INTERNATIONAL MASTER’S DEGREE PROGRAMME IN WIRELESS COMMUNICATIONS ENGINEERING (WCE): WCE-RAN & WCE-RF & DD-WCE

WCE STUDY GUIDE & OPTIONS & CURRICULUM & SCHEDULE TOOLS FOR PLANNING OF STUDIES

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Web: https://www.oulu.fi/cwc/staff
Web Home for Enrolled WCE Students: http://www.oulu.fi/cwc/wce

WCE Orientation 2.9.2021
WCE CURRICULUMN STRUCTURE

- Consist of the basic, advanced, and optional (elective) study modules, practical training, and master’s thesis work.

<table>
<thead>
<tr>
<th>Study Module</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic WCE studies (RAN: 42, RF: 38 ECTS)</td>
<td></td>
</tr>
<tr>
<td>Advanced WCE studies (RAN: 28, RF: 33/34 ECTS)</td>
<td></td>
</tr>
<tr>
<td>Optional WCE studies (RAN: ≥ 17, RF: ≥ 16/15 ECTS)</td>
<td></td>
</tr>
<tr>
<td>Advanced practical training (3 ECTS)</td>
<td></td>
</tr>
<tr>
<td>Master’s (Diploma) Thesis work (30 ECTS)</td>
<td></td>
</tr>
<tr>
<td><strong>Total 120 ECTS</strong></td>
<td></td>
</tr>
</tbody>
</table>

ECTS = European Credit Transfer System, 1 credit 25-30 hours, 1 year ca. 60 credits
WCE-RAN STUDY OPTION

**Basic studies (obligatory):**
- Numerical matrix analysis
- Introduction to optimization
- Statistical signal processing I
- Statistical signal processing II
- Wireless communications I
- Radio engineering I
- Communication networks I
- Survival Finnish language course

**Advanced studies (choose):**
- Statistical communications theory
- Wireless body area networks
- Information theory
- Channel coding and modulation
- Convex optimization
- Modern topics in telecommun. & radioengineering

**Advanced studies (choose):**
- Wireless communications II
- Commun. signal processing
- Multiantenna communications
- Communication networks II
- Radio channels
- Antennas
- Signal processing systems
- Simulations & tools for telecommun.

**Optional studies (choose):**
- 27 elective courses
**WCE-RF STUDY OPTION**

**Basic studies (obligatory):**
- Electronics Design II
- Radio engineering I
- RF components & measurements
- Electronic system design
- Wireless communications I
- Statistical signal processing I
- Statistical signal processing II
- Survival Finnish language course

**Advanced studies (obligatory):**
- Electronics Design III
- Radio engineering II
- Telecom. circuit design
- Microel. packaging technologies
- Antennas
- Telecommmun. Eng. project or Electronics design & construction exercise

**Optional studies (choose):**
- Radiochannels
- Communication networks I
- Wireless communications II
- Commun. signal processing
- Simulations & tools for telecommun.
- Modern topics in telecommun. & radioengineering
- 29 elective courses

Optional (elective) WCE subject studies ~ 3-4 courses
- **RAN ≥ 17 ECTS**
- **RF ≥ 16/15 ECTS**
OPTIONAL STUDIES

• Optional (elective) courses plan must be submitted always to PSP advisor & coordinator Kari/Matti before taking courses.
• Finnish language studies are also suggested as electives during 1st yr
• Survival Finnish 2 ECTS course is mandatory
• EE & CSE & IPS studies for RAN & RF study options:
  • Electronics design courses & lab. works are offered as electives by the CAS, OPEM, MIC research units
  • Computer engineering & DSP courses are offered as electives by CMVS, MISG, UBICOMP research units
  • Courses from Information processing science (IPS)
• Courses offered by different UO faculties & departments are also possible, e.g.
  • Industrial engineering degree programme
  • Oulu Business School studies
  • You always have to ask coordinator’s opinion about suitability before taking them and submitting into your personal study plan (OodiPSP)!
LANGUAGE STUDIES AS ELECTIVES

