# ME3200/3210 Competition

# 2007/2008

# Chariot Racing


Each team will design, build and race a robot 'horse' and chariot. The design will consist of a legged robot horse, which will provide all of the propulsion and steering. The chariot will consist of a two-wheeled cart. The wheels cannot be powered or steered. The chariot will carry a rider of your choice. It may also be used to carry the batteries and micro controller.

**Schedule:**

ME 3200

| | | |
|---|---|---|
| Week 2: | Assign teams – Receive Kits | The teams will be from your lab groups. Four people will be on each team. |
| Week 3: | Memo on three concepts | Your team will write a memo outlining three concepts for the legs and robot. These will include different actuation methods (linkages, cams, gears, etc.). You will also include ideas for the chariot including the robot/chariot attachment and payloads. |
| Week 5: | Design selection | Your team will write a memo describing your design selection. It will explain the design and its reasons for the choice. |
| Week 7: | Memo design with CAD drawings | Your team will write a memo showing the detail design with proper, dimensioned drawings. |
| Week 10 | Up-date | Your team will meet with your lab TA, up-dating your progress |
| Week 12: | 1st working prototype - | Your team will present to your lab TA, your 1st prototype of the legged robot and chariot. It will have all motors, linkages, etc. |
| Week 14 | Up-date | Your team will meet with your lab TA, up-dating your progress |
| Week 16: | Race in lab sections | You will race your robot against other lab teams in you lab session. There will not be any control or guidance, nor any turning. This will be a 'drag' race of the chariots. |

**Rules:**

1. All propulsion and steering must be provided by legs.
2. Legs are mechanisms with discontinuous motion and intermittent contact with the ground.
3. Any number of legs are allowed.
4. The chariot may have only two, free spinning wheels.
5. The chariot may be used to help stabilize the legged robot.
6. There must be at least one rotational degree of freedom between the chariot and the legged robot.
7. The total length of the robot and chariot may not exceed 250 mm.
8. The total width of the robot and chariot may not exceed 150 mm.

9. There is no restriction on the height.

10. There is no restriction on the weight.

11. The robot must be completely autonomous.

12. The robot must not damage the course.

13. The robot may not leave anything on the course.

14. The robot will be started by an IR light.

15. The robot will be disqualified if touched by a team member after the start. Only race officials may touch the robots after the start.

16. Batteries and Handy Boards may be carried on the chariot.

17. All motors must be carried by the legged robot.

18. The chariot may be pulled or pushed by the legged robot.

19. Each chariot must carry a rider of your choice. Ben Hur action figures are encouraged. The minimum weight of the rider is 100 grams. The minimum height of the rider is 100 mm.

20. Only motors, batteries, and controllers provided by the class may be used.

21. All parts and materials used must be approved for use by the TAs.

22. The course will be a figure 8 shape with both right and left-hand turns.

23. The racers must stay in their assigned lanes. Contact between the robots/chariots is allowed, but no part of your robot or chariot may cross the guide strip of your opponent.