1. **Lab Coordinator**

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2. **Lab Instructors**

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3. **Catalog Description (1 cr.)**

A laboratory course that covers the following topics: basics of radio network planning and optimization, radio network planning for the GSM cellular system, radio network planning for the UMTS cellular system, GSM-UMTS co-existence and co-citing, radio network planning for the WiMAX broadband system, indoor GSM drive testing measurements and analysis, outdoor GSM drive testing measurements and analysis, UMTS drive testing measurements and analysis, and measurement-based wireless channel modeling. **Prerequisite:** EECE 640.

4. **Time and Place**

- Wireless Communications Lab Room, Raymond Ghosn Building

5. **General Description**

The mission of the wireless communications lab course is to introduce ECE students to the field of radio network planning and optimization. It would give them hands-on experience through a set of experiments using state-of-the-art radio network planning tools and drive testing equipment and software. It would also give them an understanding of practical wireless communication systems such as GSM/GPRS/EDGE, UMTS, and WiMAX.

The wireless communications lab course is an elective for fourth year undergraduate students in addition to graduate ICT students. It consists of ten experiments and each experiment consists of pre-lab preparation, lab exercises, and a post-lab report.

6. **Prerequisite**

- EECE 640 – Wireless Communications
7. References


8. Objectives

- Provide students with hands-on experience on radio network planning tools and techniques.
- Provide students with hands-on experience on wireless drive testing measurement systems and analysis.
- Train students to analyze, evaluate, and improve actual wireless network plans and channel models.
- Provide students with an understanding of wireless communication technologies such as GSM/GPRS/EDGE, UMTS, and WiMAX.
- Provide students with practical background in wireless communications that will allow them to practice in this field.

9. List of Experiments

1. Link Budget Analysis and Network Dimensioning: Part I
2. Link Budget Analysis and Network Dimensioning: Part II
3. GSM Radio Network Planning: Part I
4. GSM Radio Network Planning: Part II
5. UMTS Radio Network Planning
6. Radio Network Planning for a 2G/3G Seamless Network
8. WiMAX Radio Network Planning: Part II
9. GSM Drive Testing Measurements and Analysis
10. UMTS Drive Testing Analysis and Measurement-based Channel Modeling

10. Evaluation

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<td>Lab Reports</td>
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<td>Final Exam</td>
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