

**SYLLABUS OF INSTRUCTION
FOR
PHASE II OFFICER/WARRANT OFFICER ROTARY WING AVIATOR COURSE
PHASE III WARRANT OFFICER CANDIDATE ROTARY WING AVIATOR COURSE**



JULY 1966

**UNITED STATES ARMY AVIATION SCHOOL
FORT RUCKER, ALABAMA**

SYLLABUS OF INSTRUCTION
FOR
PHASE II OFFICER/WARRANT OFFICER ROTARY WING AVIATOR COURSE
PHASE III WARRANT OFFICER CANDIDATE ROTARY WING AVIATOR COURSE

BASIC TACTICAL INSTRUMENT FLYING

This syllabus of instruction supersedes all previous syllabi for ORWAC/WORWAC classes.

1. Purpose of the Course: To qualify the students in the skills and knowledges of Basic Instrument Flying.
2. Location: Fort Rucker, Alabama.
3. Duration: 4 weeks.
4. Beginning Class: WORWAC 66-11.

BASIC TACTICAL INSTRUMENT STAGE (CONTRACT)
 ORWAC/WORWAC Phases II/III
 (25:00 Hours - 4 Weeks)

OBJECTIVE FLIGHT HOURS

| WEEK OF TRAINING | | | | | |
|------------------|-------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | TOTAL |
| DUAL | 06:15 | 06:15 | 06:15 | 06:15 | 25:00 |
| TOTAL | 06:15 | 12:30 | 18:45 | 25:00 | 25:00 |

BASIC INSTRUMENTS 23:45
 *BASIC INSTRUMENTS NIGHT 01:15

TOTAL 25:00

*LINK 08:00

*Introduction to basic instrument night flight will be conducted during the second through third week of training.

*Link training to be conducted concurrently with flight training during the first through fourth week of training.

BASIC INSTRUMENT
(25 Hours - 4 Weeks)

1ST WEEK

| <u>TNG</u> <u>DAY</u> | <u>PERIOD</u> | <u>MANEUVER</u> | <u>PERIOD</u> <u>TIME</u> | <u>TOTAL</u> <u>TIME</u> |
|--------------------------|----------------------------------|---|------------------------------|-----------------------------|
| 1 | BI-1 Dual, Visual and Hood | Demonstrate and practice the following procedures and maneuvers: a. Equipment check (instrument). b. Pitch control. c. Roll control. d. Power control. e. Trim control. f. Straight and level flight. | 01:15 | 01:15 |
| 2 | BI-2 Dual, Visual and Hood | 1. Review as necessary. 2. Demonstrate and practice: a. Accelerations and decelerations. b. Gyro turns to heading. c. Standard rate turns. | 01:15 | 02:30 |
| 3 | BI-3 Dual, Visual and Hood | 1. Review as necessary. 2. Demonstrate and practice: a. Straight climbs. b. Straight descents. c. Standard rate climbs. d. Standard rate descents. | 01:15 | 03:45 |
| 4 | BI-4 Dual, Visual and Hood | 1. Review as necessary. 2. Demonstrate and practice: a. Turn needle calibration. b. Timed turns in level flight. c. Autorotations, power recovery. | 01:15 | 05:00 |
| 5 | BI-5 Dual, Visual and Hood | Review all previous work. | 01:15 | 06:15 |

2ND WEEK

| TNG DAY | PERIOD | MANEUVER | PERIOD TIME | TOTAL TIME |
|------------|-----------------------------------|---|----------------|---------------|
| 6 | BI-6 Dual, Visual and Hood | 1. Review as necessary. 2. Demonstrate and practice: a. Instrument takeoff. b. Climbing and descending turns. c. Timed climbing and descending turns. d. Steep turns. | 01:15 | 07:30 |
| 7 | BI-7 Dual, Visual and Hood | 1. Review as necessary. 2. Demonstrate and practice: a. Slow flight. b. Servo off flight. | 01:15 | 08:45 |
| 8 | BI-8 Dual, Visual and Hood | 1. Review as necessary. 2. Demonstrate and practice: a. Magnetic compass (lead and lag). b. Magnetic compass turns. c. Recovery from unusual attitudes. | 01:15 | 10:00 |
| 9 | BI-9 Dual, Visual and Hood | Review all previous work. | 01:15 | 11:15 |
| 10 | BI-10 Dual, Visual and Hood | 1. Review as necessary. 2. Introduction to emergency panel. 3. Demonstrate and practice: a. Pitch control. b. Roll control. c. Trim control. d. Power control. e. Straight and level flight. | 01:15 | 12:30 |

