THE ARRL

TENTH EDITION

GENERAL
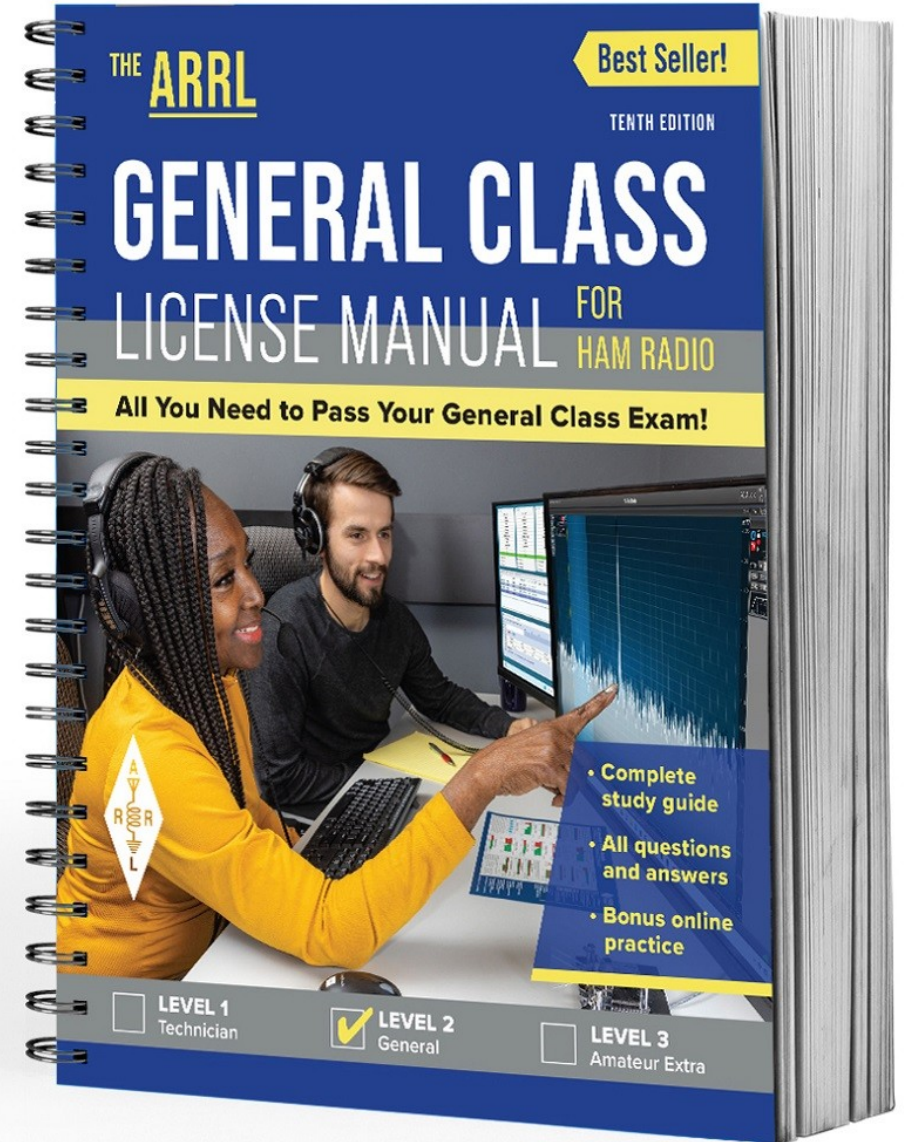
LICENSE COURSE

FOR HAM RADIO

CLASS

All You Need to Pass Your General Class Exam!
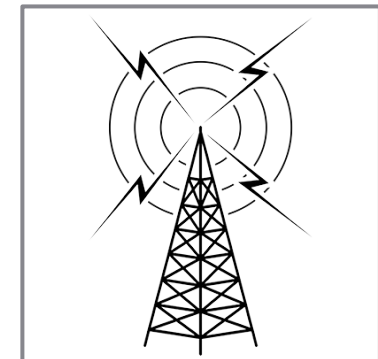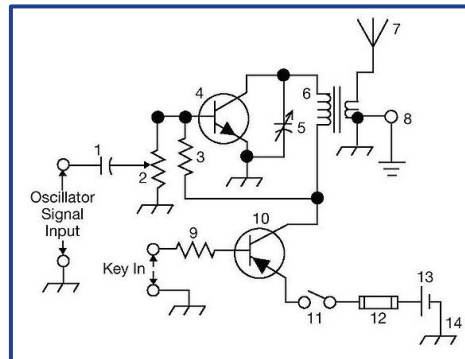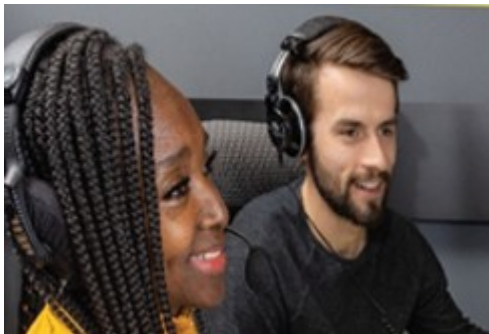
Resource & Reference

www.arrl.org/shop/Licensing-Education-and-Training

Chapter 1 Part 1 of 1

ARRL General Class
Sections 1.1, 1.2, 1.3

Introduction

Introductions

- Instructors
- Students
  - What is your name?
  - Tell us about yourself.
  - Why are you taking this course?
  - What do you know about ham radio?
  - What are your expectations for yourself & instructors?

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Instructors' Expectations

- Class will start and end on time

- Instructor will be prepared for each topic

- Students are expected to read assigned material before class and be ready to learn

- Ham radio is NOT a spectator sport
  - Active participation in class is vital to success in obtaining your General Class license

Course Overview (book chapters)

1. Introduction
2. Procedures & Practices
3. Rules & Regulations
4. Components & Circuits
5. Radio Signals & Equipment

6. Digital Modes
7. Antennas
8. Propagation
9. Electrical & RF Safety
10. General Question Pool

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General Question Pool Subelements

#	Title	# Exam Questions
G1	Commission's Rules	5
G2	Operating Procedures	5
G3	Radio Wave Propagation	3
G4	Amateur Radio Practices	5
G5	Electrical Principles	3
G6	Circuit Components	2
G7	Practical Circuits	3
G8	Signals and Emissions	3
G9	Antennas and Feed Lines	4
