

# CAR CRASH LAB - PROJECT EVALUATION RUBRIC

## 1. (20 points) Research and Development

- (5 pts) Reading Check
- (6 pts) Pre-Construction Research
- (4 pts) Blueprints of car body design (top + bottom)
- (4 pts) Blueprints of restraint system (top + bottom)
- (1 pt) Blue Prints turned in on or before Thursday, March 14

## 2. (10 points) Test and Refine

- (4 pts) Testing Observation Log
- (4 pts) Refinement Summary
- (2 pts) Reflection

## 3. (15 points) Car Design

- (5 pts) **Ergonomics**
  - Are there windows that allow the driver and passenger to both be visible and for them to “see” out?
  - Are there doors that allow for easy access to each egg?
  - Can the eggs be removed without utilizing the “jaws of life”?
  - Do the crumple zone and the rest of the design meet all specifications?
  - Is the car unique, yet realistic looking?
- (5 pts) **Crumple Zone**
  - Is it visibly useful for slowing down the stop/reducing the force?
  - Was it obviously designed with crumple spots in the hood? (i.e. - you do not rely totally on the energy absorbing material under the hood...)
  - No restricted materials were utilized
- (5 pts) **Restraint System**
  - Do your passenger and driver both remain in their seats throughout the crash?
  - Does your restraint system allow for proper leg room, arm room, head room, vision, etc.?

## 4. (10 points – 5 points per egg) Live Test Results: Survival of the Occupants

*(Grade awarded AFTER extracting occupant from vehicle)*

- “Walk Away” - *Occupant survives completely unharmed (5 points earned)*
- “Minor Concussion” - *A slight crack, but not initially obvious until further inspection (4 points earned)*
- “Broken Bones” - *Small cracks or puncture wound, no major leaks (3 points earned)*
- “Life Threatening Injuries” - *Larger, more obvious cracks or punctures, slight leak of internal fluid (2 points earned)*
- “Comatose” - *Significant damage, but the majority of the egg is still intact with internal fluid still inside (1 points earned)*
- “DOA” - *dead on arrival... self-explanatory ☹ (0 points earned)*

## 5. (35 points) Car Crash Engineering Portfolio (This is completed entirely **INDIVIDUALLY**)

- *Individually means that you may not work with a partner to complete ANY portion of this portfolio. Failure to do so will result in a 0 on the entire lab as well as an academic fraud report with the administration.*
- (6 pts) Time log (you must document WHEN you worked, HOW LONG you worked and WHAT YOU DID)
- (4 pts) Technical analysis of your crumple system
- (15 pts) Theoretical (Idealized) data analysis of the car’s crash performance
- (10 pts) Quantitative (Real Time) analysis of car crash based on real time sensor data

**TOTAL SCORE: 80 POINTS POSSIBLE (LAB CATEGORY)**