Radio License Exam Course: Technician Class

Corky Searls – 10/2018

Course Flow:

Session 1:

Bring:

- Station: Radio, Microphone, Tuner, Antenna, Battery, Coax, Power Meter Dummy Load
- TNC, Computer, cables, GPS
- Thumb drive with slides in .ppt and .pdf

First Class Session:

1) Introduction;
    a) Brian – Welcome & thank you
    b) Students
    c) Class summary
        1. Goals/Expectations – Pass exam; Get involved; Hands-on learning
        2. What it is/is not
        3. Learning a new language – Summary reference sheets
        4. Requirements from students – Math, participation, homework, questions, Enjoy
    d) Amateur Radio, what is it
        1. Communications service
        2. Activities – Social, Volunteer/Public Service. Technical
        3. Communication modes – Voice (analog/digital), data, image, Morse code
        4. License classes – Tech, General, Extra

2) Exam description and structure (pp iii, 13-15)
    a) Calculators
3) Exam Prep – Starts before you know anything about Amateur Radio
    a) Multiple-choice test guidance [Handout]
    b) Practice exams – We will use this as a study technique for this class
    c) HamExam.com, aa9pw.com, ARRL – other sites, importance of practice
    d) Learn some new information, some memorization [Reference Sheets]
4) Class session summary
    a) Study sessions
        1. Tuesday Session 1: 1, 4, 2, L1, 3, 8
        2. Thursday Session 2: 7, L2, 5, 6, 9, 0
    b) Two short technical lectures for context
        1. Radio waves & propagation
        2. Electrical and Electronic principles
    c) Saturday: Review, Q&A, & Exam

Break – 5 min

5) Element T1 – FCC Rules (6)
    a) Reference for phonetics – pp T1-3
6) Element T4 – Amateur radio practices & Station Setup (2)
    a) Use assembled station for demonstration
7) Element T2 – Operating procedures (3)
    a) Reference: Q-signals (Summary sheet & pp T2-7)

Break (5 min)

8) Wave Theory Lecture
   a) Waves – freq, wavelength, phase, velocity, polarization
   b) Bands – Color (Slides 1 & 2 – bands & large spectral chart, pp T3-8)
   c) Adding information – Modulation (Slide 3, Slide 4)
   d) Bandwidth vs modulation – pp. T8-2
   e) Propagation – Reflection/Refraction, Ionosphere (Slide 5 of earth, and slide 6 layer heights)
      (Rainbow analogy)
9) Element T3 – Radio Wave Characteristics (3)
10) Element T8 – Modulation Modes [Optional following Class Status Check] (4)
11) Closeout and prep for Thursday class
   a) Review testing guidelines
   b) Study and Practice exams – At least once, preferably twice
   c) Register with FCC to obtain FRN – Follow-up on Thursday if problems

Session 2

Bring:

- Radio Station
- Sample components: Battery, Resistor, capacitor, inductor, transistor, diode, LED, switch, potentiometer, transformer
- VOM, Antenna Analyzer

Second Class Session:

1) Welcome & Q&A as follow-up to last class – Questions
2) Element T7 – Station Equipment (4)
    a) Reference basic station
    b) Reference VOM
3) Basic Electricity and Electronics Lecture – (At Board, reference Summary sheet)
    a) Battery, light, switch
    b) Current & Voltage in circuits – series & parallel
    c) Ohms law and Power computation
    d) Components – Passives, Semiconductors

Break 5 Min

4) Element T5 – Electrical Principles (4)
5) Element T6 – Electrical components (4)
6) Element T9 – Antennas and feed lines (2)
7) Element T0 – Electrical Safety (3)
8) Q&A and review for Saturday Exam