



Outcome-based 18/SU Course Syllabus

Course Rubric Number Section: AERM 1357 4601
Lecture-Lab-Credit: 2-4-3
CIP Code: 47.0608
Course Title: Fuel Metering and Induction Systems
Course Description: Skill development in fuel metering and induction systems used on reciprocating and turbine engines including fuel metering systems, carburetors, induction systems, heat exchangers, and cooling systems. Fundamentals of safety procedures will also be addressed.

Prerequisites:
Co-requisites:
Course Meets: 4ABH 115 LEC MW 01:00PM 01:55PM 4ABH 119 LAB MTWTH 11:00AM 11:55AM

Instructor: Joshua Parker
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Building & Office Room Number: Hanger 103
Office Hours: 0800-1630 M - F

Approved by: Angel Newhart	Date: 2018-04-26
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Course Outcomes

- CO1:** Inspect, check, service, troubleshoot, and repair engine fuel systems and components, turbine engine fuel metering systems and components, electronic engine fuel controls, fuel metering systems and components, reciprocating and turbine engine fuel metering systems, engine ice and rain control systems, heat exchangers, superchargers, turbine engine airflow and temperature control systems, carburetor air intake and induction manifolds, and engine cooling system and components
- CO2:** Overhaul carburetors
- CO3:** Demonstrate safety procedures

TSTC Grading Policy

(Grades for courses must be C or better)

Grade	Percent	Description	Grade Points
A	90-100	Excellent/Superior Performance Level	4
B	80-89	Above Required Performance Level	3
C	70-79	Minimum Required Performance Level	2
D	60-69	Below Required Performance Level	1
F	Below 60	Failure to meet Performance Requirements	0
IP	--	In Progress	
W	--	Withdrawal	0
CR	--	Credit	0
AUD	--	Audit of Course	0

See College Catalog for complete descriptions.

Competencies Rating Scale

Rating Scale Key			
6	90+	Proficient	Student consistently performs the task accurately to industry standards without supervision.
5	80-89	Proficient	Student performs the task to industry standards with no supervision.
4	70-79	Proficient	Student performs the task to industry standards with little supervision. This is the minimum performance rating for STAR skill completion.
3	60-69	Exposed/Not Proficient	Student has been introduced to the task and can perform some of the tasks to industry standards.
2	50-59	Exposed/Not Proficient	Student has been introduced to the task, but cannot perform the task to industry standards.
1	0-49		Student was absent or did not complete assignment.

Campus Standard Policies

The [Student Handbook](#) contains valuable information on campus policies and procedures.

- Student Code of Conduct
- Student Drug and Alcohol Testing Policy
- Plagiarism
- Student Grievances and Complaints

Disability Services

Any student who, because of a disability, may require special accommodations in order to meet the course requirements, should contact the Disability Services office, as soon as possible, to make necessary arrangements. Please note that instructors are not allowed to provide classroom accommodation to a student until appropriate verification from the Disability Services office has been provided.

Abilene Campus

Susan Hash
Testing and Support Services
Abilene Main Campus Bldg. Rm. 112
325-734-3641

Breckenridge Campus

Lisa Langford
Testing and Advisement located in
The Main Building Rm. 106
254-559-7731

Brownwood Campus

Nicole Whitley
Testing and Advisement
Building 2 Rm. 120
325-641-5955

Fort Bend Campus

Schauna Boynton
Brazos Center Rm. 113
346-239-3394

Harlingen Campus

Corina De La Rosa
Disabilities Services
Student Support Services
Student Services Bldg. Rm. 216
956-364-4521

Marshall Campus

Annette Ellis
Administration and Admissions Rm. 150
909-923-3313

Sweetwater Campus

Misty Walden
Disability Services
Student Support Services
Lance Sears Building Rm. 140
325-236-8292

North Texas Campus

Amanda Warren
Student Services, Room 227
972-617-4724

Waco Campus

Marilyn Harren
Disabilities Services Office
Student Services Center Rm. 198
254-867-3600

Williamson County

Chemese Armstrong
Enrollment Services Rm. B113C
512-759-5907

Tutoring Statement

The Supplemental Instruction & Tutoring Program at TSTC offers free tutoring and academic support services to help you achieve your academic and career goals. You can access the Tutoring Schedule, as well as *MyTSTC Video Tutor Library*, by visiting: https://portal.tstc.edu/student/Student_Learning/Pages/Tutoring.aspx (shortened link: goo.gl/Z9vJvY). For more information, please contact Norma A. Salazar@ 956-364-4557.

