

## TECHNICIAN COURSE SYLLABUS

### November 2017

#	TECHNICIAN ELEMENT	URL	Time (mins)	Comment on videos Rough Time Schedule
	DEMONSTRATIONS			
		<b>SATURDAY</b>		
		<b>INTRODUCTION &amp; PAPERWORK</b>		
1	Any of these that seem interesting;  HF receiver tuning, calibration making contacts on both VHF and HF watching & doing all kinds of digital	<a href="https://www.youtube.com/watch?v=fEWmiMotimY">https://www.youtube.com/watch?v=fEWmiMotimY</a>  T1A Amateur Radio Service <a href="https://www.youtube.com/watch?v=jomk_c9LLa4">https://www.youtube.com/watch?v=jomk_c9LLa4</a> Start at 1:35 or so.  T1C Operator Classes <a href="https://www.youtube.com/watch?v=PuW1RxspVIQ">https://www.youtube.com/watch?v=PuW1RxspVIQ</a>	7.4   13.5  12.75	0815-0900  Overview and explanation of the ARRL License Manual; good review of facets of ham radio.
2	Frequency counter.	<a href="https://www.youtube.com/watch?v=Z-194MMckjg">https://www.youtube.com/watch?v=Z-194MMckjg</a>  2.1  Subelement T3B Whisperer <a href="https://www.youtube.com/watch?v=RwFZ-oOXGNs">https://www.youtube.com/watch?v=RwFZ-oOXGNs</a>	10.4   9.8	0910-0945 Frquency and Wavelength consider having a frequency counter with an audio source also SB102 with a dial You can use the 80 meter band on CW with a technician license review kilo and mega go over wavelength chart
3	Waterfall spectrum of different signals (psk, RTTY, SSB, AM if possible)	<a href="https://www.youtube.com/watch?v=iVh2dwsltCA">https://www.youtube.com/watch?v=iVh2dwsltCA</a>  2.2	7.4	1000-1045  MODULATION practice tuning in SSB

	Oscilloscope demo of CW versus SSB.	T8A: <a href="https://www.youtube.com/watch?v=kszOBGATUTo">https://www.youtube.com/watch?v=kszOBGATUTo</a>	9.2	show drawings of spectrum of CW, AM, FM etc possibly do spectrum displays on FLIDGI
4		<a href="https://www.youtube.com/watch?v=DVk3L764YKQ">https://www.youtube.com/watch?v=DVk3L764YKQ</a> 2.3	4	RADIO EQUIPMENT BASICS
5	Voltmeter: explain scales, measure 9V, 1.5 V batteries, and then (carefully) wall 120VAC.  Demonstrate reaing resistance and current.	<a href="https://www.youtube.com/watch?v=r8w4QeaI5k8">https://www.youtube.com/watch?v=r8w4QeaI5k8</a> 3.1  T5D Ohms Law <a href="https://www.youtube.com/watch?v=dczEuHlaA4E">https://www.youtube.com/watch?v=dczEuHlaA4E</a>	12.33	1100 - 1145 P=EI measuring volage from AA cell stress the meaning of resistance (sets ratio of E to I) Note batteries set E not I
6	Small lab on series and parallel components using wooden block lab circuits.	<a href="https://www.youtube.com/watch?v=l9yLsLRo0QU">https://www.youtube.com/watch?v=l9yLsLRo0QU</a> 3.2  Subelement T6A Questions: <a href="https://www.youtube.com/watch?v=1g-Cxx7Ykcl">https://www.youtube.com/watch?v=1g-Cxx7Ykcl</a>	16  8.66	1300-1345  Components and Units discrete components and explanations
7	Open up a BitxX and shows how the different circuits work.	<a href="https://www.youtube.com/watch?v=9Liz_Lu9htU">https://www.youtube.com/watch?v=9Liz_Lu9htU</a> 3.3	short	1400-1420 Radios & Circuits
8	Listen on different bands so they can see which ones are quiet, noisy, empty and full. Explain the D layer destroying 80 meters daytime; why 40 is open regionally and 20 open nationally and 2 meters only line of sight.	<a href="https://www.youtube.com/watch?v=I8g2SDQ-ul0">https://www.youtube.com/watch?v=I8g2SDQ-ul0</a> 4.1  Subelement T3A Whisperer: <a href="https://www.youtube.com/watch?v=T5OVC4tN-q8">https://www.youtube.com/watch?v=T5OVC4tN-q8</a>	11.66	1420-1445 Propagation
9	Demonstrate antenna tuner and Swr meter in action.	4.2 Antenna Fundamentals <a href="https://www.youtube.com/watch?v=naJtkb7rGbl">https://www.youtube.com/watch?v=naJtkb7rGbl</a>	4	1500-1530

