An e-newsletter for
ARRL registered instructors and teachers

Debra Johnson K1DMJ, Editor

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Resources for Licensing Instructors

http://www.arrl.org/es/instructor-resources/

Resources for Teachers

http://www.arrl.org/FandES/ead/teacher/

Education & Technology Program:
http://www.arrl.org/FandES/tbp/

Teachers Institute on Wireless Technology:
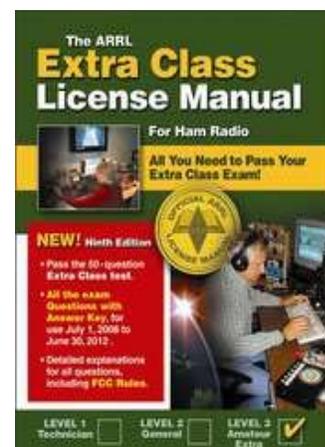**http://www.arrl.org/FandES/tbp/ti.html**

New ARRL Extra Class Study Manual Released

ARRL's new Extra Class License manual and Extra Class Q&A are now in stock. I've asked Ward Silver, the manual editor to provide an overview of the changes in content and organization of the new manual.-editor

By Ward Silver N0AX

The biggest change to the Extra Class License Manual is the reorganization of its content. Previous editions presented material in the same order as the Element 4 question pool. With so many students self-taught, this method is felt to be more appropriate for the students to learn on their own and will increase their retention of what is taught. References to the questions covered in each section guide the student to check their understanding as they progress through the material. This approach has worked well in the "Ham Radio License Manual" (Technician class, Element 2) and "General Class License Manual" (Element 3).

To help instructors make the change to the new organization, supporting documents are provided. First, a Topic List in the form of an outline lists all major subject areas in the manual. To help insure complete coverage of the question pool, a back-reference for every question shows the primary manual page on which material pertinent to the question can be found. The Extra Class License Manual website http://www.arrl.org/eclm contains supplemental material, such as a list of very helpful math tutorials (see "Math Supplement" on the Web site) and an expanded glossary. When errata are found, a list of corrections will be maintained on the Web site, as well.

The question pool update resulted in new topics being added and obsolete topics being dropped. The following is an overview of some of the more noticeable changes:

- Digital modes - this section has been updated to current practices. PSK and multi-carrier modes are covered in more detail.
- Operating practices - more coverage of digital operation is included, such as message forwarding
- Station control - more effort is expended on digital operation, including systems such as Winlink
- Radio math - covered in its own section, topics such as coordinate

ARISS Program

FAQs:
http://www.rac.ca/ariss/faqariss.htm

Application:
http://www.rac.ca/ariss/arissapp.htm

Continuing Education Program
http://www.arrl.org/cep/

Contact Us

ARRL Education Services
Debra Johnson, K1DMJ
Education Services Manager
djohnson@arrl.org
(860) 594-0296

Mark Spencer, WA8SME
Education & Technology Program
Manager
mspencer@arrl.org

Rosalie White, K1STO
ARISS Program Manager
rwhite@arrl.org

Nancy Hallas, W1NCY
Education Services Assistant
nhallas@arrl.org
(860) 594-0263

Kim Mancuso
Education Services Assistant
kmancuso@arrl.org
and Continuing Education Program
Administrator
cep@arrl.org
(860) 594-0242

systems and conversions has been rewritten
- Electrical principles - the material has been streamlined to focus on the basics and what is needed to pass the exam
- Semiconductor devices - obsolete devices are dropped or greatly reduced in emphasis
- Opto-Electronics - more coverage of photovoltaic devices
- Amplifier circuits - discrete and op-amp circuits are now together along with intermod and stability topics
- Signal processing circuits - additional coverage of DSP, DDS, and SDR topics
- Filters and Impedance matching - previously separated, these topics are now brought together
- AC waveforms and measurements - collects related topics (including PEP and EM fields) into a single section
- Digital protocols and modes - much more detail and discussion of basics that underlie digital communications in general
- Receiver performance - topics now presented in a single section
- Antenna systems - impedance matching systems and feedline mechanics are rewritten and brought together
- Antenna modeling - discussed in more detail from previous editions, including trade-offs and caveats
- Safety - a short section that focuses on the new topic of hazardous materials and summarizes RF Exposure topics

Where possible, it was attempted to reuse graphics from the previous edition, knowing that slides and graphics had been prepared by instructors. Several have been updated for a more refined presentation, but the originals are still correct. Some topics, such as fields, have received a different treatment that is more appropriate to students with less background in electronics. There was significant reuse of material from previous editions (thank you, editors), but this edition streamlines each presentation to cover basic concepts in support of the specific topics for the exam questions. If an exam question requires a specific calculation or answer, the text includes them specifically as examples or statements. This is a compromise between making the text too general and encouraging rote memorization.