• Max. 10 ECTS Finnish language studies is allowed into electives.
  • Check the schedules of Finnish courses and free seats in language study groups from Weboodi ASAP!
  • You can choose only from the following set of Finnish courses:
    • 900017Y Survival Finnish Course - 2 ECTS credits mandatory
    • 900013Y Beginners' Finnish Course 1 - 3 ECTS credits
    • 900053Y Beginners' Finnish Course 2 - 5 ECTS credits
• Reserve/book a Finnish language group ASAP, since number of groups/seats is typically limited every year!
• Language groups 7 and 8 of Survival Finnish are targeted for WCE students
• Language teaching is in distance learning mode on autumn term.
<table>
<thead>
<tr>
<th>Autumn 2021</th>
<th>Spring 2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Periods 1-2</td>
<td>Periods 3-4</td>
</tr>
<tr>
<td><strong>Numerical Matrix Analysis (5 cr, 1 p)</strong></td>
<td><strong>Communications Networks II (7 cr, 3-4 p)</strong></td>
</tr>
<tr>
<td><strong>Statistical Signal Processing I (5 cr, 1 p)</strong></td>
<td><strong>Wireless Body Area networks (5 cr, 3-4 p)</strong>*</td>
</tr>
<tr>
<td><strong>Wireless Commun. I (5 cr, 1 p)</strong></td>
<td><strong>Statistical Signal Processing II (5 cr, 3 p)</strong></td>
</tr>
<tr>
<td><strong>Multiantenna Commun. (5 cr, 1 p)</strong> **</td>
<td><strong>Antennas (5 cr, 4 p)</strong></td>
</tr>
<tr>
<td><strong>Channel Coding &amp; Modul. (5 cr, 1p)</strong> **</td>
<td><strong>Advanced Practical Training (3 cr)</strong> (recommended in summer 2022, training report will be done on autumn 2022 term)</td>
</tr>
<tr>
<td><strong>Survival Finnish Course (2 cr, 1 p)</strong>*</td>
<td><strong>Finnish Language studies (2-10 cr) and/or optional studies depending on personal study plan (PSP)</strong></td>
</tr>
<tr>
<td><strong>Basic Studies (all 42 cr obligatory)</strong></td>
<td><strong>Optional Studies (choose ≥ 17 cr)</strong></td>
</tr>
<tr>
<td><strong>Advanced Studies (choose ≥ 28 cr)</strong></td>
<td><strong>Other Mandatory Studies 33 cr</strong></td>
</tr>
</tbody>
</table>

* = will be lectured on even years (2022, 2024)  
** = will be lectured on odd years (2021, 2023)  
*** = choose period 1. or 2.
WCE-RAN SCHEDULE – 2ND YEAR 2022-2023

Autumn 2022
Periods 1-2

- Telecommunication Engineering Project (5 cr) or Electronics Design and Construction Exercise (6 cr, 1-2 p) (one of these can be chosen as advanced course)
- Information Theory (5 cr, 1 p) *
- Statistical Commun. Theory (7 cr, 1-2 p) *
- Convex Optimization (7 cr, 1-2 p) *
- Radio Engineering I (5 cr, 2 p)
- Signal Processing Systems (5 cr, 2 p)
- Finnish Language studies (2-10 cr) and/or optional studies depending on personal study plan (PSP)

Spring 2023
Periods 3-4

- Master’s Thesis Work (30 cr, 3-4 p)
- Commun. Signal Proc. (5 cr, 4 p) **
- Electronics and Communications Engineering Seminar (0 cr, 4 p)
- Maturity Test for Master’s Degree (0 cr, 4 p)

Basic Studies (all 42 cr obligatory)
Advanced Studies (choose ≥ 28 cr)
Optional Studies (choose ≥ 17 cr)
Other Mandatory Studies 33 cr

* = will be lectured on even years (2022, 2024)  ** = will be lectured on odd years (2021, 2023)  *** = choose period 1. or 2.

WCE Orientation 2.9.2021
# WCE-RF Schedule – 1st Year 2021-2022

## Autumn 2021

<table>
<thead>
<tr>
<th>Periods 1-2</th>
<th>Course</th>
<th>Credits</th>
<th>Periods</th>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Statistical Signal Processing I (5 cr, 1 p)</td>
<td></td>
<td></td>
<td>Radio Engineering I (5 cr, 2 p)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electronics Design II (6 cr, 1 p)</td>
<td></td>
<td></td>
<td>Electronics Design III (6 cr, 2 p)</td>
<td></td>
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<tr>
<td></td>
<td>Wireless Commun. I (5 cr, 1 p)</td>
<td></td>
<td></td>
<td>Radio Channels (5 cr, 2 p)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Survival Finnish Course (2 cr, 1 p)***</td>
<td></td>
<td></td>
<td>Survival Finnish Course (2 cr, 2 p)***</td>
<td></td>
</tr>
</tbody>
</table>

