Outcome-based 18/SU Course Syllabus

Course Rubric Number Section:	AERM 2341 1001
Lecture-Lab-Credit:	2-2-3
CIP Code:	47.0608
Course Title:	Powerplant and Auxiliary Power Units
Course Description:	Advanced concepts of auxiliary power unit (APU) and powerplant systems and components. Safety procedures will also be addressed.
Prerequisites:	
Co-requisites:	
Course Meets:	1ASC S220 LEC W 01:00PM 02:55PM 1ASC S220 LAB W 03:00PM 04:55PM
Instructor:	Thomas Reynolds
Office Phone Number:	254-867-2692
Email Address:	threynolds@tstc.edu
Office Fax Number:	
Building & Office Room Number:	Aerospace Center N275
Office Hours:	Mondays and Thursdays 9a-11a

Approved by:	Angel Newhart	***Date:***	2018-05-03

Course Outcomes

CO1: Operate auxiliary power unit (APU) systems
CO2: Distinguish functions of auxiliary power unit (APU) components
CO3: Operate powerplant systems
CO4: Troubleshoot powerplant systems
CO5: Demonstrate safety techniques

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 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.

Resources

Textbooks & Publications:

Item	Title	Author	Publisher	Edition	ISBN
1	AC 43.13 1B & 2B Acceptable Methods, Techniques, and Practices	FAA	ASA	n/a	978-1-560277-28-6
2	Aircraft Electricity & Electronics	Eisman	McGraw Hill	6th	978-0-07-179915-7
3	Aircraft Powerplants	Kroes	McGraw Hill	8th	978-0-07-179913-3
4	FAA-H-8083-32	FAA	Aircraft Technical Book Co.	2nd	9781941144121

Tools, Materials:

Item	Resource	Quantity
1	Student tool kit	1 kit

Course Schedule

Unit/ Week	Unit Description/Objectives	Assessment Label:Description	Due Date
1	Unit 1 (Powerplant Instruments)		
	• Mechanical Powerplant Instruments • Electrical Powerplant Instruments	**Lab 1 - Unit 1 Research:** Research chapter questions **Lab 2 - Instrument Markings:** Research, inspect, and mark aircraft instrument indicators **Lab 3 - Liquid Temperature Gauges:** Test temperature gauges that measure liquids for accuracy **Lab 4 - Gas Temperature Guages:** Test temperature gauges that measure gases for accuracy	
2	Unit 2 (Fire Detection and Extinguishing)		
	• Fire Detection Systems • Fire Extinguishing Systems	**Lab 5 - Unit 2 Research:** Research chapter questions **Lab 6 - Fire Detection I:** Test fire detection systems on a trainer board **Lab 7 - Fire Detection II:** Inspect fire detection systems	

		on an aircraft **Lab 8 - Fire Extinguishing:** Inspect fire extinguishing systems on an aircraft **Units 1 & 2 Test:** Covers all material in Unit 1 (Powerplant Instruments) and Unit 2 (Fire Detection and Extinguishing)
3	Unit 3 (Engine Cooling Systems)	
	• Reciprocating Engine Cooling Systems • Turbine Engine Cooling Systems	**Lab 9 - Unit 3 Research:** Research chapter questions **Lab 10 - Cooling Systems:** Inspect a reciprocating engine cooling system **Lab 11 - Repairs:** Repair a damaged fin on a reciprocating engine cylinder
4	Unit 4 (Engine Exhaust and Thrust Reversers)	
	• Reciprocating Engine Exhaust Systems • Turbine Engine Exhaust Systems • Thrust Reversers	**Lab 12 - Unit 4 Research:** Research chapter questions **Lab 13 - Inspections I:** Inspect reciprocating engine exhaust system **Lab 14 - Inspections II:** Leak test a reciprocating engine exhaust system **Unit 3 & 4 Test:** Covers all material in Unit 3 (Engine Cooling Systems) and Unit 4 (Engine Exhaust and Thrust Reversers)
5	Unit 5 (Auxiliary Power Units [APUs] and Ground Power Units [GPUs])	
	• Aircraft Auxiliary Power Unit Functions • Aircraft Auxiliary Power Unit Servicing • Aircraft Auxiliary Power Unit Operation	**Lab 15 - Unit 5 Research:** Research chapter questions **Lab 16 - Servicing:** Inspect and service APUs **Lab 17 - Starting APUs:** Start turbine powered APUs and GPUs **Unit 5 Test:** Covers all material in Unit 5 (Auxiliary Power Units [APUs] and Ground Power Units [GPUs])
6	Final Exam	
		Final Exam: Comprehensive test covering all material from the course

Grade Scheme

Category Description	Category Value
Labs (All labs must be complete to pass the course)	0%

Assessment Label:	Assessment Description	Assessment Value
Lab 1 - Unit 1 Research:	Research chapter questions	0.00%
Lab 2 - Instrument Markings:	Research, inspect, and mark aircraft instrument indicators	0.00%
Lab 3 - Liquid Temperature Gauges:	Test temperature gauges that measure liquids for accuracy	0.00%
Lab 4 - Gas Temperature Guages:	Test temperature gauges that measure gases for accuracy	0.00%
Lab 5 - Unit 2 Research:	Research chapter questions	0.00%
Lab 6 - Fire Detection I:	Test fire detection systems on a trainer board	0.00%
Lab 7 - Fire Detection II:	Inspect fire detection systems on an aircraft	0.00%
Lab 8 - Fire Extinguishing:	Inspect fire extinguishing systems on an aircraft	0.00%
Lab 9 - Unit 3 Research:	Research chapter questions	0.00%
Lab 10 - Cooling Systems:	Inspect a reciprocating engine cooling system	0.00%
Lab 11 - Repairs:	Repair a damaged fin on a reciprocating engine cylinder	0.00%
Lab 12 - Unit 4 Research:	Research chapter questions	0.00%
Lab 13 - Inspections I:	Inspect reciprocating engine exhaust system	0.00%
Lab 14 - Inspections II:	Leak test a reciprocating engine exhaust system	0.00%
Lab 15 - Unit 5 Research:	Research chapter questions	0.00%
Lab 16 - Servicing:	Inspect and service APUs	0.00%