The question pool committee attempted to remove questions about "factoids". It was felt that the vast majority of licensees do not retain memorized items. Questions about fundamentals were much more likely to be remembered and useful on the air. There are still a number of calculation-intensive questions, but they are reduced from previous pools and are (mostly) focused on areas likely to be of use to the Extra class licensee. There is a great deal of work remaining to make the question pool more representative of what an Extra class licensee actually does and is likely to encounter.

As always, instructor feedback is particularly welcome. Feel free to point out errors so that we can update the supplemental material and errata on the Web site. If your students are having problems with specific questions, please let us know so that supplemental material can be developed. If you have a favorite method of explaining a concept - send it along! The email address for this information is ead@arrl.org.

Thank you for volunteering your time to help others in their quest to complete the Upgrade Trail!

Robots and Radio at Granite Bay Montessori

A report from Brian Lloyd, 2007 Teachers Institute participant, extracted from email correspondence.

"…One other thing that has us very excited. My middle-school (grades 6-8) kids (all 7 of them) are entered in the regional science fair. We just

got a call from the people putting on the science fair asking three of the girls if they would be willing to be interviewed on TV with their projects. Two are working as a team and have built their own 4-wheel-drive autonomous robot controlled by a Parallax Propeller chip. The other one has interfaced a Portland Area Robotics Society Mark III robot to her Macintosh laptop using Bluetooth to make a voice-command robot. We are very excited about their prospects.

One last thing: of my 20 5th-8th graders, I have 7 who are ready to take the test for the tech ticket. I am going to schedule the VECs from the local club to come in and administer the test. I will probably run a second session to catch the stragglers. The kids love getting on the air and calling CQ. They all enjoy building equipment and they especially enjoy soldering on circuit boards. Several of them do really first-class work now.

So this is just to say thank you again. I was planning to do something new this year but your teacher-training class really helped me focus on how to bring it about. Much of what I am doing has to do with things that were introduced in the class. The parents are ecstatic about the new program and the hams I know have been amazingly helpful. (Phil Karn, KA9Q, VP of Technology at Qualcomm, even provided a grant for new computers for our technology center.) This has definitely turned out to be
 a win."

Here is our station as it stands now. Right now we are using my Icom IC-706mkII from home until the kids finish building the Elecraft K2 that you provided under the grant.

Brian Lloyd WB6RQN
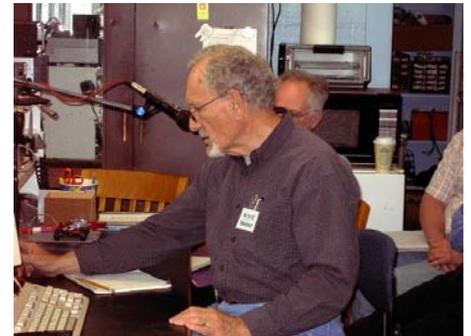Granite Bay Montessori School, Roseville, CA

A Playful Approach to Tech License Preparation

Dan Romanchik, KB6NU has developed an engaging study aid for Technician license preparation in the form of a game he has named **Tech Pursuit**. Dan developed the game while working with kids at Scarlet Middle School in Ann Arbor, MI. He decided to model the game after *Trivial Pursuit*. As with *Trivial Pursuit*, he assigned questions from the question pool to different categories so that it is played just like *Trivial Pursuit*. Dan reports that the game has been a big success with the middle school kids. It might play well with adults too! You'll find all of the materials Dan has developed to support the game on his website at http://kb6nu.com/tech-pursuit/.

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Try an HF Workshop at your next club meeting!

Sumner Weisman W1VIV submitted an article describing a program he and Ed Weiss, W1NXC of Framingham Amateur Radio Association planned to expose club members to HF Operating. Much to their surprise they learned that many members of the club had never operated on HF. I'm posting Sumner's description of the program on our website so you can take advantage of his ideas and the program outline he shared with us. Here's the link: http://www.arrl.org/es/articles/w1viv.pdf

The photo showsW1VIV teaching hands-on transceiver operation.

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An Invitation

I received a copy of the following correspondence from Jim Clark, N5RO to his fellow club members. It seems to me that Jim's invitation should be extended beyond his immediate audience. With his permission I'm sharing his thoughts with you.-editor

After a very long wait (was the FCC busy with the Granite Mt. Middle School Club License Application and Exams?), The Bradshaw Mountain Middle School Amateur Radio Club finally received it's club call sign

change from KE7QOP to W7BMB (Bradshaw Mountain Bruins)! At the 5th graders' visiting days and at the open house demo station many of next year's students expressed excitement about joining the club so we expect a great turnout for a full school year club next year and hopefully some young future ham operators.

