

Pendulum Ride Design

Group Number: _____

| CATEGORY | 4 | 3 | 2 | 1 |
|------------------------------------|--|--|--|--|
| Completion | The entire project is complete. | Most of the project is complete. | Half of the project is complete. | Less than half of the project is complete. |
| Measurements | In the dormant (ride not running) position, the ride model does not exceed the 12 inch by 12 inch footprint. (144 square inches) | In the dormant (ride not running) position, the ride mode slightly exceeds the 12 inch by 12 inch footprint. (144 square inches) | In the dormant (ride not running) position, the ride model exceeds a 15 inch by 15 inch footprint. (More than 225 square inches) | In the dormant (ride not running) position, the ride model exceeds an 18 inch by 18 inch footprint (More than 324 square inches) |
| Use of Hummingbird Robotics | Robotic accessories used in a proper fashion. More accessories were used than just a motor or a servo. | Robotic accessories used in a proper fashion. Accessories used were just a motor or a servo. | Robotic accessories used in a proper fashion. Programming was done but motors and servos not attached. | Did not have an opportunity to program the robotics. |
| Design | Ride is well organized and attractive to the eye. All wires, motors, servos, and circuit board are not visible. | Ride is organized and attractive to the eye. Most of the wires, motors, servos, and circuit board are not visible. | Ride is somewhat organized. Many of the wires, motors, servos, and circuit board used are visible. | Ride still in basic construction phase. |
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Centripetal Ride Design

Group Number: _____

| CATEGORY | 4 | 3 | 2 | 1 |
|------------------------------------|--|--|---|--|
| Completion | The entire project is complete. | Most of the project is complete. | Half of the project is complete. | Less than half of the project is complete. |
| Measurements | In the dormant (ride not running) position, the ride model does not exceed the 15 inch by 15 inch footprint. (225 square inches) | In the dormant (ride not running) position, the ride mode slightly exceeds the 15 inch by 15 inch footprint. (225 square inches) | In the dormant (ride not running) position, the ride model exceeds an 18 inch by 18 inch footprint. (More than 324 square inches) | In the dormant (ride not running) position, the ride model exceeds an 19 inch by 19 inch footprint (More than 361 square inches) |
| Use of Hummingbird Robotics | Robotic accessories used in a proper fashion. More accessories were used than just a motor or a servo. | Robotic accessories used in a proper fashion. Accessories used were just a motor or a servo. | Robotic accessories used in a proper fashion. Programming was done but motors and servos not attached. | Did not have an opportunity to program the robotics. |
| Design | Ride is well organized and attractive to the eye. All wires, motors, servos, and circuit board are not visible. | Ride is organized and attractive to the eye. Most of the wires, motors, servos, and circuit board are not visible. | Ride is somewhat organized. Many of the wires, motors, servos, and circuit board used are visible. | Ride still in basic construction phase. |
| Planning Document | Every step was planned and document was completed. | Every step was planned, document was not completed | All steps were not planned and document was partially completed. | No planning was done and document was not utilized |
| Use of Music | Music starts when ride commences and ends appropriately. Appropriate type of music used. | Music starts when ride commences but does not end at the appropriate time.. Appropriate type of music used. | Music does not starts when ride commences and does not end at the appropriate time.. Appropriate type of music used. | No attempt to use music was made. |
| Supply Tracking | All materials including waste was tracked, tallied and totaled on tracking sheet. | Materials were tracked, tallied and totaled on tracking sheet but waste was not accounted for. | Not all materials were tracked, tallied and totaled on the tracking sheet. | Tracking sheet not utilized. |

Lesson Contributed by: M. Weidinger

Funded through a 2015 State Council of Higher Education for Virginia (SCHEV) grant, PISTEM II.

| CATEGORY | 4 | 3 | 2 | 1 |
|------------------------------------|--|--|---|--|
| Completion | The entire project is complete. | Most of the project is complete. | Half of the project is complete. | Less than half of the project is complete. |
| Measurements | In the dormant (ride not running) position, the ride model does not exceed the 20 inch by 20 inch footprint. (400 square inches) | In the dormant (ride not running) position, the ride mode slightly exceeds the 20 inch by 20 inch footprint. (400 square inches) | In the dormant (ride not running) position, the ride model exceeds an 24 inch by 24 inch footprint. (More than 576 square inches) | In the dormant (ride not running) position, the ride model exceeds an 28 inch by 28 inch footprint (More than 784 square inches) |
| Lift Requirement | When ride operation commences the swings are lifted at least two inches above their starting position. | When ride operation commences the swings are lifted at least one inch above their starting position. | When ride operation commences the swings are lifted at least ½ inch above their starting position. | The ride is currently unable to lift. |
| Tilt Requirement | When ride is fully elevated, the ride carriage will tilt achieving at least a one inch difference between the high and low side. | When ride is fully elevated, the ride carriage will tilt achieving at least ¾ inch difference between the high and low side. | When ride is fully elevated, the ride carriage will tilt achieving at least a ½ inch difference between the high and low side. | The ride is currently unable to tilt when fully elevated. |
| Light Requirement | Blinking Light attached to highest point of ride. Operates even when ride is in dormant state. | Blinking Light attached to highest point of ride. Only operates when ride is in motion. | Light attached to highest point of ride. Light does not blink. | Lights were not utilized in this model. |
| Use of Hummingbird Robotics | Robotic accessories used in a proper fashion. More accessories were used than just a motor or a servo. | Robotic accessories used in a proper fashion. Accessories used were just a motor or a servo. | Robotic accessories used in a proper fashion. Programming was done but motors and servos not attached. | Did not have an opportunity to program the robotics. |
| Design | Ride is well organized and attractive to the eye. All wires, motors, servos, and circuit board are not visible. | Ride is organized and attractive to the eye. Most of the wires, motors, servos, and circuit board are not visible. | Ride is somewhat organized. Many of the wires, motors, servos, and circuit board used are visible. | Ride still in basic construction phase. |
| Planning Document | Every step was planned and document was completed. | Every step was planned, document was not completed | All steps were not planned and document was partially completed. | No planning was done and document was not utilized |

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| CATEGORY | 4 | 3 | 2 | 1 |
|---|---|---|---|---|
| Use of Music | Music starts when ride commences and ends appropriately. Appropriate type of music used. | Music starts when ride commences but does not end at the appropriate time.. Appropriate type of music used. | Music does not start when ride commences and does not end at the appropriate time.. Appropriate type of music used. | No attempt to use music was made. |
| Supply Tracking | All materials including waste was tracked, tallied and totaled on tracking sheet. | Materials were tracked, tallied, and totaled on tracking sheet but waste was not accounted for. | Not all materials were tracked, tallied and totaled on the tracking sheet. | Tracking sheet not utilized. |
| Total Real-World Cost Calculations | Total real-world cost including waste has been calculated and totaled. Cost was lowest model. | Total real-world cost including waste has been calculated and totaled. Cost was neither the lowest nor highest model. | Total real-world cost including waste has been calculated and totaled. Cost was highest model. | Real-world cost not completely calculated. Information is incomplete. |

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