		T9A: Antenna <a href="https://www.youtube.com/watch?v=iu14meONMiE">https://www.youtube.com/watch?v=iu14meONMiE</a>	14.5	
10	Demonstrate coax versus ladder line, even show zip line used as feedline.	4.3 Feedlines & SWR <a href="https://www.youtube.com/watch?v=SxNBIPKHFvQ">https://www.youtube.com/watch?v=SxNBIPKHFvQ</a>  T9B Feedlines <a href="https://www.youtube.com/watch?v=JIT8QucVHfk">https://www.youtube.com/watch?v=JIT8QucVHfk</a>	6.75  10.25	1530 - 1600
11	Demonstrate dipole, end fed, ¼ wave and non resonant antennas. Explain manual and auto-tuners.	4.4 Practical antennas <a href="https://www.youtube.com/watch?v=-SG5qWQDMUA">https://www.youtube.com/watch?v=-SG5qWQDMUA</a>	2.8	1615-1630
12	Demonstrate using:  handheld 2 meter mobile 2 meter HF go box radio  demonstrate voice, CW, digital WINLINK	5.1. Transmitters & Receivers <a href="https://www.youtube.com/watch?v=VUGrMvfkHXc">https://www.youtube.com/watch?v=VUGrMvfkHXc</a>  T7A: Station Radios <a href="https://www.youtube.com/watch?v=LY4b0cdv-zc">https://www.youtube.com/watch?v=LY4b0cdv-zc</a>	11  11	1630-1700
13	– make PSK31 contacts and WINLINK connections.	Digital Communications <a href="https://www.youtube.com/watch?time_continue=2&amp;v=xMk_g0Z4QGo">https://www.youtube.com/watch?time_continue=2&amp;v=xMk_g0Z4QGo</a>  T8D <a href="https://www.youtube.com/watch?time_continue=4&amp;v=UWrwoh5NeSs">https://www.youtube.com/watch?time_continue=4&amp;v=UWrwoh5NeSs</a>	15  11	1715-1800
14	Demonstrate usage of voltmeter and explain fuses, voltages, safety.	Power Supplies and Batteries <a href="https://www.youtube.com/watch?v=n2nv3UFjJZY">https://www.youtube.com/watch?v=n2nv3UFjJZY</a>	6.6	1830-1900

		T0A AC Power safety <a href="https://www.youtube.com/watch?v=r0OGCh01J9g">https://www.youtube.com/watch?v=r0OGCh01J9g</a>	11	
		-----SUNDAY-----		
1 5		5.4 RF Interference <a href="https://www.youtube.com/watch?time_continue=4&amp;v=5u3ngc_8R0w">https://www.youtube.com/watch?time_continue=4&amp;v=5u3ngc_8R0w</a>  T7B Common Tx Rx Problems <a href="https://www.youtube.com/watch?v=pc4A4kl-JQs">https://www.youtube.com/watch?v=pc4A4kl-JQs</a>	5.75  11	1300-1330
	BUILD ANTENNAS			1330-1430
1 6		5.5 RF Grounding <a href="https://www.youtube.com/watch?time_continue=11&amp;v=eHf6v-W_X7A">https://www.youtube.com/watch?time_continue=11&amp;v=eHf6v-W_X7A</a>  T4A (not a great match) <a href="http://www.hamwhisperer.com/2010/06/lesson-13-technician-class-exam-prep.html">http://www.hamwhisperer.com/2010/06/lesson-13-technician-class-exam-prep.html</a>	4  13	1445-1530
1	<ul style="list-style-type: none"> <li>• HF receiver tuning, calibration</li> <li>• making contacts on both VHF and HF</li> <li>• watching &amp; doing all kinds of digital</li> <li>• possibly a cross band repeater demo with two baofengs</li> <li>•</li> </ul>	6.1 Contact Basics <a href="https://www.youtube.com/watch?v=vA6PSf9zEqI">https://www.youtube.com/watch?v=vA6PSf9zEqI</a>  T8C Operating <a href="https://www.youtube.com/watch?v=OS9D5Nm6sY8">https://www.youtube.com/watch?v=OS9D5Nm6sY8</a>	14  13	1545-1630
1 8	demonstrate the different bands by clicking through them.	6.2 Band Plans <a href="https://www.youtube.com/watch?v=-7wyWr1mH6g">https://www.youtube.com/watch?v=-7wyWr1mH6g</a>	4.75	1645-1715

	display / hand out ARRL band limit PDFs and explain how to read them.	T1B Frequency Assignments <a href="https://www.youtube.com/watch?v=x20K8asxfKI">https://www.youtube.com/watch?v=x20K8asxfKI</a>	11	
19		6.3 Making Contacts <a href="https://www.youtube.com/watch?v=UcASsRVF8ow">https://www.youtube.com/watch?v=UcASsRVF8ow</a>  T1F Station identification <a href="https://www.youtube.com/watch?v=gJjeIQXO0P4">https://www.youtube.com/watch?v=gJjeIQXO0P4</a>	6.8  14	1730-1800
20	Demonstrate using repeaters and demonstrate making an band offset repeater using 2 baofengs. one of 2 meters; the other on 70 cm.	6.4 Using Repeaters <a href="https://www.youtube.com/watch?v=4opPihImOY">https://www.youtube.com/watch?v=4opPihImOY</a>		1830-1900
21		6.5 Nets <a href="https://www.youtube.com/watch?v=1HX1py03-SI">https://www.youtube.com/watch?v=1HX1py03-SI</a>	8.1	