Learning Resource Center

The purpose of the TSTC Learning Resource Center is to serve the TSTC Community and support academic, advanced, specialized and emerging programs, contributing to the educational and economic development of the State of Texas. You can access the Learning Resource Center page at <https://portal.tstc.edu/employee/Departments/operations/Pages/Learning%20Resource%20Center.aspx>

Aerospace Grading Policy:

Passing any course will require a minimum overall course grade of 70%. The student cannot fail more than one test per course. More than one test score below 60 is a failure of the entire course with a final grade of "D" or "F". The grade difference between "D" and "F" will be based on each individual program policy.

Aerospace Students reference HB 1508:

For students in this course who may have a criminal background, please be advised that the background could keep you from being licensed by the State of Texas and certifying agency. If you have a question about your background and licensure, please speak with your faculty member or the department chair. You also have the right to request a criminal history evaluation letter from the applicable licensing agency.

Aerospace Student Dress Code:

The student dress requirements mirror standards seen in our profession and will identify you as an Aviation Program Student. Your image reflects your professional attitude and conduct. How you present yourself is important to companies, airlines, FAA and hopefully to yourself. We expect you to look like a professional in your dress as well as in your conduct.

All APT, AER, AVI, ADT and ATC students are expected to be clean and well groomed. The TSTC aviation blue, steel grey, Baylor aviation shirt, or approved substitute, must be worn when in the classroom. Pants should reflect a professional image and worn at waist level. Ripped or baggy clothing is not acceptable; nor is overly tight or revealing clothing; yoga pants are not acceptable. NO short shorts! Shorts must be no more than 5" above the knee. Jeans that don't detract from a professional image may be worn. Close toed shoes, tennis shoes, or boots are acceptable. Open toed shoes, sandals, and flip flops are not permitted due to safety issues. If heels are worn they must be two inches or less for safety. Hair should be clean and neat.

Jewelry will be kept to a minimum to prevent loss and /or injury. Earrings are acceptable, but should be conservative and not extend beyond the ear. Tattoos covering large parts of the body or reflecting crude taste will limit your chances of being hired, are not recommended, and will be covered to promote an aviation professional image.

The purpose of these appearance standards is to promote a safe and comfortable work environment that is free of unnecessary distraction. The aviation industry as a whole is conservative in dress and appearance, and we hold you to these standards. Crude, provocative, or radical clothing will not be permitted. Students who arrive for class or for a flight inappropriately groomed or attired may be asked to leave and/or make changes. If you have opposition to conforming to conservative dress standards, you should probably consider other career options. Unless a notification is sent out Fridays are considered Relaxed Dress Code days.

Only the Department Chair or Lead instructor can issue waivers to this policy.

By attending our programs, you agree to the standards so described.

Represent TSTC and the Aerospace Department with pride.

Assessment Methods & Grading Policy

Due to the critical nature of an aviation maintenance technician's job description, the following grading scale has been established.

90.00 – 100.00 A

80.00 – 89.99 B

70.00 – 79.99 C

A student must score at least a 70% on all final exams, lab projects and written practical tests.

Quizzes - All quizzes are given at the discretion of the instructor. These can be either oral or written quizzes created by the instructor.

Final Exams - At the end of each subject, the student will take a final exam. The student must score a minimum of 70% in order to be considered a passing score. Failure to score the minimum of a 70% on a final exam will require the student to retake the course sometime in the future.

Lab Activities and Written Practical Tests (WPT) - For each course in the approved curriculum, there are items (lab activities) that must be completed by the student to at least a 70% level of performance (as determined by the instructor). Written Practical Tests will be given either as an oral or written test, created by the instructor, covering performed lab activities. Students must pass all activities before a final grade for the subject will be given. The following grading system for lab activities and WPTs are as follows:

70.00% or above P (pass)

69.99% or below F (fail)

When a student fails to meet the requirements of his/her lab activity or WPT, he/she may do the lab activity again, or retake the WPT, up to one time.

If the student uses any consumable materials during the lab retake, he/she must pay for or supply the materials at the time of use. If the student fails to pass the retake of any labs or WPTs, the student will receive a failing grade and must retake the course that contained the lab or WPT.