Many of the graduating club members wanted to know why there is no ham radio club at the high school level. Club members: If you are concerned about the flight of technology from the U.S. to other countries as many of us are, consider getting involved in a school club effort. Years ago, there were ham radio clubs at many high schools - not true anymore. It DOES TAKE SOME SELLING, but the school boards ARE interested based on conversations we've had and the students can get excited about it with the right approach. We started at BMMS with a letter to the principal showing the educational advantages which led to a lunch-time demonstration by Jack, W7JLC last December. We attracted students with ideas from Terry, WB7TRE and by putting out weekly radio science facts "from the Radio Club" on the intramural closed-circuit TV announcements ("Channel One") and soliciting encouragement from the science teachers (an idea from Doug Hulse, K7AAC at Verde Valley Middle School).

It seems obvious that, as ham radio operators, we are uniquely qualified to contribute something to our society before we pass on. True, we contribute greatly in advancing the radio art (not so much as we use to though) and in public service, in accordance with the FCC mandate and the Communications Act. Beyond that however, perhaps we're in a position to do more by encouraging our youth to be more than video game experts in a communications and technology age - more so than any other group, since we have both communications AND computer knowledge beyond that of many others. The technology standards in most educational systems stress only computer knowledge and in our local school districts at any rate, these courses - beyond the mere basics - tend to be electives. Many of us have technical/engineering/scientific careers to which we were led because of obtaining amateur radio licenses in our youth, such as one of my own sons, becoming an advanced-class ham at age 9 - now a manager on the Mars program at JPL, and many of you as well.

If you feel inclined to do something else worthwhile along these lines after the wildfire season is over, in addition to those public service activities in which you are already engaged, contact me and I'll be more than happy to assist you in this effort.

73
Jim, N5RO
Jim adds that Terry Pemberton, WB7TRE and Doug Hulse, K7AAC deserve much credit for their dedication to the "school ham club" effort, along with Jack Crabtree, W7JLC (professor/advisor of the Embry-Riddle Aeronautical Univ. radio club) who was instrumental in getting the effort off the ground.

HQ Volunteer AA1T is Very Busy!

Grant Warner AA1T volunteers at ARRL HQ two days a week. He signed up to offer tours for visitors but lately he's gotten much busier than he anticipated.

Since instructors and teachers have been requesting pre-assembled parts kits for the Basic Electronics Course that Mark Spencer developed as part of the Education & Technology Program, we asked volunteers Bob Allison WB1GCM (now Lab Test Manager) and Roy Johnson N1IKM if they would be willing to help. They were happy to oblige and assembled some kits for us to make available through our online store. When Grant came on board as an HQ volunteer in January he agreed to take this on where Bob and Roy left off. Then we got word that we had a large order for the kits from Sage Group, a workforce training group in Tennessee. Grant agreed to pick up the tempo and build the kits needed to fill the order. He has assembled more than 300 kits in the past few months at his makeshift assembly line here in the Education Services Department! The kits and ARRL's *Understanding Basic Electronics* reference book are a big hit with the instructors at Sage Group. More information about the course and kit is at:
http://www.arrl.org/FandES/tbp/kits-projects.html

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Another New Face in the Education Services Department

We're happy to welcome Kim Mancuso as a part-time Education Services Department Assistant. Kim joined our team in April and has brought her personal energy and enthusiasm to supporting the needs of students and mentors in our Continuing Education Program. She is eager to learn about Amateur Radio and plans to study for a Technician license. Kim's duties also include administrative support for the Education & Technology Program and the Teachers Institute on Wireless Technology.

Nancy Hallas, W1NCY continues to provide support for the EmComm field instruction and examination component of the Emergency Communications training program and is providing support for content management of the CEP courses as well as assisting with instructor support.

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VEC Statistics

ALL VEC ACTIVITY	Jan 1 to May 31, 2006	Jan 1 to May 31, 2007	Jan 1 to May 31, 2008
LICENSE TYPE	LICENSE COUNT	LICENSE COUNT	LICENSE COUNT
EXTRA	1,324	3,329	3,194
GENERAL	1,619	✴13,123	6,257
TECHNICIAN	8,321	11,246	12,066
TOTAL	**11,264**	**27,698**	**21,517**

✴Effective February 23, 2007 the FCC changes the Amateur Radio Service Rules and no longer requires applicants to pass a Morse code exam. This creates a spike in the number of individuals seeking an upgrade to General.

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ARRL members first must register on the Members Only Web Site, http://www.arrl.org/members/. You'll have an opportunity during registration to sign up for e-mail delivery of this newsletter as well as others, including the ARRL Letter, W1AW bulletins, and other material. ARRL members may subscribe to the ARRL Instructor/Teacher Newsletter by going to the Member Data Page at: http://www.arrl.org/members-only/memdata.html?modify=1

Note that you must be logged in to the site to access this page. Scroll down to the section "Which of the following would you like to receive automatically via email from ARRL?" Check the box for "ARRL Instructor/Teacher E-Letter " and you're all set.

Past issues of this newsletter are available at http://www.arrl.org/FandES/ead/instructorNews.html. Issues are posted to this page upon publication.

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