Lab 16 - Servicing:	Inspect and service APUs	0.00%
Lab 17 - Starting APUs:	Start turbine powered APUs and GPUs	0.00%

Category Description	**Category Value**
Unit Tests (Unit tests must average 70 points or better to pass the class)	50%

Assessment Label:	**Assessment Description**	**Assessment Value**
Units 1 & 2 Test:	Covers all material in Unit 1 (Powerplant Instruments) and Unit 2 (Fire Detection and Extinguishing)	16.66%
Unit 3 & 4 Test:	Covers all material in Unit 3 (Engine Cooling Systems) and Unit 4 (Engine Exhaust and Thrust Reversers)	16.67%
Unit 5 Test:	Covers all material in Unit 5 (Auxiliary Power Units [APUs] and Ground Power Units [GPUs])	16.67%

Category Description	**Category Value**
Final Exam (Final exam must total 70 points or better to pass the course)	50%

Assessment Label:	**Assessment Description**	**Assessment Value**
Final Exam:	Comprehensive test covering all material from the course	50.00%

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**
Lab 1 - Unit 1 Research	Research chapter questions **Course outcomes met:** CO1, CO2, CO3, CO4, CO5	0.00	0.00%
Lab 2 - Instrument Markings	Research, inspect, and mark aircraft instrument indicators **Course outcomes met:** CO5, CO4, CO3, CO2, CO1	0.00	0.00%
Lab 3 - Liquid Temperature Gauges	Test temperature gauges that measure liquids for accuracy **Course outcomes met:** CO1, CO2, CO3, CO4, CO5	0.00	0.00%
Lab 4 - Gas Temperature Guages	Test temperature gauges that measure gases for accuracy **Course outcomes met:** CO5, CO4, CO3, CO2, CO1	0.00	0.00%
Lab 5 - Unit 2 Research	Research chapter questions **Course outcomes met:** CO1, CO2, CO3, CO4, CO5	0.00	0.00%
Lab 6 - Fire Detection I	Test fire detection systems on a trainer board **Course outcomes met:** CO5, CO4, CO3, CO2, CO1	0.00	0.00%
Lab 7 - Fire Detection II	Inspect fire detection systems on an aircraft **Course outcomes met:** CO1, CO2, CO3, CO4, CO5	0.00	0.00%
Lab 8 - Fire Extinguishing	Inspect fire extinguishing systems on an aircraft **Course outcomes met:** CO5, CO4, CO3, CO2, CO1	0.00	0.00%
Units 1 & 2 Test	Covers all material in Unit 1 (Powerplant Instruments) and Unit 2 (Fire Detection and Extinguishing) **Course outcomes met:** CO5, CO1, CO2, CO3, CO4	16.66	16.66%
Lab 9 - Unit 3 Research	Research chapter questions **Course outcomes met:** CO5, CO1, CO2, CO3, CO4	0.00	0.00%
Lab 10 - Cooling Systems	Inspect a reciprocating engine cooling system **Course outcomes met:** CO4, CO3, CO2, CO1, CO5	0.00	0.00%
Lab 11 - Repairs	Repair a damaged fin on a reciprocating engine cylinder **Course outcomes met:** CO5, CO1, CO2, CO3, CO4	0.00	0.00%
Lab 12 - Unit 4 Research	Research chapter questions **Course outcomes met:** CO4, CO3, CO2, CO1, CO5	0.00	0.00%
Lab 13 - Inspections I	Inspect reciprocating engine exhaust system **Course outcomes met:** CO5, CO1, CO2, CO3, CO4	0.00	0.00%
Lab 14 -	Leak test a reciprocating engine exhaust system	0.00	0.00%

Inspections II	**Course outcomes met:** CO4, CO3, CO2, CO1, CO5		
Unit 3 & 4 Test	Covers all material in Unit 3 (Engine Cooling Systems) and Unit 4 (Engine Exhaust and Thrust Reversers) **Course outcomes met:** CO5, CO1, CO2, CO3, CO4	16.67	16.67%
Lab 15 - Unit 5 Research	Research chapter questions **Course outcomes met:** CO4, CO3, CO2, CO1, CO5	0.00	0.00%
Lab 16 - Servicing	Inspect and service APUs **Course outcomes met:** CO5, CO1, CO2, CO3, CO4	0.00	0.00%
Lab 17 - Starting APUs	Start turbine powered APUs and GPUs **Course outcomes met:** CO4, CO3, CO2, CO1, CO5	0.00	0.00%
Unit 5 Test	Covers all material in Unit 5 (Auxiliary Power Units [APUs] and Ground Power Units [GPUs]) **Course outcomes met:** CO5, CO1, CO2, CO3, CO4	16.67	16.67%
Final Exam	Comprehensive test covering all material from the course **Course outcomes met:** CO1, CO5, CO4, CO3, CO2	50.00	50.00%
		100.00	**100.00%**

For program attendance, make-up, safety, and other policies please consult the Waco Aviation Maintenance Programs Policies Guide.

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