

# Quiz #1

MEMS 0051 - Introduction to Thermodynamics

Assigned: February 8<sup>th</sup>, 2021

Due: February 12<sup>th</sup>, 2021, 9:00 pm

## Intermediate Problem #1

(1 pt) Determine the quality of the water existing at 180 °C with a specific volume of 0.140 0 [m<sup>3</sup>/kg].

## Intermediate Problem #2

(1 pt) Determine the mass of saturated vapor at 155 °C in a 40 [m<sup>3</sup>] rigid tank.

## Intermediate Problem #3

(1 pt) Determine the specific volume for water existing at 1,823 [kPa] and 462 °C.

## Challenge Problem #1

(2 pt) Water vapor at 3,000 [kPa] and 300 °C is contained within a piston-cylinder. The water is cooled in a constant volume process until the temperature reaches 200 °C. The water is then compressed in a constant temperature process until the pressure is 2,500 [kPa]. **Determine the following:**

1. The specific volumes at States 1, 2 and 3.
2. The quality at State 2.

### Academic Integrity Statement:

I hereby attest that I have received no assistance (from a friend, from another student, from an on-line resource, such as Chegg, etc.), and that I have provided no assistance to another student, during this examination. All the work presented within is solely my own work.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_