Teaching One-Day, “Ham Cram” Technician Classes

By Dan Romanchik, KB6NU, ARRL MI Section Training Manager

Every club should be teaching amateur radio classes. There are a couple of reasons for this. First, new members are the lifeblood of any organization. Without new members, clubs die a slow death. Turnover is inevitable. If your club doesn't teach classes, where are you going to get new members?

Second, teaching classes is good for the amateur radio service. New hams means new folks that bring their energy and ideas into amateur radio, and that vitality is always welcome.

Although it's somewhat controversial, I think one of the best ways to bring new people into the hobby is by conducting one-day Technician classes. These classes, sometimes called "ham cram" classes, don't really teach the material in any depth, but rather teaches students just enough to pass the test. The theory behind this is that once someone gets their license, they'll be in a better position to learn by doing.

The purpose of this article is not to debate the merits of the "ham cram" approach, but rather how to teach one successfully. Along the way, I've learned a few things about how to find and sign up students, where to hold the classes, what materials to use, some tips on how to teach the class, and a bunch of other miscellaneous stuff. I hope that some of this will be useful when you decide to teach a class wherever you are.

If you schedule it, will they come?

The first thing you need to do is to decide on a date and then find a venue for your class. These are kind of interactive. I now hold all my classes at the Ann Arbor Hands-on Museum. These folks have been really great, allowing us to use one of their classrooms for free. The kicker is that we get the classroom only if they have not scheduled a revenue-generating activity, such as a birthday party.

In practice, this is usually not a big deal. I'll suggest a date, and then they tell me if a room is available or not. If one is, I'm all set. If not, they tell me when rooms are available, and I choose one of those dates.

You may not be as lucky as I am when it comes to finding a venue for your class. Don't worry, though. Once you start looking around, you'll find spaces where you can hold your class without having to pay an exorbitant fee. Here are some suggestions:

- Community colleges.
- Red Cross.
- Public libraries.
- Town halls.
- Churches.

Once you've selected a venue, review what facilities they have. The most important thing is that you're going to need some kind of chalkboard or whiteboard so that you can draw diagrams while you teach. If you plan to use a slide presentation, check to see if the room has some kind of screen. If it has neither, you're going to have to provide these yourself.

It's also important that the room has enough space for the number of students that you expect. You don't, for example, want to have to cram ten or twelve people into a small conference room that's designed to accommodate only half than number.

Another scheduling consideration is whether or not you can get Volunteer Examiners (VEs). I am fortunate that my club has a great VE team that is very accommodating. There are many VEs on the team, and in the last few years, I've only had to give them the time, date, and location, and the team has shown up. Your mileage may vary on this.

Putting butts in seats

The next thing that you have to do is find students for your class. The first place to start is your own club. The club members may all have licenses, but they may also have family members, neighbors, or co-workers that have shown an interest in amateur radio. Get them to pass on your class information to these folks. Other ways to advertise your class include:

- Send out a notice to clubs in your area. I get the e-mail addresses of the newsletter editors of amateur clubs within 50 miles of Ann Arbor, MI (where I live) by going to http://www.arrl.org/find-a-club. I then send them a short description of the class and ask that they put this information in their club newsletter. This always results in a student or two. Also, check to see if there are any hacker or maker groups in your area and send them notices, too. These groups are great places to recruit new hams.
- Tell your section manager and ACC. Send an e-mail to your section manager (SM) and affiliated club coordinator and ask them to let people know. The SM puts out a monthly newsletter that goes to every ARRL member in your section, and so is a good way to get the word out.
- ARRL Find-a-Class. If you're a registered volunteer instructor, you can list your class on the ARRL website by going to http://www.arrl.org/list-a-license-class. To be honest, I'm not sure if I've ever gotten a student from this service, but it's not hard to list your class, so you

might as well do so. By the way, if you're not a registered volunteer instructor already, go to http://www.arrl.org/volunteer-instructors-mentors and sign up. There are some benefits to doing so, and it doesn't cost anything.

- Newspapers, magazines. Send in an event listing to your local newspapers and magazines. Many of these publications now have online calendars that list all kinds of different public events, and because there are no space limitations, nearly every event gets into the calendar.
- Post flyers. Another thing you might think about doing is to post flyers around town in grocery stores, coffee houses, libraries, etc.

The notices and flyers that I send out include the time and date of the class, a basic description of the class, a link to the study guide on my website (I use my own study guide, of course), and my contact information. Whenever anyone contacts me about the class, I record their name and e-mail address in a spreadsheet. They may not be able to attend this class, but if you keep them on the list and notify them when you schedule subsequent classes, you'll get them to attend sooner or later, if they are really interested. This list is really the cornerstone of my recruiting efforts.

