COURSE OUTLINE
Fire Apparatus Driver/Operator

Course Description
FS 265. Fire Apparatus Driver/Operator. 4 hours credit. Prerequisite: FS 100 and FS 207 both with a C or better, concurrent enrollment in FS 203, and Firefighter I certification. This course will enable the student to understand the responsibilities and skills required to function as a fire apparatus driver/operator. The student will learn to safely move the fire apparatus to and from emergency and non-emergency incidents. The student will also learn to safely and effectively operate a fire apparatus at emergency and non-emergency incidents.

Required Materials
For complete material(s) information, refer to https://bookstore.butlercc.edu

Butler-assessed Outcomes
The intention is for the student to be able to:
1. Identify and apply state and local laws of the authority having jurisdiction (AHJ).
2. Identify safety guidelines pursuant to the operation of fire department apparatus.
3. Identify the characteristics and limitations of fire department apparatus, pumps, and water supplies.
4. Demonstrate an understanding of fire hydraulics through operating various types of fire service pumps.

Learning PACT Skills that will be developed and documented in this course:
Through involvement in this course, the student will develop ability in the following PACT skill areas:

Analytical Thinking Skills
- Critical thinking - By performing a safety inspection of the fire department pumper and identifying different elements of a fire department pumper, the student will demonstrate critical thinking.
- Problem solving - Through the analysis of different fire department equipment, the student will identify problems and take immediate corrective actions to resolve the issues.

Technology Skills
- Discipline-specific technology - Through the application of various fire pump systems on the apparatus, the student will demonstrate a working knowledge of problems that arise and take immediate corrective actions.

Major Summative Assessment Task(s)
These learning outcomes and the Learning PACT skills will be demonstrated by:
1. Using fire service tools and equipment to master the job performance requirements
outlined in NFPA 1002, thus preparing the student for the IFSAC certification examination.

Skills or Competencies
Actions that are essential to achieve the course outcomes:
1. Perform an inspection of the apparatus to verify its operational status
2. Operate a fire department vehicle over a closed road course that will present various driving challenges
3. Operate the apparatus so that it is positioned at a water source so an intake hose can be connected without kinks, obstructions, or restrictions without needing to reposition the apparatus
4. Demonstrate the ability to produce hand and master streams as well as foam fire streams
5. Demonstrate the ability to change water supply source from tank to external source
6. Demonstrate the ability to supply another apparatus during a relay pumping operation

Learning Units
I. The driver/operator
   A. Skills and physical abilities needed
   B. Selection of drivers/operations

II. Types of fire apparatus equipped with a pump
    A. Fire department pumpers
    B. Initial attach fire apparatus
    C. Mobile water supply apparatus
    D. Wildland fire apparatus
    E. Pumping apparatus typing
    F. Aircraft fire apparatus
    G. Fire boat apparatus
    H. Aerial apparatus equipped with fire pumps
    I. Ladder tenders
    J. Rescue apparatus equipped with fire pumps
    K. Trailer mounted fire pumps
    L. Apparatus-mounted special systems
    M. Scene lighting and electric power distribution equipment
    N. Hydraulic rescue tool systems

III. Introduction to apparatus inspection and maintenance
    A. Systematic maintenance program
    B. Cleanliness
    C. Apparatus inspection procedures
    D. Charging batteries
    E. General fire suppression equipment maintenance

IV. Emergency vehicle operations
A. Collision statistics and causes  
B. Driving regulations  
C. Starting and driving the vehicle  
D. Safe driving techniques  
E. Warning devices and clearing traffic  
F. Traffic control devices  
G. Driving exercises and evaluation methods  

V. Positioning apparatus  
A. Fire department pumpers  
B. Wildland fire apparatus  
C. Support apparatus  
D. Special situations  

VI. Water and water supply systems  
A. Characteristics of water  
B. Advantages and disadvantages of water  
C. Water pressure and velocity  
D. Friction loss  
E. Principles of municipal water supply systems  
F. Private water supply systems  

VII. Fire hose, nozzles, and flow rates  
A. Fire hose nozzles  
B. Selecting nozzles  
C. Nozzle pressure and reaction  

VIII. Theoretical pressure calculations  
A. Customary  
B. Metric  

IX. Fire ground hydraulic calculations  
A. Flowmeters  
B. Hydraulic calculators  
C. Pump charts  
D. Hand method  
E. Condensed “Q” formula  
F. GPM flowing  

X. Fire pump theory  
A. Positive displacement pumps  
B. Centrifugal pumps  
C. Pump piping and valves  
D. Automatic pressure control devices  
E. Priming methods and devices  
F. Pump panel instrumentation
G. Auxiliary cooling devices

XI. Fire pump operation
   A. Making the pump operational
   B. Operating from the water tank
   C. Operating from a pressurized water supply source
   D. Operating from a static water supply source
   E. Sprinkler and standpipe support

XII. Static water supply sources
   A. Principles of lift
   B. Natural static water supply sources
   C. Man-made static water supply sources

XIII. Relay pumping operations
   A. Relay apparatus and equipment
   B. Relay pumping operational considerations
   C. Types of relay pumping operations

XIV. Water shuttle operations
   A. Water shuttle apparatus
   B. Setting up a water shuttle
   C. Fill site operations
   D. Dump site operations
   E. Evaluating tender performance

XV. Foam equipment and systems
   A. Principles of foam
   B. Foam concentrates
   C. Low energy foam proportioning systems
   D. High energy foam generating systems
   E. Portable foam generating systems
   F. Assembling a foam fire stream
   G. Foam application techniques
   H. Environmental impact
   I. Durable agents

XVI. Apparatus testing
   A. Preservice tests
   B. Pumper service tests
   C. Foam proportioning equipment testing

Learning Activities
Activities will include, but no be limited to, class discussions, lectures, classroom exercises, course projects, and field trips.

Grade Determination
The student’s evaluation will be based on completion of the assessment task, and written examinations.