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) )
```