Short Course Initiative Strategic Plan

February 2019

Short Course Committee:

Stefano Coraluppi (Chair), Lorenzo Lo Monte, Luke Rosenberg, Michael Wicks, Jason Williams

Background[1]

- AESS Short Course (ad hoc) Committee was first established in 2018
- Business model
  - 1-3 day courses to be hosted by AESS Chapters
  - Provides a lengthier presentation than DL program, allowing educational/professional development
  - Fee for participation. AESS Chapter covers speaker and venue costs; nominally, surplus 20% to AESS, 80% to Chapter
- Program info is available online
  - http://ieee-aess.org/aess-short-course

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Background[2]

- Short courses to date
  - Fabrizio, South Australia Section, CSS/AESS Chapters, Nov 2015 (1 day)
  - Lo Monte, South Australia Section, CSS/AESS Chapters, Nov 2017 (3 days)
  - Lo Monte, Germany Section, AESS Chapter, Oct 2018 (2 days)
  - Crouse, South Australia Section, CSS/AESS Chapters, Jun 2019 (? days)
- Instructors
  - Fabrizio, Lo Monte, Koch, Crouse (TBD March 2019)
  - Potential: Mariottini (Robotics/Autonomy, Draper)

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Current priorities

- Update/maintain website
  - Course descriptions must be added
- Identify instructors and advertise offerings
  - Email blast on 31 Oct 2018
  - Advertise regularly in QEB and Systems Magazine
  - Contact tutorial speakers from AESS conferences, and current DLs
  - Direct, targeted approach with *selected* Senior Members and Fellows (like mentoring program)
  - Seek help of BoG members (lecturing or advertising)
  - Email to be sent to all Chapter Chairs (http://ieee-aess.org/chapters/all)

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Backup

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Short Course Initiative

Chapter Summit

April 26, 2018

AESS Board of Governors Meeting

April 27-28, 2018

Oklahoma City, OK, USA

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Background

- Many AESS chapters have insufficient revenue to organise events, especially with external speakers.
- The Short Course Initiative was conceived back in May 2015 by then VP Education, Joe Fabrizio.
- He ran a pilot program in November of 2015 by giving a one-day workshop himself, drawing in many participants and proved his idea as successful, raising around AUS$10K for the local chapter.
- The South Australia Chapter ran a second “pilot” in 2017, bringing AESS Distinguished Lecturer, Lorenzo Lo Monte in to give a multi-day course, with equal success - 45 participants and AUS$15K profit.

- Short courses offer the opportunity to fund high quality speakers, provide useful training, engage with the local community and raise revenue which can be directed towards further events.
- Courses can be offered to industry, government laboratories and academia – these organisations typically have training budgets.

Organisation

- We recognise that the details of every course will be different.
- This outline provides some general guidance to assist in the planning.
- Short course organiser – should be the local AESS chapter chair with support from other local members.

- First step is to find a topic which will provide a reasonable audience.
  - Contact colleagues to find areas they would like training.
  - Reach out to large companies / research institutes in the local area.
  - Create an online survey for local IEEE members.
  - Contact the AESS industry relations and / or education organiser for advice (www.ieee-aess.org).

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Organisation

- Find a speaker and agree on the date.
  - This may be someone from the short course website or someone known in the local industry.
  - Contact the respective AESS technical panel and / or education committee for ideas.
  - Must first be approved by the AESS short course committee.
- Clarify details of the topic to be covered, duration of course and whether they would be prepared to give multiple courses in different (nearby) locations.
- Venue – Should be accessible for all attendees.
  - Requires seats / tables / projector / screen / lectern.
  - If possible, record presentation – see guide for recording presentations on the short course website.
  - Should hold between 10-50 attendees.
  - Be near public transport / suitable car parking.

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Budget - planning

- Goal is to keep costs as low as possible to attract large audience.
- Instructors should be offered an honorarium (although not everyone will be able to accept it).
- AESS can provide seed money of US$2500 to help with initial course expenses (then paid back from the course profits).
- All expenses of the instructor should be covered. They are expected to travel economy and stay at a hotel near the venue.
- Course costs should be chosen to match the expected expenses (see example spreadsheet for planning).
- Offer different pricing for IEEE members / non members and students.
- Profit should be split 80/20 with the local chapter / AESS.