Any retakes of tests or labs are done on the student's own time and at the convenience of the instructor. All retakes must take place within 3 working days of the initial attempt.

Before a determination of final grades can be done, all lab activities and written practical tests must be completed to at least 70% proficiency. After this has been done the final grade can be calculated.

- (1) Add Quizzes - get average
- (2) Add Subject Exams - get average
- (3) Add Quiz average and Subject Exam average to get average of final grade.

EXAMPLE BELOW:

Quiz #1 -- 90
 Quiz #2 -- 87
 Quiz #3 -- 70
 247

3 quiz grades ÷ 247 = 82.33 QUIZ AVERAGE

Exam #1 -- 90
 Exam #2 -- 85
 175

2 exam grades ÷ = 87.50 EXAM AVERAGE

NOTE: ALL EXAMS MUST BE PASSED WITH A SCORE OR 80% OR HIGHER.

Quiz Average (82.33) + Exam Average (87.50) = 169.83

169.83 ÷ 2 = 84.92

84.92 = FINAL COURSE GRADE

Class Participation Policy & Student Conduct

Every student is required to attend class daily, unless prevented from doing so by a serious illness or injury, death in the family, or by any other circumstances beyond the student's control. In all cases, attempts must be made to notify the instructor before or during the absence. The number to call is (325) 672-4418.

The student must participate in the classroom or laboratory training while in attendance at school in order to be recorded present. If the student does not participate in the learning activities, he/she will be dismissed for the day and an absence will be recorded.

A student is considered to be excessively absent from a course when absent for 10% of any course's scheduled total hours. At that time the student will be notified in writing that he/she may fail the course. When, for any reason, absences exceed 10% of the course's total scheduled hours, the student will receive a grade of "F", even if he/she has made-up some or all of the time missed. This will necessitate the retaking of the course.

Any student who is tardy for class, laboratory or shop sessions will be charged the time he/she missed and must make the time up.

Personal performance, appearance and attitude of the student toward TSTC, the instructors, fellow students and the F.A.A., are as an important part of training as are attendance, grades and lab activities. If it is determined that the student's intent for attending TSTC is for the primary purpose of anything other than to gain the knowledge and skills needed to become eligible to receive a Certificate of Completion and participate in the F.A.A. examinations, he/she is subject for dismissal from the program.

Any violation of the Discipline Code as listed in TSTC publications (school catalog, policy manual, discipline code, etc.) will result in being dismissed from school with a recorded absence and possible expulsion from the school. Students are responsible for complying with all rules and policies at all times, places, functions, and events.

Safety

Campus building occupants are required to evacuate buildings when a fire alarm activates. Alarm activation or announcement requires exiting and assembling outside. Familiarize yourself with all exit doors of each classroom and building you may occupy while receiving instructions. The nearest exit door may not be the door you used when entering the building. Students requiring evacuation assistance should inform the instructor during the first week of class. In the event of evacuation, follow the faculty's or class instructor's instructions. Do Not re-enter a building unless given instructions by the Fire Department, Campus/Local Police, or Fire Prevention Services.

Hangar Specifics—Students are required to abide with all safety procedures when performing laboratory projects. This may include, but is not limited to eye protection, hearing protection, etc. Students who do not observe appropriate safety precautions will be dismissed from class, with an absence recorded for the missed time. Horseplay, vandalism, theft or any other destructive act will likely result in expulsion from the AER program and college.

House Bill 1508

For students in this course who may have a criminal background, please be advised that the background could keep you from being licensed by the State of Texas. If you have a question about your background and licensure, please speak with your faculty member or the department chair. You also have the right to request a criminal history evaluation letter from the applicable licensing agency.