3RD WEEK

| TNG DAY | PERIOD | MANEUVER | PERIOD TIME | TOTAL TIME |
|------------|-----------------------------------|---|----------------|---------------|
| 11 | BI-11 Dual, Visual and Hood | Introduction to Basic Instrument night flying. (To be performed during the second and/or third week of training.) | 01:15 | 13:45 |
| 12 | BI-12 Dual, Visual and Hood | 1. Review as necessary. 2. Demonstrate and practice (emergency panel). a. Accelerations and decelerations. b. Compass turns, standard rate. | 01:15 | 15:00 |
| 13 | BI-13 Dual, Visual and Hood | 1. Review as necessary. 2. Demonstrate and practice (emergency panel): a. Standard rate climbs. b. Standard rate descents. | 01:15 | 16:15 |
| 14 | BI-14 Dual, Visual and Hood | 1. Review as necessary. 2. Demonstrate and practice (emergency panel): a. Timed turns. b. Autorotations, power recovery. | 01:15 | 17:30 |
| 15 | BI-15 Dual, Visual and Hood | 1. Review as necessary. 2. Demonstrate and practice (emergency panel): a. Servo off flight. b. Steep turns. | 01:15 | 18:45 |

4TH WEEK

| TNG DAY | PERIOD | MANEUVER | PERIOD TIME | TOTAL TIME |
|------------|-----------------------------------|--|----------------|---------------|
| 16 | BI-16 Dual, Visual and Hood | 1. Review as necessary. 2. Demonstrate and practice (emergency panel): Recovery from unusual attitudes. | 01:15 | 20:00 |
| 17 | BI-17 Dual, Visual and Hood | Review as necessary. | 01:15 | 21:15 |
| 18 | BI-18 Dual, Visual and Hood | Review as necessary. | 01:15 | 22:30 |
| 19 | BI-19 Dual, Visual and Hood | Review as necessary. | 01:15 | 23:45 |
| 20 | BI-20 | Basic Instrument check. | 01:15 | 25:00 |

SYLLABUS

TACTICAL INSTRUMENT DIVISION (CONTRACT)

BASIC STAGE (25 Hours)

The following classes will be prepared in accordance with School Regulation 310-1, chapters 1 and 2, dated January 1966 and will be presented at the appropriate time during the basic instrument stage.

| | |
|-----------------------------------|--------|
| Rotary Wing Briefing, 5/69-3985-1 | 1 hour |
|-----------------------------------|--------|

| | |
|--|--------|
| Helicopter Attitude Instrument Flying, 5/69-3986-1 | 1 hour |
|--|--------|

In addition, it will be the duty of the individual instructor pilot to brief his students before each day's flight and to debrief them afterward. The briefing will re-emphasize the objectives of the mission, and the pertinent procedures and techniques involved in the accomplishment of these objectives; the debriefing will include a critique on the individual student accomplishment of the objectives of the mission and on the next flying assignment.