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Budget – risks

- There may be financial losses due to poor attendance.
- To reduce risk we suggest:
  - Set an early bird payment date (~30 days before the course) to attract early registrations.
  - If sufficient registrations are not achieved by this date, then make it clear that the course may be cancelled and fees refunded.
  - AESS short course committee can offer advice if there are any concerns.
  - Chapter chairs should book venues / flights with the ability to cancel if necessary (i.e. flight insurance).
  - Only after the course is deemed ok to proceed, should funds be committed.

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Budget - planner

Expenses:	Cost ex Tax	Tax	Total cost
Airfare	2,688.64	268.86	2,957.50
Accomodation	500.00	50.00	550.00
Meals / incidentals	250.00	25.00	275.00
Speaker fee	5,000.00		5,000.00
AESS seed money payback	2,500.00		2,500.00
Credit card fees			448.70
Tax			2,389.72
Catering	3,089.08	258.92	3,348.00
Networking drinks	672.73	67.27	740.00
Course notes	1,389.76	138.98	1,528.74
Misc	17.88	1.79	19.67
			19,757.33

Income:	
AESS seed money	2500
Avg cost per day	300
Estimated number of attendees	30
Number of days	3
Expected Income	29500
Total profit	9,742.67
Chapter profit (80%)	7794.136
AESS profit (20%)	1948.534

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Registration - vTools

- Course can be organised with the IEEE vTools.
  - This is a free service offered by the IEEE (http://sites.ieee.org/vtools/)
  - Automatically connected to the L31 reporting tools.
  - Can manage registrations and send bulk emails.

  - In the USA - manages credit card payments and interfaces with the concentration bank accounts.
  - Easier to manage if the local AESS chapter has their own bank account separate to the section.
  - At this time, vTools Payment is still being developed for countries outside the US and Canada. An update will be provided as the payment method is formalized.

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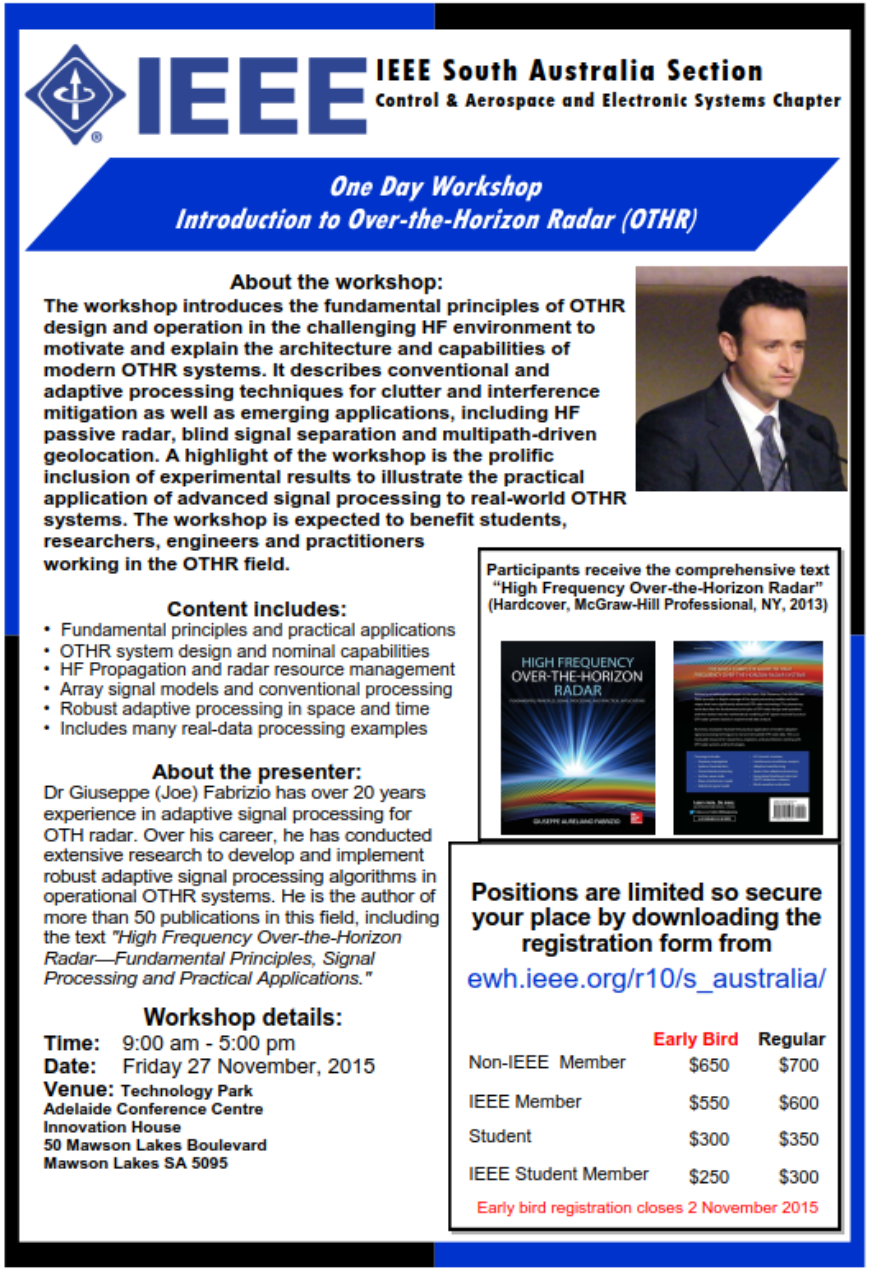
Advertising

