



# ELE476

## Week-1

### Getting Started

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# Outline

Getting started

About Me

Curriculum

Schedule

Motivations

Installation

# 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
  - ELE361L since 22-23 Summer
  - ELE495
  - ELE101
  - ELE476

# Embedded Experience - Monitoring Receivers

TI 8-core DSP/SysBIOS

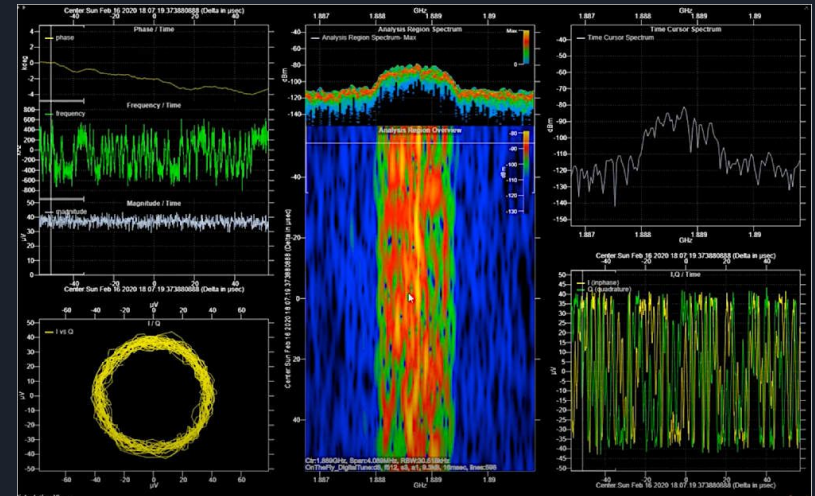


Intel i7/VxWorks



# 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.



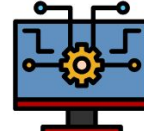
### Professional Development

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



**3. Ulusal Sanayi Odaklı AR-GE ve İnovasyon Proje Yarışması**

**ÖDÜL KAZANANLAR**  
*Akademisyen/Lisansüstü Mezun*

**BİRİNCİ**  
**Mücahid KUTLU**  
Tematik Alan: Bilgisayar  
100.000 TL

**İKİNCİ**  
**Mutlu KURBAN**  
Tematik Alan: Tekstil  
80.000 TL

**ÜÇÜNCÜ**  
**Murat SEVER**  
Tematik Alan: Elektrik/Elektronik  
60.000 TL

**500.000 TL**  
Ödül Havuzu

The poster features a central illustration of a large golden trophy with a red AOSB logo on its cup, surrounded by smaller trophies and gears. The background is dark with golden stars and a circular frame of stars around the central trophy.

# Events: SDR Academy Friedrichshafen, Germany



# Events: GNU Radio Conference 2023



5-9 September 2023

Talk & Workshop



# Schedule

1. Introduction/git/GitHub
2. GNU Radio Software Radio Toolkit
3. DSP with Python
4. Sampling and Nyquist Theorem
5. Quantization
6. Complex Sampling and Complex Numbers
7. Frequency Domain Translation
8. Aliasing
9. Convolution
10. Digital Filtering
11. Resampling: Decimation and Interpolation
12. Channelization



# Assessment

- Midterm (40) (40) %30



# 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

- Engagement
- Professional Development





# How to use GitHub?

Web interface

<https://github.com/>

Create an account if not yet!

Do not forget your account info!

Command

<https://git-scm.com/downloads>

# Install git – Windows

- go to [git-scm.com](https://git-scm.com)
- Run the installer to install git into your PC
- You can choose defaults





# Install git – Linux

```
$ sudo apt-get install git
```

You can open a terminal to use git commands



# Install git – Mac

- Install homebrew first
  - `/bin/bash -c "$(curl -fsSLhttps://raw.githubusercontent.com/Homebrew/install/HEAD/install.sh)"`
- `brew install git`

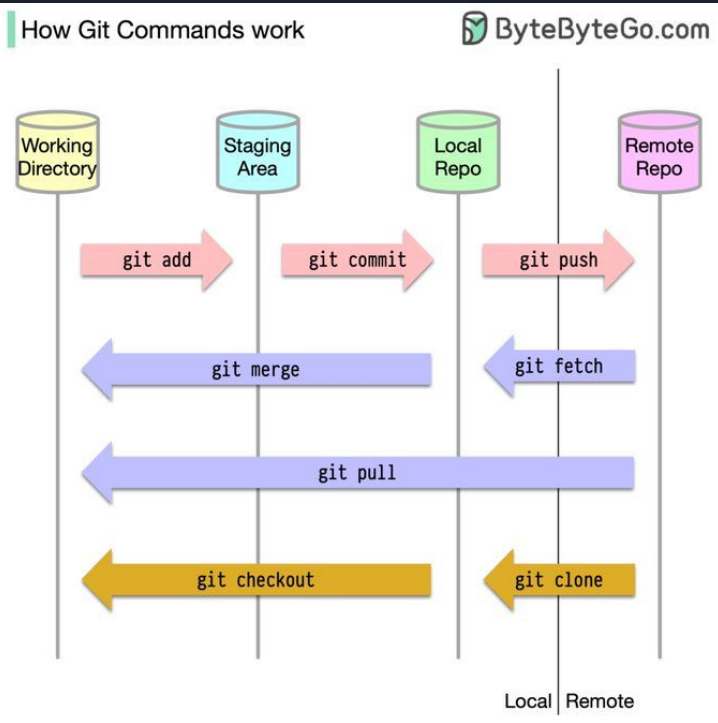
You can open a terminal to use git commands



# Git

- Git CMD or Git BASH
- git config needs to be done only once
- Always check with git status first!
- 3-stages
  1. Working directory
    - `git clone your_repo_name`
  2. Staging Area
    - `git add .`
  3. Repository
    - `git commit -m "your message"`
- Remote (server) update
  - `git push`

# Git







# Clone ELE476 Repository

- Create ELE476 folder under your home folder
- Change to ELE476 folder
- Use git clone command below to create a local copy on your PC
- git clone <Repo\_Address>
  - Replace <Repo\_Address> with original repo address you have just copied
  - git clone <https://github.com/ELE476-2425Summer/GettingStarted.git>



Thanks!

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