## Spring 2022

<table>
<thead>
<tr>
<th>Periods 3-4</th>
<th>Course</th>
<th>Credits</th>
<th>Periods</th>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Statistical Signal Processing II (5 cr, 3 p)</td>
<td></td>
<td></td>
<td>RF Components and Measurem. (5 cr, 4 p)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Radio Engineering II (6 cr, 3 p)</td>
<td></td>
<td></td>
<td>Antennas (5 cr, 4 p)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Microel. &amp; Packaging Technologies (5 cr, 3 p)</td>
<td></td>
<td></td>
<td>Advanced Practical Training (3 cr)</td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td>(recommended in summer 2022, training report will be done on autumn 2022 term)</td>
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</tr>
<tr>
<td></td>
<td>Finnish Language studies (2-10 cr) and/or optional studies depending on personal study plan (PSP)</td>
<td></td>
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</tr>
</tbody>
</table>

## Basic Studies

- All 38 cr obligatory

## Advanced Studies

- Choose ≥ 33/34 cr

## Optional Studies

- Choose ≥ 16/15 cr

## Other Mandatory Studies

- 33 cr

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* = will be lectured on even years (2022, 2024)

** = will be lectured on odd years (2021, 2023)

*** = choose period 1. or 2.
## WCE-RF SCHEDULE – 2ND YEAR 2022-2023

### Autumn 2022

**Periods 1-2**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telecommunication Engineering Project (5 cr) or Electronics Design and Construction Exercise (6 cr, 1-2 p)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electronic System Design (5 cr, 1 p)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telecommunications Circuit Design (6 cr, 1 p)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finnish Language studies (2-10 cr) and/or optional studies depending on personal study plan (PSP)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Spring 2023

**Periods 3-4**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master’s Thesis Work (30 cr, 3-4 p)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electronics and Communications Engineering Seminar (0 cr, 4 p)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maturity Test for Master’s Degree (0 cr, 4 p)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Basic Studies (all 38 cr obligatory)**

- Telecommunication Engineering Project (5 cr) or Electronics Design and Construction Exercise (6 cr, 1-2 p) (one of these is obligatory)
- Electronic System Design (5 cr, 1 p)
- Telecommunications Circuit Design (6 cr, 1 p)

**Advanced Studies (choose ≥ 33/34 cr)**

- Master’s Thesis Work (30 cr, 3-4 p)
- Electronics and Communications Engineering Seminar (0 cr, 4 p)
- Maturity Test for Master’s Degree (0 cr, 4 p)

**Optional Studies (choose ≥ 16/15 cr)**

- Finnish Language studies (2-10 cr) and/or optional studies depending on personal study plan (PSP)

**Other Mandatory Studies 33 cr**

- Basic Studies (all 38 cr obligatory)
- Advanced Studies (choose ≥ 33/34 cr)
- Optional Studies (choose ≥ 16/15 cr)

* = will be lectured on even years (2022, 2024)  ** = will be lectured on odd years (2021, 2023)  *** = choose period 1. or 2.

WCE Orientation 2.9.2021
UO SCHOLARSHIP FOR NON-EU/ETA STUDENTS

• Waiver to release the payment of tuition fee of 7500 Eur/yr
• To renew it for the second year, **at least 60 ECTS** is required to obtain by the end of 1st academic year, **31.7.2022**.
• **No UO scholarship for the 3rd year**, i.e. WCE degree must be obtained with scholarship by the end of 2nd academic year (**31.7.2021**), or student have to pay 10000 Eur for the third year.
• **Read the detailed terms of scholarship in ”Terms and Conditions” document received with your admission acceptance letter.**
• **No (sad) excuses are taken in account if student fails to obtain 60 ECTS.**
• **In the case of long term severe sickness during studies always ask medical doctor’s statement** concerning your ability to do studies
  • Contact e.g. Finnish Students Health Service, FSHS/YTHS, but not for an ordinary couple of days flu absence!
CWC’S GRANT FOR MASTER’S THESIS & INTERNSHIP

• If you wish to have a chance to obtain a CWC’s master’s thesis grant of 3000 Eur for the thesis work during second study year, also at least 60 ECTS is required to be passed by the end of 1st academic year (31.7.2022)

• NOTE:

  1. Student has always to follow either WCE-RAN or WCE-RF 1st year curriculum exactly, i.e., ”easy-to-do” elective studies that are not accepted for the 1st year personal study plan (PSP) are not counted into the sum of obtained credits required by the terms of CWC’s grant. Follow always schedule of basic and advanced courses!