- Create a flyer for advertising with all the required information.
  - Using vTools, send an eNotice to the local (and nearby) AESS sections.
  - Post it on the local (and nearby) IEEE section websites.
  - Using your networks, forward the flyer to local companies and universities.



AESS Instructors

- A list of AESS short courses and instructors will soon be compiled for the short course web site.
- If you would like to sign up as an instructor, the expectation is:
  - You provide a list of topics which are vetted by the short course committee.
  - Course topics are not to be too technical or too generic unless the audience has agreed to the content.
  - Agree to perform the course as a volunteer or with an agreed upon honorarium.
  - Be prepared to travel internationally.
- The slides are owned by the instructor, but if they agree to be recorded to have it included on the AESS Resource Center, they will sign a Copyright Form, and the slides will be posted as well.

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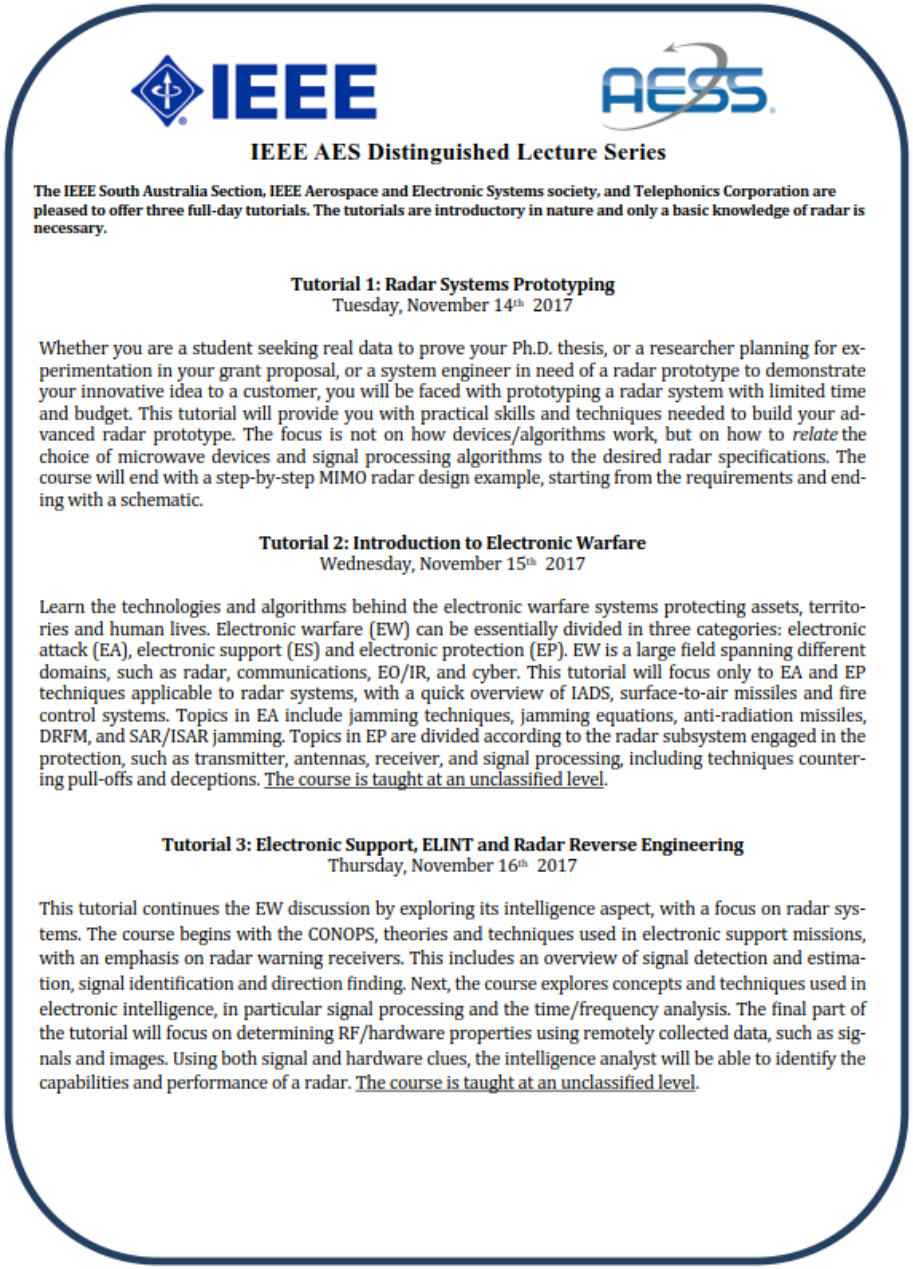
Course example

