



ELE101 Week-1

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Outline

Getting started

Survey

About Me

Curriculum

Schedule

Motivations

Tech. Part



Getting Started Survey

- No personal information is collected
- Think before answering
- Help us prepare better course content



About me

BSc, METU, 1998



MSc, AYBU, 2015



PhD, TOBB ETU, ...



TOBB ETÜ
Ekonomi ve Teknoloji Üniversitesi



Certificates

Certified Instructor and University
Ambassador at NVIDIA



GitHub Teacher




Work Experience

- ASELSAN
 - Türkiye's leading defence company
 - Aselsan 47. Rank in "Defense News' Top 100 list"
 - ~15 years
 - March '23



aselsan

Türk Silahlı Kuvvetlerini Güçlendirme Vakfı'nın bili. Kuruluşudur.



About Me

- 25 years in software development
- 15+ years in telecom field
- PhD student @ TOBB ETÜ
- Lecturer @ TOBB ETÜ
 - 2021-2022 Summer ELE361L course (Telecom Lab)
 - 2022-2023 Fall ELE361L
 - 2023-2024 Fall ELE361L
 - 2023-2024 Summer ELE361L
 - 2024-2025 Fall ELE361L
 - ELE495 Senior Project

Embedded Experience - Monitoring Receivers

TI 8-core DSP/SysBIOS

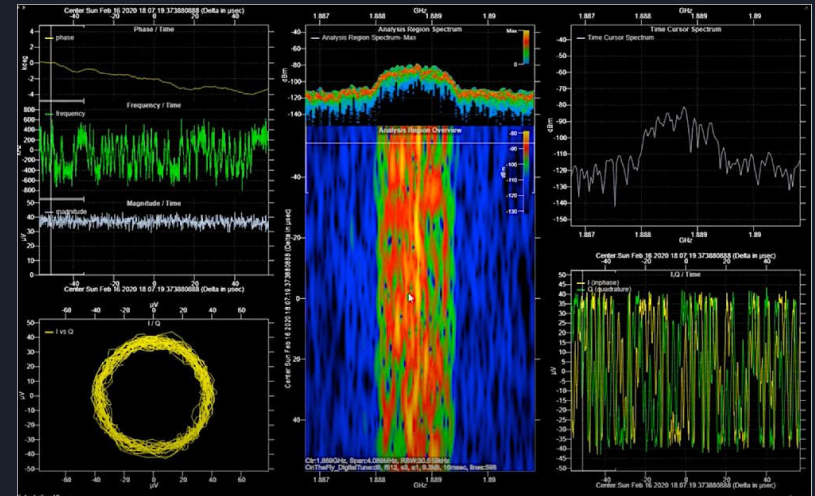


Intel i7/VxWorks



SIGINT: Signal Analysis Project

- Offline/Online Analysis
- Demodulation/Decoding
- Parameters
 - Center Freq
 - Modulation Type
 - Baud Rate



ELE361L

ELE361L

Communication Systems Laboratory

Course Info - 5min 



Open System

Course was designed from the ground up to have open system components.



Modular

Course has modular architecture. It can be customized or extended by adding new modules.



Real-World Signals

We are dealing with real-world signals like AM in airband, broadcast FM signals, or ADS-B signals emitted from aircrafts.



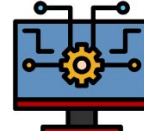
Professional Development

We support professional development of students in software. They learn industry-standard tools and improve their programming skills.



Mobility/Remote Opportunity

Course provides students mobility. They can complete their tasks wherever they feel comfortable. And it is also remote-ready.



Software-based

Since we are using Software Defined Radios, all modules are software-based.

<https://ele361l.github.io/>

Awards: 9. Başakşehir Innovation Contest

BASAKSEHIR
LIVING
LAB
ISTANBUL



Awards: 3. AOSB R&D and Innovation Contest



Events: SDR Academy Friedrichshafen, Germany



Events: GNU Radio Conference 2023



5-9 September 2023

Talk & Workshop



Skills

- Technical Skills
- Soft Skills



Technical Skills

- **Programming and Software Proficiency:**
 - Familiarity with programming languages (e.g., Python, C/C++, MATLAB) and industry-specific software (e.g., AutoCAD, SolidWorks, ANSYS).
- **Mathematics and Data Analysis:**
 - Proficiency in calculus, linear algebra, and statistical analysis to model systems and interpret data.
- **Design and CAD (Computer-Aided Design):**
 - Skills in creating and modifying 2D and 3D models for prototypes, simulations, and manufacturing processes.
- **Project Management and Planning:**
 - Competence in using tools like Microsoft Project or Primavera for managing timelines, resources, and budgets in engineering projects.
- **Electrical System Knowledge:**
 - Understanding of electrical components, circuits, and systems for interdisciplinary projects.
- **Testing and Quality Assurance:**
 - Ability to design, execute, and interpret tests to ensure that products meet safety, functionality, and reliability standards.