The student will be able to perform the following maneuvers as described in the current "Standardization of Maneuvers Guide," within the tolerances listed:

STAGE I BASIC INSTRUMENTS

(25:00)

| MANEUVER/PROCEDURE | KNOWLEDGE | SKILL |
|--|--|---|
| 1. Aircraft procedures for: a. Instrument preflight. b. Equipment check. c. Cockpit procedures. | The student will memorize and be able to recite the listed items. An overall accuracy of 100 percent is required. | From memory, the student will perform the listed actions with 100 percent accuracy. |
| 2. Instrument takeoff. | The student will memorize and be able to recite the pretakeoff check. An overall accuracy of 100 percent required. | a. Prior to lift-off. From memory, the student will perform the pretakeoff check with 100 percent accuracy. b. Lift-off prior to establishing normal climb. (1) RPM 3000-3200. (2) MP as required. (Not to exceed 33" Hg). (3) Heading $\pm 15^\circ$. (4) Airspeed constant acceleration. (5) Altitude constant ascent (500 feet per minute rate of climb desired). c. Normal climb-out. (1) RPM 3000-3200. (2) MP as required. (3) Heading $\pm 15^\circ$. |

MANEUVER/PROCEDURE

KNOWLEDGE

SKILL

| | | |
|--|---|--|
| | | <p>(4) Airspeed 50 knots \pm 10 knots.</p> <p>(5) Altitude (500 feet per minute rate of climb \pm 100 feet per minute).</p> |
| | <p>The student will memorize and be able to recite the level-off check. An overall accuracy of 100 percent is required.</p> | <p>d. Level off.</p> <p>From memory, the student will perform the level-off check. An overall accuracy of 100 percent is required.</p> |
| <p>3. Straight and level flight. (Full panel.)</p> | <p>N/A</p> | <p>a. RPM 3000-3200.</p> <p>b. MP as required.</p> <p>c. Heading \pm 15°.</p> <p>d. Airspeed 60 knots \pm 10 knots.</p> <p>e. Altitude \pm 100 feet.</p> |
| <p>4. Accelerations and decelerations. (Full panel.)</p> | <p>N/A</p> | <p>a. Accelerations from straight and level flight.</p> <p>(1) RPM 3000-3200.</p> <p>(2) MP as required.</p> <p>(3) Heading \pm 15°.</p> <p>(4) Airspeed at high cruise 70 knots \pm 10 knots.</p> <p>(5) Altitude \pm 100 feet.</p> <p>b. Decelerations.</p> <p>(1) RPM 3000-3200.</p> <p>(2) MP as required.</p> <p>(3) Heading \pm 15°.</p> |

MANEUVER/PROCEDURE

KNOWLEDGE

SKILL

5. Gyro turns.
(Full panel.)

N/A

(4) Airspeed at low
cruise 40 knots \pm 10 knots.

(5) Altitude \pm 100
feet.

c. Accelerate to straight
and level flight. (See ma-
neuver No. 3, straight and
level flight.)

a. RPM 3000-3200.

b. MP as required.

c. Airspeed 60 knots \pm
10 knots.

d. Heading \pm 15° (entry
and roll-out heading).

e. Altitude \pm 100 feet.

f. Bank \pm 5° of angle of
bank required to main-
tain a standard rate turn.

6. Climbing and
descending turns.
(Full panel.)

N/A

a. Climbing turns.

(1) RPM 3000-3200.

(2) MP as required.

(3) Heading \pm 15°.

(4) Airspeed 50
knots \pm 10 knots.

(5) Altitude \pm 100
feet on entry and roll-
out.

(6) Rate of climb
500 feet per minute \pm
100 feet per minute.

(7) Bank \pm 5° of
angle of bank required to
maintain a standard rate
turn.

MANEUVER/PROCEDURE

KNOWLEDGE

SKILL

| | | | |
|---|---|--|---|
| | | | <p>b. Descending turns.</p> <p>(1) RPM 3000-3200.</p> <p>(2) MP as required.</p> <p>(3) Heading $\pm 15^\circ$.</p> <p>(4) Airspeed 60 knots ± 10 knots.</p> <p>(5) Altitude ± 100 feet on entry and roll-out.</p> <p>(6) Rate of descent 500 feet per minute \pm 100 feet per minute.</p> <p>(7) Bank $\pm 5^\circ$ of angle of bank required to maintain a standard rate turn.</p> |
| 7. Servo off flight. (Full panel.) | Student will memorize and recite all the required actions to be completed upon servo failure with an accuracy of 100 percent. | | <p>a. RPM 3000-3200.</p> <p>b. MP as required.</p> <p>c. Heading $\pm 15^\circ$.</p> <p>d. Airspeed 50 knots ± 10 knots.</p> <p>e. Altitude ± 100 feet.</p> |
| 8. Straight and level flight. (Emergency panel.) | N/A | | <p>a. RPM 3000-3200.</p> <p>b. MP as required.</p> <p>c. Heading $\pm 15^\circ$.</p> <p>d. Airspeed 60 knots ± 10 knots.</p> <p>e. Altitude ± 100 feet.</p> |