Free or fee?

Before you send out notices, you need to decide whether or not you're going to charge a fee for the class. At first, I did not charge a fee. The problem with this approach is that some students just didn't bother to show up.

So, about a year ago, I started charging a $10 fee and I require that they send me this fee before the class. I accept checks and PayPal. This has definitely improved attendance. My theory is that once they've paid, they're less likely to just skip the class. And, before you get the idea that I'm getting rich off the students, let me add that all the money I collect goes towards the expense of maintaining and enhancing our club station, WA2HOM, at the Hands-On Museum.

Choosing a study guide

Before you start teaching, you're going to have to decide on what study guide you tell students to get. For me, this is a no-brainer. I wrote my own! You can find it on my website at http://www.kb6nu.com/tech-manual/. Students can download a free version, buy an e-book version from Amazon or Barnes&Noble, or buy a printed version from me directly.

As the name implies, my *No-Nonsense Technician Class License Study Guide* is a straightforward guide to passing the Tech test. What I did was to first take each question in the question pool and reword them as statements. Then, I re-arranged them so that related questions appear next to one another and added text to give the questions some context. It doesn't go very deeply into each topic, but it does give readers enough context so that they understand the intent of the question and perhaps why it's important to know the answer.

There are plenty of other study guides available. You can have them purchase one from the ARRL or obtain one of the other free ones out there.

Whichever one you choose, I think it's important that you stress that the students prepare for the class by reading through the study guide at least once or twice. There is, after all, a limit on how much you can cram into them in seven hours. I have found that most of the students who fail the test after my class did not prepare at all, thinking that they could wing it. They should also take some online practice tests, so that they can judge how much they already know and prepared to ask questions about the test questions that the don't understand. I tell them that if they do not prepare, the chances are that they will fail the test.

Teaching the class

I wrote my study guide with the one-day Tech class in mind. I like to cover the technical topics first, when the students are still relatively fresh, so the first thing I cover in class is electrical principles, not FCC regulations, which is what the first section of the question pool covers. Here's my list of topics:

- Electrical Principles
- Electronic principles and components
- Radio and electromagnetic wave properties
- Antennas and Feedlines
- Amateur Radio Signals
- Safety
- Station Setup and Operation
- Operating Procedures
- Rules and Regulations

The class starts promptly at 8:30 am. I don't wait for everyone to show up. There is a lot of material to cover, and I don't think that it's fair to make those that show up on time wait for the tardy folks.

The first thing we do is introduce ourselves, just like you might do at a ham radio club meeting. Then, I tell them where the rest rooms are, when we'll be taking breaks, and perhaps some other "housekeeping" kinds of things. I make it clear that we're going to have to really focus to get through all the material by 3:00 pm.

After the introduction, I pretty much follow the study guide page-by-page. I talk a little bit about the concepts, then cover the questions. So, for example, I talk about what voltage and current are, and then say something like, "The question on the test is, 'What is the electrical term for the electromotive force (EMF) that causes electron flow.' Answer: voltage. Question: 'What is the basic unit of electromotive force?' Answer: the volt." I often repeat the answer for emphasis.

I tell lots of stories from my own personal experience. For example, in the section "Troubleshooting common problems," there's a question, "What are some useful things to try in correcting a radio frequency interference problem?" The answer is "All of these choices are correct," with the other choices being snap-on ferrite chokes, low-pass and high-pass filters, and band-reject and band-pass filters.

The story that I tell to make the point is about when I first set up a 40m dipole at my current QTH. I built the antenna, strung it up between the house and a tree, and when I put the antenna analyzer on it, found that it didn't even require any tuning. Feeling pretty good about myself, I headed down to the shack to make a few contacts with it.

Well, as soon as I started calling CQ, my wife stormed into the shack. "What are you doing?" she asked. Taken totally by surprise, I answered, "I'm just making a few contacts." "Well," she said, "You're making the garage door go up and down."

As it turned out, there was enough RF being coupled into wires connecting the garage door opener to the switch on the wall that I was indeed opening and closing the garage door. Fortunately, I had some snap-on ferrite chokes and putting one at the garage door opener input fixed the problem.

Watch the time

While anecdotes are great, don't go overboard. The reason for this is that it's very important that you move quickly through the material, so that you cover everything. One time, I found myself running out of time, so I skipped some questions on the International Telecommunications Union (ITU). After the test session, one of the Volunteer Examiners pulled me aside and said, "Dan, nearly all the students missed the question on the ITU. Next time, you might want to make sure to cover that." Fortunately, none of the students in that class failed the test, but I would have felt really bad if one of them had failed by one question.

