1. **Catalog Description** (4 credit hours) – Real world digital signal processing (DSP) tasks are presented and solved in a lab environment that utilizes a 150 MHz Floating Point DSP, a sophisticated code development tool and hardware emulation.

2. **Pre-requisites** – Microprocessor Applications EEL4744 and Signals & Systems EEL3135 and/or prior approval by the faculty teaching the class.

3. **Course Objectives** - To understand the differences between floating point and fixed point DSP implementations. To be able to design and implement low, high and band pass filters in the digital domain. To study and accurately employ appropriate digital sampling and windowing of data techniques. To understand and use the Discrete Fourier Transform (DFT) and Fast Fourier Transform (FFT) algorithms in Spectrum analysis related problems.

4. **Contribution of course to meeting the professional component** 4 hours of engineering science.

5. **Relationship of course to program outcomes**: EE2, a, b, c, d, e, f, g, h, i, j, k

6. **Instructor** Dr. Karl Gugel  
   a. Office location 265 NEB  
   b. Telephone 692-0800  
   c. E-mail address gugel@ufl.edu  
   d. Web site www.add.ece.ufl.edu/4945  
   e. Office hours MWF 10:30 - 11:30 am & 1:30 - 3:00 pm

7. **Teaching Assistant** Jennilee Navales  
   a. Office location 213B  
   b. Telephone N/A  
   c. E-mail address jennilee.navales@gmail.com  
   d. Office hours Monday & Tuesday 4 - 7 pm

8. **Meeting Times and Location** - 3rd Period (9:35 - 10:25 am) BLK 315

9. **Class/laboratory schedule**, three 50-minute periods each week in class and a weekly three hour lab. Initially there will be a maximum of 2 lab sections where each section can accommodate up to 13 students.

10. **Material and Supply Fees** - To Be Determined

11. **Textbooks and Software Required** - None
12. **Recommended Reading**


Discrete-Time Signal Processing by Oppenheim and Schafer, 1st Ed. (ISBN#: 013216292X)

13. **Course Outline**

Weeks 1 - 3: DSP Assembly Programming and Code Composer Development Problems 
Weeks 6 - 7: Low, High, Band Pass FIR Filter Design (Matlab) & Implementation (DSP) 
Weeks 8 - 9: Low, High, Band Pass IIR Filter Design (Matlab) & Implementation (DSP) 
Weeks 10 - 11: Understanding & Creating DFTs (Matlab, C and DSP code) 
Weeks 14 - 15: Special Topics: Vocoders, Sound Synthesis & Sound Effects

14. **Attendance and Expectations** - Attendance expected. Students are responsible for all announcements, assignments made during the classes. Cell phones and other electronic devices are to be silenced. No text messaging during class or exams. Requirements for class attendance and make-up exams, assignments, and other work are consistent with university policies that can be found at: https://www.add.ece.ufl.edu/4745

15. **Grading** – Homework (5%), 8 Labs (60%), Exam I (10%), Exam II (10%), Final Quiz (5%), Class Participation (10%)

16. **Grading Scale** Typical engineering grading scale. e.g., 90-100 A, 85-89 B+, 80-84 B, etc. where all grades will be curved in the end with the desired average grade being between a 'B' and 'B+'. For more information on grades and grading policies, please visit: https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

17. **Make-up Exam Policy** – If you have a University-approved excuse and arrange for it in advance, or in case of documented emergency, a make-up exam will be allowed and arrangements can be made for making up missed work. University attendance policies can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

Otherwise, make-up exams will be considered only in extraordinary cases, and must be taken before the scheduled exam. The student must submit a written petition to the instructor two weeks prior to the scheduled exam and the instructor must approve the petition.
18. **Honesty Policy** – All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a UF student and to be honest in all work submitted and exams taken in this course and all others.

“...failure to comply with this commitment will result in disciplinary action compliant with the UF Student Honor Code Procedures (http://www.dso.ufl.edu/sccr/procedures/honorcode.php)

19. **Accommodation for Students with Disabilities** – Students Requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.

20. **UF Counseling Services** – Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:
   - UF Counseling & Wellness Center, 3190 Radio Rd, 392-1575, psychological and psychiatric services.
   - Career Resource Center, Reitz Union, 392-1601, career and job search services.

21. **Software Use** – All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

23. **Lab Notes**

1. Students must wear eye protection while soldering.

2. Personal equipment or other items should not be left behind in lab.

3. Equipment like O-scopes and LSAs will need to be checked out (and back in) from the locked cabinet in the lab by a TA or other faculty. This equipment may only be used while a TA or other faculty are present in the lab.

5. When finished, students should return all borrowed equipment back to the original location on a particular shelf. Soldering irons should never be disassembled or have their tips removed. This is the general rule for all equipment in the lab; don’t disassemble our equipment without our consent first! Note: If a soldering iron appears to not be working, then use another one and notify a TA or Eric Liebner to obtain a new tip.