  2. Study credits that are obtained with credit compensation are not included into the sum of obtained credits from a standpoint of UO tuition fee waiver, i.e. if you have done a course during your B.Sc. studies the content of which equals, or is closely similar to WCE course content based on recognition of prior learning process (RPL shortly) procedure.

• CWC also offers training grant of 1500 Eur for summer internship after 1st study year to be done at CWC.
CONSEQUENCE OF FRAUD & MISCONDUCT IN STUDIES

• If student participates in classroom or distance exam cheating (e.g. using smart phones, stored material, conversation, looking friend’s paper), or preparing course exercise report, or training report e.g. based on friend’s reports etc. (plagiarism) a hearing is always conducted by ITEE dean of education, and punishment consequences will always result.

• Carrying mobile phone in classroom exams results dean’s hearing!

• Students who have participated in misconduct in their studies are not eligible for:
  • Paid (contract-based) training topic (2 months x 2200 Eur/month)
  • Paid master’s thesis work (6 months x 2200 Eur/month)
  • CWC training scholarship (1500 Eur)
  • CWC master’s thesis scholarship (3000 Eur)
  • Doctoral studies at University of Oulu graduate school
  • To get job from CWC during studies or after graduation

• Excuses are not taken in account if student participates in cheating. Clearly the risk of cheating is not worth of taken!
WEB & SMART PHONE TOOLS FOR STUDYING

• Several tools to help in daily studies, and to monitor progress.
• You will get your personal userID (called account) and password when registering to UO for each academic year.
• account is needed to access web-based learning systems.
• Student tutor will help you to get familiar with these systems!
• Systems to be introduced next:
  • O365 → UO e-mails, Microsoft softwares (student edition)
  • TUUDO → timetable, credits, registrations, study news (smart phone-based)
  • Campus navigator → maps & places with smart phone application
  • PEPPPI → study guide, content of courses, teaching times & rooms
  • WEBOODI → personal study register, grades & credit points, course/exam registration, OodiPSP study plans, transcript of records
  • MOODLE → course home pages, stored lecture & exercise materials
  • OSAT → study rigth activation & extension, application of degree and degree certificate, recognition of prior learning (RPL) application, application of certificate of student status, resignation
  • OodiPSP → personal study plan (PSP) tool within Weboodi
  • ZOOM → distance learning system, can be loaded from UO software center
  • MATLAB → needed almost in all courses, Matlab & Simulink available from UO ICT administration’s software distribution
YOUR E-MAIL ADDRESS AT UO

• O365
  • Students will get their personal UO e-mail address & access for the *Microsoft’s Office 365 for Education* (O365) cloud service.
    - [http://www.oulu.fi/ict/office365](http://www.oulu.fi/ict/office365)
  • Take a glance of UO IT admin services:
    - [http://www.oulu.fi/ict/](http://www.oulu.fi/ict/)
  • Instructions to activate O365:
    - [https://www.oulu.fi/ict/activation](https://www.oulu.fi/ict/activation)
  • O365 offers a free Outlook e-mail, and free cloud services like Office Online applications (Word, Excel, PowerPoint, OneNote), calendar and OneDrive.
  • NOTICE: **WCE staff will use only official UO addresses to contact you, i.e. they probably will never contact you with your private e-mail addresses** (Gmail, Hotmail, Yahoo, etc.).
  • Format of official UO e-mail address designed to you is:
    - [account@student.oulu.fi](mailto:account@student.oulu.fi) or
    - [firstname.secondname@student.oulu.fi](mailto:firstname.secondname@student.oulu.fi)
YOUR E-MAIL ADDRESSES AT UO

• O365
  • Remember every now and then check your O365 e-mail account in order not to miss important messages from teachers, coordinator, officers, etc., or forward your O365 messages to your private e-mail server.
  • Instructions how to get O365 access can be found from: http://www.oulu.fi/ict/office365.
  • When encountering computer problems, just ask help from your Kummis, or from older WCE colleagues! They will certainly help you.
DAILY & WEEKLY COURSE CALENDARS

• **TUUDO**: [https://www.oulu.fi/forstudents/tuudo](https://www.oulu.fi/forstudents/tuudo)
  • TUUDO combines student and study services into one place.
  • TUUDO features:
    • Calendar for each day
    • Obtained credits and notifications of new credits
    • Credit statistics of passed courses from Weboodi
    • Registration for courses and exams
    • Map of the University and room search
    • Menus of campus restaurants
    • Study news
    • Use UO *account* to login into TUUDO.
    • Load TUUDO into your Android or iOS smart phone from [https://www.tuudo.fi/en/](https://www.tuudo.fi/en/)
TUUDO: HTTPS://WWW.TUUDO.FI/EN/

For Students

Tuudo is a mobile app, made for you, to make your student life simpler. With Tuudo, you manage your studies and ease your daily life, both on and off the campus. Enjoy your institution’s most important services and your study information on your mobile device – safely, simply and surely up to date.