- Luke met with Lorenzo Lo Monte at the Seattle radar conference about a potential course.
- Luke then surveyed his organisation (Defence Science and Technology Group) to identify the greatest training need.
- Lorenzo Lo Monte agreed to visit Adelaide, South Australia and give a three day course on rapid systems prototyping and electronic warfare in November 2017.
- Lorenzo provided a short description of each day and Luke advertised the it as a Distinguished lecture course.



IEEE AES Distinguished Lecture Series

The IEEE South Australia Section, IEEE Aerospace and Electronic Systems society, and Telephonics Corporation are pleased to offer three full-day tutorials. The tutorials are introductory in nature and only a basic knowledge of radar is necessary.

Tutorial 1: Radar Systems Prototyping
Tuesday, November 14th 2017

Whether you are a student seeking real data to prove your Ph.D. thesis, or a researcher planning for experimentation in your grant proposal, or a system engineer in need of a radar prototype to demonstrate your innovative idea to a customer, you will be faced with prototyping a radar system with limited time and budget. This tutorial will provide you with practical skills and techniques needed to build your advanced radar prototype. The focus is not on how devices/algorithms work, but on how to *relate* the choice of microwave devices and signal processing algorithms to the desired radar specifications. The course will end with a step-by-step MIMO radar design example, starting from the requirements and ending with a schematic.

Tutorial 2: Introduction to Electronic Warfare
Wednesday, November 15th 2017

Learn the technologies and algorithms behind the electronic warfare systems protecting assets, territories and human lives. Electronic warfare (EW) can be essentially divided in three categories: electronic attack (EA), electronic support (ES) and electronic protection (EP). EW is a large field spanning different domains, such as radar, communications, EO/IR, and cyber. This tutorial will focus only to EA and EP techniques applicable to radar systems, with a quick overview of IADS, surface-to-air missiles and fire control systems. Topics in EA include jamming techniques, jamming equations, anti-radiation missiles, DRFM, and SAR/ISAR jamming. Topics in EP are divided according to the radar subsystem engaged in the protection, such as transmitter, antennas, receiver, and signal processing, including techniques countering pull-offs and deceptions. The course is taught at an unclassified level.

Tutorial 3: Electronic Support, ELINT and Radar Reverse Engineering
Thursday, November 16th 2017

This tutorial continues the EW discussion by exploring its intelligence aspect, with a focus on radar systems. The course begins with the CONOPS, theories and techniques used in electronic support missions, with an emphasis on radar warning receivers. This includes an overview of signal detection and estimation, signal identification and direction finding. Next, the course explores concepts and techniques used in electronic intelligence, in particular signal processing and the time/frequency analysis. The final part of the tutorial will focus on determining RF/hardware properties using remotely collected data, such as signals and images. Using both signal and hardware clues, the intelligence analyst will be able to identify the capabilities and performance of a radar. The course is taught at an unclassified level.