G0	Electrical and RF Safety	2

Let's Get Started!

- Our goal during this class is for each of you to achieve the General class Amateur Radio license!

- This license will authorize you to operate an Amateur Radio (ham radio) transmitter on frequencies well beyond that allowed with a technician class license

Section 1.1
The General Class License and Amateur Radio

- Reasons to upgrade
  - More frequencies (covered in Chapter 3)
  - More communications options (expanded HF)
  - New technical opportunities (studying and using effects of the ionosphere & solar conditions, for example)
  - More fun (DXing, contesting, e.g.)
  - You can be a Volunteer Examiner

Section 1.2
How to Use the ARRL General Manual

- Chapters begin with brief review of Technician material for this topic

- Covers exam questions (and correct answer), along with examples

- Questions to be covered are listed at the beginning of the section

- ARRL General webpage:
  - www.arrl.org/general-class-license-manual
  - Includes supplements and clarifications

- After completing a chapter/section, review the questions in the Question Pool

- Online practice exams at:
  - www.arrl.org/examreview

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Section 1.3
The Upgrade Trail

- Primary topics of focus as a General
    - Operating effectively on HF
    - Digital modes such as FT8, PSK31, PACTOR, and VARA
    - Solar effects on HF propagation
    - Test instruments
    - Practical electronic circuits
    - Common antennas used on HF

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Section 1.3
The Upgrade Trail (cont.)

