

## **The Rules of Collegiate Mechatronic Football**

This document sets forth rules of the game of Collegiate Mechatronic Football for the Spring 2012 game. All Rules and Guidelines are subject to change at any time at the discretion of the Commissioners and course instructors.

### **A. Players and Teams**

1. The game is played by two opposing Teams, each consisting of at least 9 remotely controlled mechatronic machines, referred to as Players.
2. No more than 8 Players from a Team are allowed on the playing field during a play, i.e. the game is 8-on-8. A 1-point delay of game penalty is assessed against the Team with an excess of Players on the field at the beginning of a play.
3. Humans are not allowed to touch any of the Players on the field of play. One individual from the Offensive Team is allowed to:
  - a. place the ball on the Center before an offensive play, and
  - b. place the ball on the kicking tee before a kicking play.

This individual may touch the Center/Kicker only with the ball and not with any part of her/his body. A violation results in a 20 ft interference penalty. This person must make a sincere effort to be off the field before the play starts.

4. The Commissioners will provide each Player with a digital accelerometer to sense if an upsetting event (knockdown, fall down, or tackle) has occurred. The code determining if an upsetting event has occurred, based on the accelerometer's output, will be provided. Additional details are in the Technical Appendix.
5. When the sensor detects an upsetting event, it will signal the lighting system to turn RED for 2 seconds and provide a signal to the Player's microprocessor to remove power from the drive system for 2 seconds. The sensor must be rigidly mounted in a horizontal orientation to a horizontal interior surface of each Player's base plate in a manner that enables a trainer to manually activate the reset button on the sensor within 10 seconds and a cable to be attached to reload the sensor software within 1 minute. Details of the mounting requirements are in the Technical Appendix.
6. A Player in possession of the ball is tackled when the upset-event sensor is activated.

### **B. The Playing Field, Player and Ball Positioning**

1. At the beginning of each half, after a Touchdown, and after a Field Goal, the Defending Team kicks off to the Receiving Team from the one-third field mark of their own territory. The clock is started and play is initiated when the Kicker contacts the ball. The ball must be kicked from the center of the field. Since the receiving team is effectively the offense, three humans may be in or behind the receiving end zone as specified in rule B-13.

2. A kick is caught by the first Player touching the kicked ball. If that Player can take possession of the ball, before being tackled by an opponent, the Player may advance the ball. Such a player may touch the ball multiple times before taking possession without the play being whistled dead as long as that player does not advance the ball more than 10 feet in doing so. If a second player touches the ball during this possession attempt, the play is whistled dead and the ball spotted at the location of the first ball contact.
3. A first down is realized when a one-third span (31.3 feet) of the field is covered within 4 plays.
4. If a ball carrier loses control of the ball and it touches the ground, the ball is considered fumbled. The Team that first touches a fumbled ball gains possession. If the Player who touches the fumbled ball can take possession of it before being tackled by the opposition, that Player may advance the ball. The same ball recovery standards of Rule B3 apply here as well. If the Quarterback should drop the ball or cause the ball to fall to the ground from the Center, it is considered a fumble.

#### **C. Game Timing**

1. The game consists of two 15-minute halves and a 10-minute halftime. Modified running time is used.
2. The Offense has 25 seconds, indicated by the play clock, from the time when the Referee toe-spots the ball to initiate a play. Failure to do so results in a 1 point delay of game penalty. The play clock is restarted.

#### **D. Scoring Rules**

1. A Touchdown is worth 6 points.
2. A kicked Point After Touchdown (PAT) is spotted at the one-third field mark and is worth 1 points.
3. A PAT may also be run in, or passed in, and is then worth 2 point. If passed in, the completed pass has its own value as well. See pass scoring below.
4. A Field Goal is worth 3 points.
5. A forward pass traveling 5-15 feet and completed to a receiver at least 2 feet beyond the line of scrimmage is worth 7 points. This is a *short pass*. If a *short pass* is intercepted, 2 points and possession of the ball are awarded to the defense. If the receiver or interceptor retains the ball, 1 additional point is awarded.
6. A forward pass traveling more than 15 feet and completed to a receiver at least 5 feet beyond the line of scrimmage is worth 12 points. This is a *long pass*. If a *long pass* is intercepted, 3 points and possession of the ball are awarded to the defense. If the receiver or interceptor retains the ball, 1 additional point is awarded.
7. A completed forward pass traveling more than 5 feet but to a Player that is not at least 2 feet beyond the line of scrimmage is worth 3 points. This is a *screen pass*. If a *screen pass* is intercepted, 1 point and the possession of the ball are awarded to the defense. If the receiver or interceptor

retains the ball, 1 additional point is awarded. Forward passes traveling less than 5 feet can be completed/intercepted for no score.

8. A ball downed in an Offensive Team's End Zone results in a Safety, with 2 points being awarded to the Defensive Team. The team charged with the Safety punts the ball from the one-third field mark of their territory. All rules regarding punting apply.
9. Teams may elect to have the ball start on the Quarterback. In this case, all scores are reduced by fifty percent. For example, a short pass completed if the ball starts with the Quarterback rather than the center is worth 3 points instead of 7.

#### **E. Offense**

1. All Players, including the Linemen, are eligible to run down field and catch passes. Receivers can all line up on one side. There does not have to be a balanced wide receiver set.
2. A Pass is caught/intercepted when a Player contacts the ball before the ball touches the ground. If that Player can take possession of the ball before being tackled by an opponent, the Player can advance the ball. The same standards of Rule B3 apply in this case.

#### **F. Defense**

1. Exactly 3 defensive players must line up within 1 foot of the line of scrimmage, and all must be in close proximity to the spotted ball. The remaining 5 defensive players must be at least 10 feet back from the line of scrimmage until the play begins, at which time full rush is allowed. Violations will result in a 1-point deduction for a delay of game penalty.
2. No significant contact is allowed between the offensive pass receiver and a Defender, where "significant" will be judged by the referees to mean anything that impedes the free movement of either Player. The Player initiating the significant contact will be charged with Offensive/Defensive pass interference. Pass interference penalties will only be called on plays in which the ball is transferred to the Quarterback, so run blocking that results in a tackle will not constitute an interference penalty.

#### **G. Offensive and Defensive Penalties**

1. There is a 4-inch neutral zone on either side of the line of scrimmage. The only Player allowed in the neutral zone before a play is initiated is the Offensive Center. A Lineman is offside when it breaks the neutral zone prior to the snap, even if no contact is made with the opponent. The penalty is a 1-point deduction from the offending team and a replay of the down.
2. The Offense must have at least 4 Players within 1 foot of the line of scrimmage at the start of the play. The 4 Players can be anywhere on the field laterally. Violations will result in a 1-point deduction for a delay of game penalty.