<http://dcasler.com/ham-radio/training/> includes links to all the videos

1. Chapter 1, Welcome to Amateur Radio. See video above.
2. Section 2.1, Radio Signals and Waves, [for video click here](#). (Okay for use with 3rd edition)
3. Section 2.2, Modulation, [for video click here](#)
4. Section 2.3, Radio Equipment Basics, [for video click here](#).
5. Section 3.1, Electricity, [for video click here](#).
6. Section 3.2, Components and Units, [for video click here](#)
7. Section 3.3, Types of Radios and Radio Circuits, [for video click here](#).
8. Section 4.1, Propagation, [for video click here](#).
9. Section 4.2, Antenna Fundamentals, [for video click here](#).

10. Section 4.3, Feed Lines and SWR, [for video click here](#).
11. Section 4.4, Practical Antenna Systems, [for video click here](#). Also, see [this excellent video by K7AGE](#) that walks you through building your own inexpensive outdoor 2-meter ground plane antenna.
12. Section 5.1, Transmitters and Receivers, [for video click here](#).
13. Section 5.2, Digital Communications, [for video click here](#).  
See also [this video about using packet radio bulletin boards](#).
14. Section 5.3, Power Supplies and Batteries, [for video click here](#)
15. Section 5.4, RF Interference (RFI), [for video click here](#)
16. Section 5.5, RF Grounding, [for video click here](#)
17. Section 6.1, Contact Basics, [click here for video](#).
18. Section 6.2, Band Plans, [click here for video](#).
19. Section 6.3, Making Contacts, [for video click here](#).
20. Section 6.4, Using Repeaters, [for video click here](#)
21. Section 6.5, Nets, [for video click here](#)
22. Section 6.6, Emergency Communications, [click here for video](#)
23. Section 6.7, Special Activities, Modes, and Techniques, [click here for video](#).
24. Section 7.1, Licensing Terms, [for video click here](#)
25. Section 7.2, Working with the FCC, [for video, click here](#)
26. Section 7.3, Bands and privileges, [for video, click here](#)
27. Section 7.4, International Rules, [for video click here](#).
28. Section 7.5, Call Signs, [for video click here](#).
29. Section 8.1, Control Operators, [for video click here](#)
30. Section 8.2, Identification, [for video click here](#)
31. Section 8.3, Interference, [click here for video](#).
32. Section 8.4, Third-Party Communications, [for video click here](#).
33. Section 8.5, Remote and Automatic Operation, [click here for video](#)
34. Section 8.6, Prohibited Transmissions, [for video click here](#).
35. Section 9.1, Electrical Safety, [click here for video](#)
36. Section 9.2, RF Exposure, [click here for video](#).
37. Section 9.3, Mechanical Safety, [for video click here](#).
38. Preparing to take your examination, [for video click here](#).

#### The Questions

<http://www.arrl.org/files/file/Instructor%20resources/Technician%20Class/Technician%20rev%203-10.pdf>

#### The Ham Whisperer List of Question Portions:

**Technician Class License Course (Valid through June 2018)**

Lesson 1: T1A Section Amateur Radio services

Lesson 2: T1B Section Authorized frequencies

Lesson 3: T1C Section Operator classes and station call signs

Lesson 4: T1D Section Authorized and prohibited transmissions

Lesson 5: T1E Section Control operator and control types

Lesson 6: T1F Section Station identification and operation standards  
Lesson 7: T2A Section Station operation  
Lesson 8: T2B Section VHF/UHF operating practices  
Lesson 9: T2C Section Public Service  
Lesson 10: T3A Section Radio Wave Characteristics  
Lesson 11: T3B Section Radio and electromagnetic wave properties  
Lesson 12: T3C Section Propagation modes  
Lesson 13: T4A Section Station setup  
Lesson 14: T4B Section Operating controls  
Lesson 15: T5A Section Electrical principles  
Lesson 16: T5B Section Math for electronics  
Lesson 17: T5C Section Electronic principles  
Lesson 18: T5D Section Ohm's Law  
Lesson 19: T6A Section Electrical components  
Lesson 20: T6B Section Semiconductors  
Lesson 21: T6C Section Circuit diagrams  
Lesson 22: T6D Section Component functions  
Lesson 23: T7A Section Station Radios  
Lesson 24: T7B Section Common transmitter and receiver problems  
Lesson 25: T7C Section Antenna measurements and troubleshooting  
Lesson 26: T7D Section Basic repair and testing  
Lesson 27: T8A Section Modulation modes  
Lesson 28: T8B Section Amateur satellite operation  
Lesson 29: T8C Section Operating activities  
Lesson 30: T8D Section Non-voice communications  
Lesson 31: T9A Section Antennas  
Lesson 32: T9B Section Feedlines  
Lesson 33: T0A Section AC power circuits  
Lesson 34: T0B Section Antenna installation  
Lesson 35: T0C Section RF Hazards