Soft Skills

- Soft Skills
 - Critical Thinking
 - Teamwork
 - Leadership
 - Being Positive
 - Problem Solving
 - Communication
 - Awareness

Savunma Sanayi Akademisi

7 Temel Sosyal Yetkinlik

<https://ssa.gov.tr/katalog/?id=5#book1/2>



ELEŞTİREL DÜŞÜNME

(Akıl yürütme, analiz ve değerlendirme gibi zihinsel süreçlerin tamamını kapsar.)



TAKIM ÇALIŞMASI

(Ekip ruhunu anlayabilme, uyumlu çalışabilme, birbirini yönetebilme, başkalarının çalışmalarını planlamayı ve organize edebilmeyi kapsar.)



LİDERLİK

(Liderlik, sadece istenileni yaptırmak değil insanlara dokunabilmek ve ilham olabilmektir; özgüven ve vizyon sahibi olabilmeyi kapsar.)



POZİTİF YAKLAŞIM & DAYANIKLILIK

(İniş çıkışlarla dolu iş dünyasında karamsarlık girdabına kapılmamak büyük önem taşımaktadır. Pozitif yaklaşım, sorunları çözmeyi, engelleri aşmayı ve başarıya giden yeni yollar yaratmayı kapsar.)



PROBLEM ÇÖZME & VERİ YÖNETİMİ

(Yaratıcı olmayı, inovatif düşünmeyi, öğrenmeye ve araştırmaya açık olmayı ve pes etmeme becerilerinin bütünü kapsar.)



KÜLTÜREL FARKINDALIK & İFADE YETKİNLİĞİ

(Çeşitli kitle iletişim araçları kullanılarak görüş, deneyim ve duyguların yaratıcı bir şekilde ifade edilmesine yönelik becerileri kapsar.)



SİBER FARKINDALIK

(Siber farkındalık, bireylerin ve kurumların çevrimiçi olarak karşılaşılabilecekleri riskleri anlamalarını ve bunlara karşı korunmalarını sağlar. Siber tehditleri tanıma, önleme ve müdahale etme yeteneklerinin tümünü kapsar.)

Kaynak: EDSP - Vision on defence related skills for Europe today and tomorrow / 2019



Content

1. Giriş ve Bölüm Hocalarının ve Program Sürecinin Tanıtımı (4 Saat – 2 hafta)
2. Mühendislik Tasarımı ve Mühendislik Etiği (4 Saat – 2 hafta)
3. Yazılı ve Sözlü Sunum Teknikleri (4 saat – 2 hafta)
4. Girişimcilik (2 saat – 1 hafta)
5. Python Dersleri (6 saat – 3 hafta)
6. Elektronik Mühendisliği Alt Alanlarından Sunumlar (4 saat – 2 hafta)



Schedule

1. GitHub
2. Markdown
3. CLI: Command Prompt/Bash Prompt
4. Linux
5. git
6. JupyterLab
7. Python
 - a. Basics
 - b. numpy, matplotlib
 - c. hexadecimal, dB Calculation, complex numbers
8. ssh
9. docker



Assessment

Attendance % 10

MidTerm (1) % 45

Assignments (5±1) % 45



Key Points to Remember

Some important points about the course

- Always bring your laptop to class
- Every user must have an account on [GitHub](#)
- Make installments required for the course into your laptop ASAP
- Check your TOBB ETU e-mail for any updates!
- Do not forget to sign in the attendance list!
- Common time for compensation?



Success Strategies

- Make time
- Assignments and Deadlines
- Understand the technology
- Do Your Work yourself
- Save Your Work!
- Start Early

Motivations

- ELE361L / ELE495
- The Missing Semester of Your “EE” Education
- Engagement
- Professional Development





The Missing Semester of Your “EE” Education

- Advanced EE Topics
 - Circuit Theory
 - Electronics
 - Electromagnetics
 - Control Systems
 - Communication Systems
- But, wait! What about the tools?
 - Version Control System - Git
 - Command Shell or terminal - Cmd or Bash
 - Python
 - Remote Machines - serial, ssh
 - Virtual machines or containers

[The Missing Semester of Your CS Education](#)



How to use GitHub?

Web interface

<https://github.com/>

Create an account if not yet!

Do not forget your account info!



Markdown Format

- <https://docs.github.com/en/get-started/writing-on-github/getting-started-with-writing-and-formatting-on-github/basic-writing-and-formatting-syntax>



Create your repo

- Add README
- Add a photo
- Download as zip
- Clone



Thanks!

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