- Testing
  - When you pass the General exam, you will have the opportunity to take the Extra exam at the same time … no additional fee
  - Find a test session
    - www.arrl.org/exam
    - Online testing is available: www.arrl.org/online-exam-session
  - Bring a copy of your license and two forms of ID to the test session (one must be a photo ID)
  - Once you pass, the VEC will submit your results to the FCC, and the FCC will update you in the database … you'll be able to use your new General privileges immediately upon passing, even though the FCC database may not be updated … just append **/AG** to your call sign … KØILP/AG (for voice operation, say **KØILP SLASH AG**)
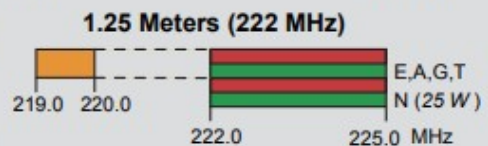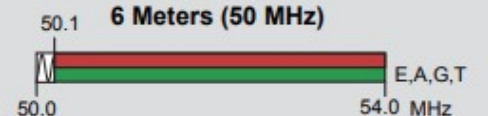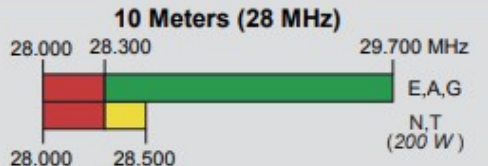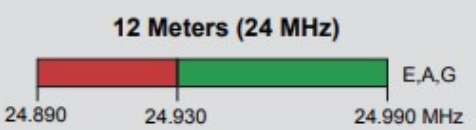 - Test consists of 35 questions … must answer 26 correctly

US Amateur Radio Bands

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US AMATEUR POWER LIMITS — FCC 97.313 An amateur station must use the minimum transmitter power necessary to carry out the desired communications. (b) No station may transmit with a transmitter power exceeding 1.5 kW PEP.

Amateurs wishing to operate on either 2,200 or 630 meters must first register with the Utilities Technology Council online at **https://utc.org/plc-database-amateur-notification-process/.** You need only register once for each band.

2,200 Meters (135 kHz)
E,A,G
135.7 kHz — 1 W EIRP maximum — 137.8 kHz

630 Meters (472 kHz)
5 W EIRP maximum, except in Alaska within 496 miles of Russia where the power limit is 1 W EIRP.
E,A,G
472 kHz — 479 kHz

160 Meters (1.8 MHz)
Avoid interference to radiolocation operations from 1.900 to 2.000 MHz
E,A,G
1.800 — 1.900 — 2.000 MHz