| MANEUVER/PROCEDURE | KNOWLEDGE | SKILL |
|---|-----------|---|
| 9. Standard rate climbs and descents. (Emergency panel.) | N/A | <p>a. Standard rate climb.</p> <p>(1) RPM 3000-3200.</p> <p>(2) MP as required.</p> <p>(3) Heading $\pm 15^\circ$.</p> <p>(4) Airspeed 50 knots ± 10 knots.</p> <p>(5) Altitude ± 100 feet on assigned altitude.</p> <p>(6) Rate of climb 500 feet per minute ± 100 feet per minute.</p> <p>b. Standard rate descent.</p> <p>(1) RPM 3000-3200.</p> <p>(2) MP as required.</p> <p>(3) Heading $\pm 15^\circ$.</p> <p>(4) Airspeed 60 knots ± 10 knots.</p> <p>(5) Altitude ± 100 feet on assigned altitude.</p> <p>(6) Rate of descent 500 feet per minute ± 100 feet per minute.</p> |
| 10. Steep turns. (Emergency panel.) | N/A | <p>a. RPM 3000-3200.</p> <p>b. MP as required.</p> <p>c. Heading $\pm 15^\circ$. (On entry and roll-out).</p> <p>d. Airspeed 60 knots ± 10 knots.</p> <p>e. Altitude ± 100 feet.</p> <p>f. Bank ± 1 needle width of maximum 3-3 1/2 width needle turn.</p> |

| MANEUVER/PROCEDURE | KNOWLEDGE | SKILL |
|--|--|---|
| 11. Unusual attitude recovery. (Emergency panel.) | N/A | Upon detection of an unusual attitude, a recovery to straight and level flight will be made immediately. |
| 12. Autorotative descent. (Emergency panel.) | Student will memorize and recite the required actions to be completed during autorotative descent. Accuracy of 100 percent is required. | <p>a. Entry into autorotation.</p> <p>(1) Heading; turn into last known surface wind $\pm 45^\circ$.</p> <p>(2) Airspeed 50 knots ± 10 knots.</p> <p>(3) Rotor RPM Green Arc.</p> <p>b. Power recovery.</p> <p>(1) RPM 3000-3200.</p> <p>(2) Upon recovery, student will maintain straight and level flight until given further instructions.</p> |
| 13. Magnetic compass turns. (Emergency panel.) | Student will memorize and recite the lead and lag associated with the magnetic compass and the procedures required for compensation in accomplishing compass turns. Accuracy of 100 percent is required. | <p>a. RPM 3000-3200.</p> <p>b. MP as required.</p> <p>c. Heading $\pm 15^\circ$ (on entry and roll-out).</p> <p>d. Airspeed 60 knots ± 10 knots.</p> <p>e. Altitude ± 100 feet.</p> <p>f. Bank ± 1 needle width of a standard rate turn.</p> |

NOTE 1: The tolerances listed for the maneuvers on the preceding pages are applicable for normal atmospheric conditions. Unusual atmospheric conditions (i.e., excessive gust spread, turbulence, high density altitude) must be equated into the achievement of desired tolerances.

NOTE 2: Manifold pressure limitations of 33 inches for 2 minutes and then a reduction to 27 inches may or may not achieve the desired rate of climb or airspeed in the listed maneuvers. The aircraft must be operated within these limitations and the rate of climb or airspeed obtained by these power settings will be considered within tolerance.