

## ENGR 4590 Project Report Checklist

The project report should describe and justify your current design with concise explanations, clear and labeled images, detailed analysis, and early prototyping. It should explain your testing and results, and outline suggested design improvements. This is a working document for your specific project and may include other applicable information not listed in the outline.

### Format (5)

- Title page with abstract, team name, member names, logo, labeled photo of prototype
- Table of contents with page numbers
- Page numbers throughout document
- Figures and tables labeled
- Images good resolution

### Intro (10)

- Background
  - Problem to be addressed
  - Project goals
  - Impact of your engineering solution in global, economic, environmental, and societal contexts
- Design criteria
  - All design constraints and specifications
  - Include any national or international standards to be met
- Prior work research
  - Sources of inspiration
  - Competitor analysis,
  - How is your project novel or improve upon existing technology?
- Process flow diagram

### Early Prototypes (brief summary) (10)

- Design: brainstorming, description, justifications, images that show key features
- Testing: objectives, procedures, photos/videos
- Analysis: results, interpretations
- Lessons learned: how did these guide your design?

### Current Prototype (detailed explanation) (45)

- Design (15)
  - Description and justifications
  - Differences from previous prototypes
  - CAD and photos with labels that show key features
  - Considerations for public health, safety, and welfare
  - Considerations for global, cultural, social, environmental, and economic factors
  - Applicable national or international standards and how they are met
  - Wiring diagrams with pinouts table
- Simulations/calculations: detailed analysis for key components (15)
  - Diagrams/images
  - Formulas
  - Inputs, outputs, explanations
- Testing and Analysis (15)
  - Objectives/tests performed
  - Procedures and safety precautions
  - Qualitative results: photos/videos, observations
  - Quantitative results: tables, graphs, statistics
  - Analysis: calculations, comparison to theoretical predictions

### Conclusion (10)

- Overview of successes and failures
- Design revisions suggested

### Appendices (20)

- Dimensioned drawings
- Extra images
- Detailed budget: cumulative for year with part, qty, price, totals
- Bill of materials for final prototype #: part name, part # from vendor, qty, and supplier/vendor
- Detailed calculations/simulations
- Code logic or flow diagrams
- References and links to datasheets if applicable
- Anything else applicable

## Examples

### Budget

Item	Qty.	Cost	Supplier	Part No.	Who Paid	Prototype
Guitar	1	\$24	Star	MG50-BL	Revanth	1, 2, 3, 4
Alligator Clamps	2	\$2	Radio Shack	270-346	Revanth	1, 2, 3
Pulley	1	\$2.02	McMaster	3434T37	Matt	3, 4
Nylon Stud	10	\$2.84	McMaster	93665A434	Matt	3, 4
LDPE	4 ft	\$5.04	McMaster	8588K151	Matt	3
HDPE	4ft	\$4.56	McMaster	8671K56	Matt	3
Polyurethane 90	.5 ft	\$7.01	McMaster	2178T25	Matt	3
¼" Ball Bearing	1	\$2.00	Fastenal	R4-2RS	Matt	4
¼" Threaded rod	3 ft	\$2.50	Fastenal	T Rod Z	Matt	4
Aluminum Square Tube 1.5"	14"	\$9.50	Metal Supermarkets		Dan	5, 6
3D Printed Overlay	2	\$60	C Ideas	Polyjet 40A	Dan	5, 6
M3x5 bolts	4	\$3	Fastener South		Alex	6
Steel Square Tube 1"x1/16"	36"	\$10.82	Home Depot		Alex	6
M3x16mm screws (set of 2)	3 bags	\$4.18	Home Depot		Alex	6
M3x20 screws (set of 2)	3 bags	\$4.18	Home Depot		Alex	6
<b>Total</b>		<b>\$144</b>				

### Bill of Materials

Part	Manufacturer	Part #	Qty	Unit Cost	Total Cost	Supplier
Arduino Mega 2560	Arduino	MEGA 2560	1	\$38.21	\$38.21	Amazon
Curtis Model 1228 Motor Controller	Curtis	1228	1	\$430.00	\$430.00	Nissan
5A, 30V DC Relay	DY	JZC-11F	5	\$1.95	\$9.75	SparkFun
5V Voltage Regulator	Texas Instruments	LM7812C	4	\$0.70	\$2.80	DigiKey
Tape Reader	Roboteq	MGS 1600	1	\$445.00	\$445.00	Nissan
RF Transciever	Nordic	NRF24L01+	2	\$2.99	\$5.98	eBay
Custom Fabrication (Chassis, Button Panel, Covers: \$200 materials + \$400 labor)	custom	N/A	1	\$600.00	\$600.00	Nissan
1/4" MDF Electronics Mounting Board	custom	N/A	1	\$2.00	\$2.00	Vanderbilt
				<b>Total</b>	<b>\$1,533.74</b>	

Figure with Callouts