The same goes for questions from the students. I encourage the students to ask questions, but you have to be careful that when answering them that you don't get too long-winded or too off-topic. Remember how much material that you have to get through by 3:00 pm.

The way I keep myself on time is to continually watch the clock, keeping in mind how many pages I've already covered and how many pages I have yet to cover. My study guide has 44 pages of material, so I try to make it through page 20, the section on Amateur Radio Signals, by the lunch break. The material after that is less technical and can be covered more quickly.

Talking about breaks, we take a half-hour lunch break and two 10-15 minute breaks. I suggest that people bring a bag lunch so that they don't take more than a half hour for lunch. I always bring one myself, so that I can chat with the students and perhaps answer off-topic questions. Just as I start on time at 8:30 am, I also don't extend the breaks.

Another tip to save time is to draw the schematic diagrams in Figures T1, T2, and T3 on the chalkboard or whiteboard before the class starts. This will allow you to do a nice job drawing them, and not take up valuable class time doing so.

No PowerPoints!

That pretty much covers it as far as my teaching method goes. You'll notice that I made no mention of PowerPoint presentations. I don't use them. Not only that, I think that they're bad for a class like this. They slow you down and put the students to sleep. You need to be dynamic and engaging and interesting to keep the students involved and awake. When was the last time you sat through a dynamic and engaging PowerPoint presentation? Here are some other miscellaneous thoughts:

- This is not a great format for teaching kids. Because there is so much material to cover in such a short time, it requires a lot of focus. Many kids don't have that kind of focus. Having said that, I have had kids in the class, and they have passed the test afterwards. The most memorable were two brothers, aged 10 and 12. As I was explaining the different forms of the Ohm's Law equation, I said, "This is simple algebra." As soon as they heard me say that, they shouted, "But, we haven't had algebra yet!" I made sure to pay special attention to these boys during the class, and keep them engaged by asking them questions throughout. I'm happy to say that they both passed.
- Tag-team approach. When I first started teaching this class, and from time to time afterwards, I have taught this class with a partner. When you have a partner, one can do the lecturing while the other reads off the appropriate questions and answers. This approach has worked well, and takes some stress off a single teacher.

- Evaluation form. I haven't had the students fill out an evaluation form in the past, but I'm planning to start using one. This should be a good source of feedback, and it will help you improved your class.
- Follow up classes. I currently don't teach any follow-up classes, but have heard of some clubs that do. The follow-up classes teach things like how to program an HT, how to build an antenna, how to participate in a net, and other topics like that. While I don't have formal classes to teach my students these things, I do tell them to feel free to e-mail me with questions, or come down to our club station when I'll be there, and I can help them one-on-one. Some of them actually take me up on my offer, and I've become good friends with some of them.
- General class. Soon after you've helped a number of folks get their Tech licenses, you'll get asked to conduct a General class. I've taught several of these, and have had good success with them. I use a more traditional approach for these classes. They consist of eight to ten, two-hour sessions and covered the material in more depth. That is to say I didn't just teach the answers to the questions in the question pool.

I hope that this article has encouraged you to run one of these classes where you are, or, if you already conduct them, I hope that it has given you some ideas on how to improve your classes. I'd love to hear about what's worked for you and what hasn't. Please feel free to e-mail me at cwgeek@kb6nu.com or to phone me at 734-930-6564.

About the Author

I have been a ham radio operator since 1971 and a radio enthusiast as long as I can remember. In addition to being an active CW operator on the HF bands:

- I blog about amateur radio at KB6NU.Com, one of the leading amateur radio blogs on the Internet.
- I am the author of the *No-Nonsense Technician Class License Study Guide* and the *No-Nonsense General Class License Study Guide*. These study guides are available as a free PDF file, in e-book format, and even in a traditional print version. See http://www.kb6nu.com/tech-manual for more information.
- I send out a monthly column to more than 300 amateur radio clubs in North America for publication in their newsletters.
- I am the station manager for WA2HOM (http://www.wa2hom.org), the amateur radio station at the Ann Arbor Hands-On Museum (http://www.aahom.org).
- I teach amateur radio classes around the state of Michigan.
- I serve as the ARRL Michigan Section Training Manager and conduct amateur radio leadership workshops for amateur radio club leaders in Michigan.

You can contact me by sending e-mail to cwgeek@kb6nu.com. If you have comments or question about any of the stuff in this book, I hope you will do so.

73!

Dan Romanchik, KB6NU