80 Meters (3.5 MHz)
3.500 3.600 3.700 4.000 MHz
E
A
G
N,T (200 W)
3.525 3.600 3.800

60 Meters (5.3 MHz)
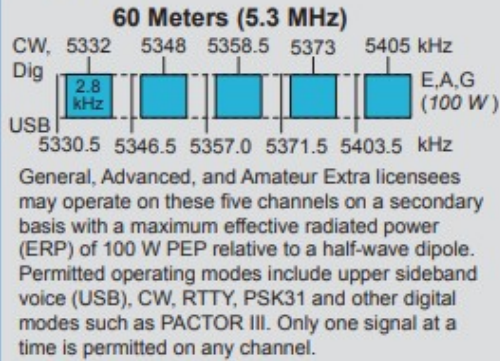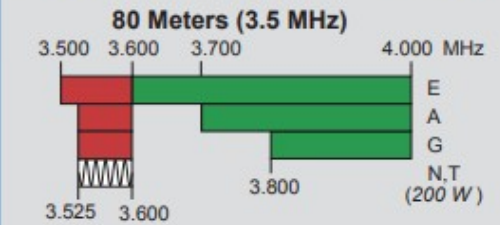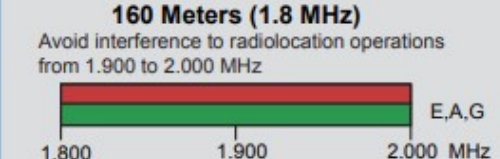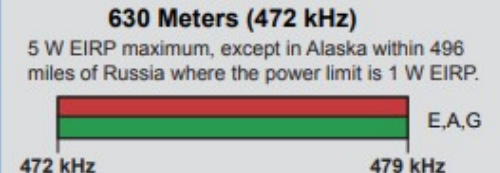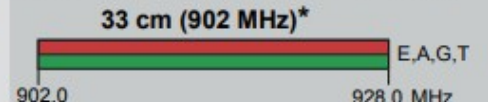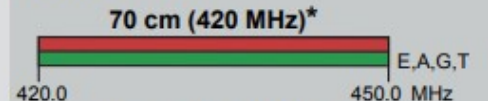CW, Dig: 5332 5348 5358.5 5373 5405 kHz
2.8 kHz
E,A,G (100 W)
USB: 5330.5 5346.5 5357.0 5371.5 5403.5 kHz

General, Advanced, and Amateur Extra licensees may operate on these five channels on a secondary basis with a maximum effective radiated power (ERP) of 100 W PEP relative to a half-wave dipole. Permitted operating modes include upper sideband voice (USB), CW, RTTY, PSK31 and other digital modes such as PACTOR III. Only one signal at a time is permitted on any channel.

40 Meters (7 MHz)
7.000 7.075 7.100 7.300 MHz
ITU 1,3 and FCC region 2 west of 130° west or below 20° north
E
A
G
N,T (200 W)
7.175
N,T outside region 2
7.025 7.125
See Sections 97.305(c), 97.307(f)(11) and 97.301(e). These exemptions do not apply to stations in the continental US.

30 Meters (10.1 MHz)
Avoid interference to fixed services outside the US.
200 Watts PEP   E,A,G
10.100 — 10.150 MHz

20 Meters (14 MHz)
14.000 14.150 14.350 MHz
E
A
G
14.175
14.025 14.150 14.225

17 Meters (18 MHz)
E,A,G
18.068 18.110 18.168 MHz

15 Meters (21 MHz)
21.000 21.200 21.450 MHz
E
A
G
N,T (200 W)
21.225
21.275
21.025 21.200

12 Meters (24 MHz)
E,A,G
24.890 24.930 24.990 MHz

10 Meters (28 MHz)
28.000 28.300 29.700 MHz
E,A,G
N,T (200 W)
28.000 28.500

6 Meters (50 MHz)
50.1
E,A,G,T
50.0 54.0 MHz

2 Meters (144 MHz)
144.1
E,A,G,T
144.0 148.0 MHz

1.25 Meters (222 MHz)
E,A,G,T
N (25 W)
219.0 220.0
222.0 225.0 MHz

*Geographical and power restrictions may apply to all bands above 420 MHz. See The ARRL Operating Manual for information about your area.

70 cm (420 MHz)*
E,A,G,T
420.0 450.0 MHz

33 cm (902 MHz)*
E,A,G,T
902.0 928.0 MHz

23 cm (1240 MHz)*
1240 1300 MHz
E,A,G,T
N (5 W)
1270 1295

All licensees except Novices are authorized all modes on the following frequencies:

2300-2310 MHz	10.0-10.5 GHz ‡	122.25-123.0 GHz
2390-2450 MHz	24.0-24.25 GHz	134-141 GHz
3300-3500 MHz	47.0-47.2 GHz	241-250 GHz
5650-5925 MHz	76.0-81.0 GHz	All above 275 GHz

