hr before the beginning of lab
TA evaluates **assembly model for function and feasibility**
Create **assembly drawings and BOM**
Finish **remaining details for DR3**: final design checklist, written description,
schedule/task list, detail drawings, budget, meeting minutes
Proofread **DR3** for content, grammar, format, and digitizing quality

July 13 (*)
(week 10)

Submit **DR3** promptly by beginning of lab
Formal design review (TA grades DR3 to identify mistakes and areas for improvement)
Implement **feedback provided during formal design review** for DR3 resubmission
(historically, DR3R report grade is typically proportional to the project's success)

July 20 (*)
(week 11)

Submit **DR3R** promptly by the beginning of lab
(historically, DR3R report grade is typically proportional to the project's success)

July 27
(week 13)

Study for **Final Exam**
Schedule a time-slot with your TA to take Final (can be during your lab period)

August 3
(week 15)

Take **Final Exam**
Submit **peer / TA / instructor / course evaluation**
Have a terrific (and safe!) break with family and friends!

IMPORTANT NOTES:

1. **Highlighted text denotes tasks to be performed in the lab session (or at least significant progress made).**
2. **Highlighted text denotes material due that week by the beginning of your assigned lab block.**
3. Asterisks (*) denote design report due that week by the beginning of your assigned lab block.
4. Starting the week after the first design report is due, every student **MUST** bring their laptop with a good battery (or an extension cord), SolidWorks, Word and Excel software to each scheduled team meeting.
5. Due to the fast pace of the course, the project schedule is quite aggressive. If you attend lab without the weekly assignments complete, the TAs can offer little assistance. Stay on schedule by frequently attending the weekly TA hours and emailing your TA or Mike with questions so your progress is not delayed.

The following time estimations are reprinted from the course syllabus for your reference.

EML2322L Effort Distribution

Week No.	Lecture Topic	Homework Assignment	Project Waypoint	Estimated Effort (hours)		
				Homework	Project	Total
1	course introduction design process review		introduction	2	12	14
2	electric motors & drives	milling, turning & drilling processes		0	15	15
3	evaluation matrices		DR1 due	1.5	15.5	17
4	fasteners & threading	drawing & dimensioning		0	16	16
5	power transmission		DR2 due	2	15	17
6	sheetmetal processes	fasteners & threading		0	15	15
7	design for manufacturing		DR2R due	0	12	12
8	welding			0.5	8	8.5
9	NO LECTURE	safety review		0	0	0
10	CNC manufacturing			0	8	8
11	machining speeds & feeds		DR3 due	1.5	6.5	8
12	dimensions & tolerances	milling & turning review		0	7	7
13	casting & forging		DR3R due	0	7	7
14	final exam review			0	0	6
15	course summary		DR4 due	0	2	10

AVG: 9.5

