Polk County Amateur Radio Association
2010 General Class Syllabus
Instructor: Greg N9CHA – ARRL Registered Instructor
Greg@N9CHA.com

Week One - January 16th - Lessons 1 - 4

Lesson 1 - "Introduction to the General Class License"

- Set the stage for the class that will motivate students to continue to participate through to the conclusion.
- Outline the advantages for obtaining a General Class license.
- Know the requirements and study resources available for General Class license.

Lesson 2 - "HF Procedures and Practices Overview"

- See basic HF operating procedures in action.
- Learn common HF practices and modes.
- Understand net structure and procedures.
- Review emergency communications within the context of General Class privileges.

Lesson 3 - "Rules and Regulations"

- Be familiar with international rules that govern Amateur Radio operation.
- Understand how the jurisdiction of the ITU, FCC and FAA impact your Amateur Radio operations, including third-party rules.
- Know where to find detailed rules and regulation information.
- Develop strategies to prevent, mitigate and handle interference issues and situations.

Lesson 4 - "Math Review"

- Review the basic math skills required to answer the math related questions.
- Solving an equation for an unknown. Addition, subtraction, multiplication, division.
- Working with fractions.
- Squaring and taking square roots of numbers.
- Finding logs and anti-logs.

Week 2 - January 23rd - Lessons 5 - 8

Lesson 5 - "Basic Components"

- Review basic electronics concepts.
- Be familiar with the electrical and physical characteristics of resistors, capacitors and inductors.

Lesson 6 - "Components in Series and Parallel"

- Compute the equivalent values of resistors, capacitors, and inductors connected in series, parallel, and combination circuits.

Lesson 7 - "Peak-to-Peak, RMS Voltage, and Power"
Be able to perform calculations to solve problems involving peak-to-peak voltage, RMS voltage and power formulas.

Lesson 8 - "Transformers and Impedance"

- Understand how transformers work.
- Define impedance.
- Be able to calculate the voltage change within a transformer based on the ratio of primary to secondary windings.
- Be able to calculate the impedance change within a transformer based on the ratio of primary to secondary windings.

Week 3 - February 20th - Lessons 9 - 12

Lesson 9 - "Reactance and Resonance"

- Define reactance as the opposition of the flow of ac through capacitors and inductors.
- Learn that the amount of reactance of a component is dependent on the frequency of the ac wave.
- Define a circuit at resonance as occurring when the individual reactance's of a capacitor and inductor cancel.
- Learn that an inductor/capacitor circuit at resonance will either pass or block the resonant frequency depending on the component arrangement (either parallel or series).

Lesson 10 - "Semiconductors, ICs, and Digital"

- Learn the basic function of diodes, transistors, integrated circuits, vacuum tubes and microprocessors in electronic equipment.

Lesson 11 - "Power Supplies, Batteries, Connectors, and Test Equipment"

- Be able to choose the appropriate power supply and battery for a particular application.
- Be able to identify and choose the appropriate connector for a particular application.
- Gain some familiarity with basic test equipment.

Lesson 12 - "Radio Signals"

- Understand that the process of modulation is embedding or impressing the intelligence to be sent by the radio carrier wave.
- Understand that the process of demodulation is separating the desired intelligence from the radio carrier wave once it is received.
- Be able to define bandwidth and relate the required bandwidth to the mode in use.
- Identify the various kinds of digital communications modes.
- Know the basic rules and regulations that govern the digital modes.

Week 4 - February 27th - Lessons 13 - 16

Lesson 13 - "Radio Equipment"

- Know the basic building blocks of transmitters and receivers.
- Know how these building blocks are assembled to create a transmitter and receiver.
- Learn how to properly set the operating controls of your station.

Lesson 14 - "Antennas"

- Understand the basics of antennas and be familiar with some of the characteristics of the most common types of antennas.
- Be able to explain how a beam antenna produces gain.
- Be able to choose an appropriate feed line and use an SWR meter to check the antenna/feed line match.

Lesson 15 - "Propagation"

- Understand the structure of the ionosphere and how it is related to radio wave propagation.
- Know how to use solar indices to predict radio wave propagation.

Lesson 16 - "Electrical and RF Safety"

- Review basic electrical safety concerns and techniques.
- Know how to properly ground your station to avoid electrical and RF safety issues.
- Know how to evaluate your station for RF safety.
- Review some physical safety concerns and techniques to use while working with towers and installing antennas.