‡ No pulse emissions

http://www.arrl.org/graphical-frequency-allocations

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General Privileges

BAND	FREQUENCIES	MODES	POWER
2200 m	135.7-137.8 kHz	CW, Phone, Image, RTTY/Data	1 W EIRP maximum
630 m	472-479 kHz	CW, Phone, Image, RTTY/Data	5 W EIRP max (see AK exception)
160 m	1.800-2.000 MHz	CW, Phone, Image, RTTY/Data	1500 watts PEP max
80 m	3.525-3.600 MHz	CW, RTTY/Data	1500 watts PEP max
80 m	3.800-4.000 MHz	CW, Phone, Image	1500 watts PEP max
60 m	5330.5 kHz	CW, Phone, RTTY/Data	100 W PEP max
60 m	5346.5 kHz	CW, Phone, RTTY/Data	100 W PEP max
60 m	5357.5 kHz	CW, Phone, RTTY/Data	100 W PEP max
60 m	5371.5 kHz	CW, Phone, RTTY/Data	100 W PEP max
60 m	5403.5 kHz	CW, Phone, RTTY/Data	100 W PEP max
40 m	7.025-7.125 MHz	CW, RTTY/Data	1500 watts PEP max
40 m	7.175-7.300 MHz	CW, Phone, Image	1500 watts PEP max
30 m	10.100-10.150 MHz	CW, RTTY/Data	200 watts PEP max

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General Privileges (cont.)

BAND	FREQUENCIES	MODES	POWER
20 m	14.025 -14.150 MHz	CW, RTTY/Data	1500 watts PEP max
20 m	14.225 -14.350 MHz	CW, Phone, Image	1500 watts PEP max
17 m	18.068-18.110 MHz	CW, RTTY/Data	1500 watts PEP max
17 m	18.110-18.168 MHz	CW, Phone, Image	1500 watts PEP max
15 m	21.025-21.200 MHz	CW, RTTY/Data	1500 watts PEP max
15 m	21.275-21.450 MHz	CW, Phone, Image	1500 watts PEP max
12 m	24.890-24.930 MHz	CW, RTTY/Data	1500 watts PEP max
12 m	24.930-24.990 MHz	CW, Phone, Image	1500 watts PEP max
10 m	28.000-28.300 MHz	CW, RTTY/Data	1500 watts PEP max
10 m	28.300-29.700 MHz	CW, Phone, Image	1500 watts PEP max
6 m	50.0-50.1 MHz	CW Only	1500 watts PEP max
6 m	50.1-54.0 MHz	CW, Phone, Image, MCW, RTTY/Data	1500 watts PEP max

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General Privileges (cont.)

BAND	FREQUENCIES	MODES	POWER
2 m	144.0-144.1 MHz	CW Only	1500 watts PEP max
2 m	144.1-148.0 MHz	CW, Phone, Image, MCW, RTTY/Data	1500 watts PEP max
1.25 m	222.00-225.00 MHz	CW, Phone, Image, MCW, RTTY/Data	1500 watts PEP max
1.25 m	219-220 MHz	Fixed digital message forwarding systems	50 watts PEP max
70 cm	420.0-450.0 MHz	CW, Phone, Image, MCW, RTTY/Data	1500 watts PEP max
33 cm	902.0-928.0 MHz	CW, Phone, Image, MCW, RTTY/Data	1500 watts PEP max
23 cm	1240-1300 MHz	CW, Phone, Image, MCW, RTTY/Data	1500 watts PEP max

All modes, 1500 watts PEP max: 2300-2310 MHz, 2390-2450 MHz, 3300-3450 MHz, 5650-5925 MHz, 10.0-10.5 GHz, 24.0-24.25 GHz, 47.0-47.2 GHz, 76.0-81.0 GHz*, 122.25 -123.00 GHz, 134-141 GHz, 241-250 GHz, All above 300 GHz (* Amateur operation at 76-77 GHz has been suspended till the FCC can determine that interference will not be caused to vehicle radar systems)

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END OF CHAPTER 1 PART 1 OF 1

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Feel free to contact me if you find errors or have
suggestions for improvement.