Resources

Textbooks & Publications:

Item Title	Author	Publisher	Edition	ISBN
1 Aviation maintenance Technician Handbook Powerplant FAA-H-8083-32	FAA	ASA	Most current Edition	978-0983865834

	11-0000-02	ASA	ASA	Edition	
2	Fast Track 2018 test Guide Bundel: Powerplant (most current year offered)	ASA	ASA	Most current Edition	None
3	Aircraft Inspection, Repair, & Alterations - FAA Advisory Circulars 43.13-1B/2B	FAA	ASA	1B/2B	978-1-61954-021-7 and 978-1-56027-903-7

Course Schedule			
Unit/Week	Unit Description/Objectives	Assessment Label:Description	Due Date
1	Unit 1		
	<ul style="list-style-type: none"> • Troubleshoot and adjust fuel control units & Electronic controls • Identify Venturi size and describe function • Interpret and use charts or diagram to explain fuel and Airflow through float and pressure carburetors 	quiz 1: quiz 1	
2	Unit 2		
	<ul style="list-style-type: none"> • Remove, install and explain the principles of fuel metering through a jet • Identify and describe the operation of an air bleed • Locate and describe the operation of the main discharge nozzle in a pressure carburetor 	Quiz 2: Quiz 2	
3	Unit 3		
	<ul style="list-style-type: none"> • Identify economizer and power enrichment systems and describe the operation of the systems in a float and pressure carburetor • Identify mixture controls incorporated in float and pressure carburetors and describe the operation of the system • Locate, remove, clean and reinstall screens in fuel metering system components 	Quiz 3: Quiz 3	
4	Unit 4		
	<ul style="list-style-type: none"> • Explain temperature, pressure and humidity effects on operation of a carburetor • Describe the operation of a float carburetor • Identify pressure type carburetor and a direct fuel injection system and describe the operation of each system 	Quiz 4: Quiz 4	
5	Unit 5		
	<ul style="list-style-type: none"> • Explain the function of vapor separators and vapor vents • Compare continuous flow fuel injection and direct cylinder injection systems • Inspect, remove and install a float type carburetor, operate the engine and adjust idle speed and idle mixture • identify the dangers of an excessively rich and excessively lean fuel-air mixtures • Inspect the rigging of a gas turbine fuel control unit 	Exam 1: Comprehensive Exam Fuel Metering	
6	Unit 6		
	<ul style="list-style-type: none"> • Describe the operation of fuel pumps and remove and install a pump on an engine • Describe the operation of auxiliary and boost pumps, install an auxiliary or boost pump in a system • Review characteristics of gasoline 	Quiz 5: Quiz 5	

7	Unit 7	<ul style="list-style-type: none"> Interpret federal aviation regulations governing fuel system, service, troubleshoot and repair an engine fuel system Inspect, check, service, troubleshoot and repair a gas turbine engine fuel system inspect, check, service, troubleshoot and repair an engine fuel system 	Quiz 6: Quiz 6 Exam 2: Comprehensive Exam Engine Fuel systems
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Grade Scheme		
Category Description		Category Value
Quizzes		50%
Assessment Label:	Assessment Description	Assessment Value
quiz 1:	quiz 1	8.33%
Quiz 2:	Quiz 2	8.33%
Quiz 3:	Quiz 3	8.33%
Quiz 4:	Quiz 4	8.33%
Quiz 5:	Quiz 5	8.33%
Quiz 6:	Quiz 6	8.33%
Category Description		Category Value
Exams		50%
Assessment Label:	Assessment Description	Assessment Value
Exam 1:	Comprehensive Exam Fuel Metering	25.00%
Exam 2:	Comprehensive Exam Engine Fuel systems	25.00%
Total Assessment Percent		100.00%
Total Category Percent		100.00%
A = 100-90	B = 89-80	C = 79-70
	D = 69-60	F = 59-0

Description of Graded Elements of the Course			
Assessment Label	Assessment Description/Course outcomes met	Assessment Value in Percent	% of Final Grade
quiz 1	quiz 1 Course outcomes met: CO1, CO2, CO3	8.33	8.33%
Quiz 2	Quiz 2 Course outcomes met: CO3, CO2, CO1	8.33	8.33%
Quiz 3	Quiz 3 Course outcomes met: CO2	8.33	8.33%
Quiz 4	Quiz 4 Course outcomes met: CO2	8.33	8.33%
Exam 1	Comprehensive Exam Fuel Metering Course outcomes met: CO1, CO2, CO3	25.00	25.00%
Quiz 5	Quiz 5 Course outcomes met: CO1, CO3	8.33	8.33%
Quiz 6	Quiz 6 Course outcomes met: CO3, CO1	8.33	8.33%
Exam 2	Comprehensive Exam Engine Fuel systems Course outcomes met: CO3, CO1	25.00	25.00%
		100.00	100.00%