Load this from Google Play or AppStore
CAMPUS NAVIGATOR

- You can find your location inside the campus, search for classes, restaurants, rest rooms, offices and meeting rooms, and get instructions on how to find your way in campus.
**PEPPI: HTTPS://OPAS.PEPPII.OULU.FI/EN/INDEX**

- **PEPPI** is a new system and evolving during 2021-22
- Properties from Weboodi will be moved into Peppi by end of 2021
- Main issues between Weboodi and Peppi in transition period

<table>
<thead>
<tr>
<th>What is done and where 2020-21</th>
<th>WebOodi</th>
<th>Peppi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course registration</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Study Guide</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Curriculums and curriculum planning</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Teaching times and places</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Study plans</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Grades and study points</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Transcript of records</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Course registration and timetable are available in Tuudo.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teachers can see their own timetable from O365-calendar.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

_OodiPSP_
Welcome to the Study Guide of the University of Oulu!

Here you can find curriculums, course information and timing for the courses.

More information about studying at the University of Oulu can be found in For Students pages: https://www.oulu.fi/forstudents/
## Wireless Communications Engineering (MSc, Tech) 2021-2022

### SHOW STRUCTURE

<table>
<thead>
<tr>
<th>Orientation</th>
<th>ECTS</th>
<th>1.ay</th>
<th>2.ay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Radio access networks</td>
<td>120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radio access networks study option, basic module 42 ECTS</td>
<td>42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Numerical Matrix Analysis</td>
<td>5</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Statistical Signal Processing I (in English) (in English)</td>
<td>5</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Wireless Communications I (in English)</td>
<td>5</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Introduction to Optimization (in English)</td>
<td>5</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Communications Networks I (in English)</td>
<td>5</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Statistical Signal Processing II (in English)</td>
<td>5</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Wireless Communications II (in English)</td>
<td>5</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Radio Engineering I</td>
<td>5</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Survival Finnish (in English)</td>
<td>2</td>
<td>✔</td>
<td></td>
</tr>
</tbody>
</table>
521348S Statistical Signal Processing 1 (in English), 5 ECTS

Course Units

521348S-3002 Statistical Signal Processing I  
31.08.2021 - 25.10.2021

Learning outcomes

Upon completion the student

- knows the key tools of linear algebra and quadratic optimization and can apply them in solving signal processing problems.
- understands how to handle complex valued random variables and processes.
- understands the key concepts in estimation theory such as the classical and Bayesian philosophies.
- masters the most important estimation principles such as minimum variance, maximum likelihood, least squares and minimum mean square error estimators.
- can derive an estimator for a given criterion and basic data models.
- can use the methodology of estimation theory to analyze the performance of estimators and compare to performance benchmarks such as the Cramer-Rao lower bound.
- understands the basics of detection and classification theory: hypothesis testing, receiver operating characteristics (ROC), the Neyman-Pearson and Bayesian detectors.

Content

Review of probability, complex valued random variables and stochastic processes; linear algebra, eigenvalue decomposition, use of Matlab; estimation theory, minimum variance unbiased estimator, Cramer-Rao lower bound, linear models, the concept of general minimum variance unbiased estimation, best linear unbiased estimators, maximum likelihood estimation, least squares estimation, Bayesian estimation, linear Bayesian estimation; statistical decision theory; receiver operating characteristics, hypothesis testing, matched filter.

Assessment methods and criteria

Completing the simulation project tasks, and a minor exams during the course. The minor exams can be retaken by a final exam later. In the final grade of the course, the weight for the examination is 0.7 and that of project report 0.3. Read more about assessment criteria at the University of Oulu webpage.