Course example

- Lorenzo could not accept payment, and his company offered to pay for accommodation.
- SA chapter paid for flights with insurance in case of cancellation.
- Fees were set low and an early bird deadline was set well in advance of the course.
- Manually organised registration and credit card payments – not ideal.
- 19 registrations by the early bird date – decided to go ahead with course.
- Organised printing of course notes, catering, venue at local university and drinks function on the second night.
- Final number of registrations were 45 and profit exceeded AUS$15K.

IEEE South Australia Section
Control & Aerospace and Electronic Systems Chapter

Workshop on Radar System Prototyping and Electronic Warfare

The IEEE South Australia Section and CAES Chapter invites you to attend three one day workshops by **IEEE Distinguished Lecturer Dr Lorenzo Lo Monte - Telephonics Corporation.**

About the workshop:
This three day tutorial workshop comprises a day on radar Systems Prototyping, and two days of Electronic Warfare. This includes an introduction day covering the electronic attack (EA), electronic support (ES) and electronic protection (EP) and a second day focusing further on electronics support, ELINT and radar reverse engineering. Participants can register for any combination of days as desired. Please see second page for a full description. Note that the course is taught at an unclassified level.

About the presenter:
Dr. Lo Monte has long and comprehensive experience in applied Radar, RF, DSP, EW system design and prototyping, from small companies, consulting, academia, research institutions, to large defense contractors and government agencies worldwide. He serves as Chief Scientist at Telephonics, a Top-100 defense corporation specializing in ISR solutions, with the role of translating research innovations into commercial products. Prior to that, he was an Associate Professor at the University of Dayton, where he created the courses "Intro to Radar," "Radar/RF Systems Design," and "Intro to Electronic Warfare." He was also the Director of the Mumma Radar Laboratory. Dr. Lo Monte has published over 60 peer-reviewed journal and conference papers and two book chapters.

Dates: 14th November – Radar Systems Prototyping
15th November – Introduction to Electronic Warfare
16th November – Electronic Support, ELINT and Radar Reverse Engineering

Time: 9:00 am - 5:00 pm

Venue: **University of Adelaide**
Ingkarni Wardli Building, B17

Early bird registration closes 5pm 1 October 2017 *

ABN: 96 817 212 761

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Chair C&AES IEEE SA
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DST Group Edinburgh
180L, PO Box 1500
Edinburgh SA 5111

Name
Phone/Email
Attendance
☐ Day 1: Radar Systems Prototyping
☐ Day 2: Introduction to EW
☐ Day 3: ES, ELINT and Reverse Engineering
Special requirements
Method of payment ☐ Visa ☐ MasterCard
Credit Card # Exp. date
Signature Dated / / 2017

Three day workshop on Radar System Prototyping and EW

Cost per day (including GST)	Early Bird	Regular
☐ Non-IEEE Member	$200	$250
☐ IEEE Member* or Adelaide Uni. staff	$180	$230
☐ Student	$100	$150
☐ IEEE Student Member*	$80	$130

Total cost for chosen days:
IEEE Member #
☐ Cheque ☐ Direct Deposit
Total:**
Commonwealth Bank Salisbury
BSB 065-122
ACC # 1020 9805

Confirmation of your registration will be e-mailed to you within 10 working days.
Please note that this workshop may be cancelled if an insufficient number of registrations is received by 10 November 2017. No refund is available after 10 November 2017.
* IEEE membership discount applies to current IEEE members.
** Note a 1.69% credit card fee will be added to this total.

Ideas for AESS events

- Outreach and networking events:
  - Bring a work colleague along to a sponsored event with a local member highlights the benefits of joining the AESS.
  - Industry networking event for students and young professionals.
- Sponsorship of student events
  - Conference travel for accepted papers
  - Student paper awards at conferences
  - Student competitions

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Summary of Resources

- Website www.ieee-aess.org
- Contact email address: admin@ieee-aess.org
- AESS short course committee:
  - Luke Rosenberg
  - Lorenzo Lo Monte
  - Judy Scharmann
  - Jason Williams
  - Joe Fabrizio

- Resources on the website:
  - List of approved instructors
  - Example budget and spreadsheet for course management
  - Short course recording guide
  - vTools tutorial
  - Example advertising flyer (.pub and .pdf)

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