ECE 425 – Pre-Lab 1

**Global Variable: robotPosition** // gives the robot’s current position in (x,y), and angle.

**Fcn: goToAngle(int targetAngle)**

Error = position - targetAngle

While(error > tolerance)

Run motor

Error = position – targetAngle

End while

updatePosition

**Fcn: goForward(int targetDistance)**

Error = position – targetDistance

While(error > tolerance)

Run motor

Error = position – targetDistance

End while

updatePosition

**Fcn: goToGoal(int[] desiredPosition)**

desiredAngle = arctan((desiredPosition[2]-currentPosition[2])/(desiredPosition[1]-currentPosition[1]))

goToAngle(desiredAngle)

distance = squareroot( (desiredPosition[1]– currentPosition[1])^2+ (desiredPosition[2]– currentPosition[2])^2 )

goForward(distance)

**Fcn: circle(int radius, int arc, boolean right) // boolean tells if circle curves to left or right**

**speedDifference = (Math Based on wheel diameter & distance)**

**Run motors at different speeds based on speedDifference**

**Use a For loop to determine how long to run motors to obtain a specific arc length.**

**updatePosition**

**Fcn: figureEight(int length, int height)**

**goToAngle( (math to find angle for figure 8) ) // depends where figure eight should start**

**goForward( (math to find length of distance) )**

**circle( height/2, math to find arc length, right)**

**goForward( (math to find length of distance) )**

**circle( height/2, math to find arc length, left)**

**Fcn: square(int length)**

**goToGoal( robotPosition + (0, length) )**

**goToGoal( robotPosition + (length, 0) )**

**goToGoal( robotPosition + (0, -length) )**

**goToGoal( robotPosition + (-length, 0) )**