

Minnesota Articulated College Credit (ACC) Agreement

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Agreement Name: **Aerodynamics and Flight**

Agreement Last Reviewed: **October 2018**

Next Review Date: **October 2020**

| College Courses | | | |
|-----------------|-----------------------------|--------------------------------------|------------|
| Class | Title | School | Credits |
| AVIA 150 | Private Pilot Ground School | Minnesota State University - Mankato | 4.0 of 4.0 |

Curriculum Content Objectives

To receive credit, students will master 100% of the following content objectives:

1. label major airplane components
2. describe the four forces of flight
3. define Newton's three laws of force and motion
4. explain Bernoulli's Principle
5. examine wing design factors
6. describe the relationship between angle of attack and airspeed
7. analyze ground effect
8. define the three axes of flight
9. differentiate between dynamic and static stability
10. demonstrate effective scanning techniques
11. explain traffic patterns
12. identify types of airspace
13. state the phonetic alphabet
14. demonstrate appropriate radio communication procedures
15. determine coordinated universal time
16. differentiate between primary and secondary radar
17. evaluate air traffic control services
18. draw pitot static system
19. explain gyroscopic instrumentation
20. cite magnetic compass errors
21. explain principles of engine operation
22. diagram fuel system
23. list types of aviation fuels
24. explain factors affecting aircraft performance
25. demonstrate the use of performance charts
26. explain characteristics of the atmosphere
27. identify types of clouds
28. sketch types of fronts
29. list weather hazards to aircraft
30. interpret printed weather reports

31. interpret weather charts
32. explain sources of weather information
33. demonstrate the use of aeronautical charts
34. demonstrate use of flight computer
35. explain types of basic navigation
36. prepare navigation log
37. list sources of flight information
38. explain the principles of radio navigation
39. explain physiological effect on the eyes in flight
40. explain causes of spatial disorientation
41. explain effects of high altitude flight
42. explain effects of drugs on flying
43. display affective decision making skills
44. display cooperation within the group
45. examine stall recognition and recovery
46. examine spin recognition and recovery
47. analyze pressure, density, temperature and humidity and its effects on airfoils
48. analyze the aerodynamics of maneuvering flight
49. examine climbing flight characteristics
50. examine left-turning tendencies
51. examine descending flight characteristics
52. examine turning flight characteristics
53. determine load factor and limit load factor
54. determine load factor in turns
55. analyze the relationship of load factor and stall speed
56. examine maneuvering speed

Course Description

This course covers the principles of flight, four forces in flight, aircraft stability and maneuvering flight, weather, and communication and navigation

Textbooks

Private Pilot Manual, 20XX, Jeppesen.

A & P Technical General Textbook, 20XX, Jeppesen.

References

CFR, Title 14, Federal Aviation Regulations, Parts 43, 61, 65, 91, 141

Physics for Aviation, 1992, Sister Noel Dreska, PhD and Leonard Weisenthal, PhD

Assessments

Students must achieve no less than 80% or B for a final grade in the high school course to receive ACC.

ACC Concept

Skills for selected courses, required for graduation in programs at the colleges participating in this regional agreement are taught in our schools using the assessments developed collaboratively by secondary and post-secondary staff. High School credit is earned and college credits are earned if the student meets the college achievement.