Form of instruction

Mode of delivery Face-to-face teaching and e-learning tool usage 
Face-to-face teaching and/or online teaching (lectures and exercises) 50h, Matlab simulation exercises in groups 30 h, independent work & passed assignment 50 h.
EVERYTHING STUDY-RELATED IS IN WEBOODI

- **WEBOODI**
  - All student’s study-related history like contact addresses, course & exams registrations, leaves, course marks, etc. are stored there, i.e. everything about you since first enrollment.
  - The most important system at UO, i.e., a ”mother” of all student-related web-based study tools.
  - Closed environment, i.e. *account* & PW needed
  - Course & exam registrations & exam results → everything is also seen in TUUDO
  - Also detailed description of courses, their schedule and classrooms: number of ECTS, prerequisites, learning outcomes, target group, timing, contents, mode of delivery, learning activities, assessment methods & criteria, grading, teacher’s contact e-mail
  - You will soon create your Personal Study Plan (PSP) in Weboodi
    - Shortly, OodiPSP is an E-document for the purpose of monitoring your study progress (by yourself and your personal study advisor/programme’s coordinator).
WEBOODI:
HTTPS://WEBOODI.OUNL.UNI/OODI/ETUSIVU.HTML?KIELI=6

Welcome to WebOodi!

NEWS AND ANNOUNCEMENTS (1)
Registration for academic year 2017-2018
04.05.2017

INSTRUCTIONS
You can browse course catalogues and search for instruction without logging in. In the top menu, choose Instruction and courses or function Search. To log in you need to have University of Oulu user account. Please check that your e-mail address is correct (section Personal data).

INSTRUCTIONS AND LINKS:
- If you are missing a user id, or you have problems with login, contact IT Services Helpdesk:

Feed your account & PW here
You can search teachers, contents, learning outcomes, prerequisites, implementation, timetables, exams, room info, etc. of the whole academic year 1.8.2021-31.7.2022 for each course by typing course name or course code here.
ALL COURSE MATERIALS & STUDY GROUP COMMUNICATION IS LOCATED IN MOODLE

**MOODLE**

- Interactive two-way channel for the purpose of communication between teacher and students
- Closed environment, i.e. all teacher’s materials & communications are protected with *account* & PW
- In addition course key is needed obtained from teacher after course registration
- Organized as folders for each course
- Lecture, class-exercise, exercise work share, instructions, etc. materials are stored there
- Your Kummi student will help you how to use MOODLE.
MOODLE: **HTTPS://MOODLE.OUNU.FI/**

Start from here
Continue here

HTTPS://MOODLE.OULU.FI/OU/EXT_LOGIN.PHP

Kirjaudu Oulun yliopiston käyttäjänä
Log in using University of Oulu account

Kirjaudu Oulun ammattikorkeakoulun käyttäjänä
uudella etusivulla
Log in using Oamk account via the new frontpage

Kirjaudu Haka-tunnuksella
Log in using Haka account

Kirjaudu Moodle-tunnuksella
Log in using Moodle account
Welcome to Wireless Communications I course

**Lectures** by Jari linatti and Timo Kokkonen
The first teaching time will be on Tuesday 1st of September 2020 (1.9.2020) at 14:15-16:00 in ZOOM. BE THERE!

Zoom link for teaching:
https://oulu.zoom.us/j/65085388263
Meeting ID: 65085388263

**Exercises** by Timo Kokkonen

**Simulation work** advised by Timo Kokkonen. **Starting 1.9.2020, and you will have time until 1.11.2020 to return your report.**

**Laboratory manual** is published inside the folder Laboratory Work.

**NOTE**: You will need a group (groups of two) in order to make and return laboratory work. **Groups MUST be formed before 13.9.2020 at 23:59.**

Requirements: Lectures, Exercises and Literature

The course is passed by:
- a minor (intermediate) exams (4 exams during the course) OR final exam
- AND by laboratory project (simulation work).

Note that all the exams will be held in Moodle.

**NOTE!** By doing homework assignments you can improve your exam based grade. In the final grade of the course, the weight for the examination result is 0.6, and that for the design work report 0.4.

HSP quizzes and pre-lecture exams will not improve your exam based grade. They are provided in order to help you learn more. Both of these are meant to be completed before lectures from each topic.

Zoom link for teaching:
https://oulu.zoom.us/j/65085388263
Meeting ID: 65085388263

**MORE INFORMATION**

**NOTE** also! This course replaces old WC I (5213235) 5 CU.

**REMEMBER** to give FEEDBACK!
OSAT: HTTPS://OSAT.OULU.FI/INDEX.PHP?LANG=EN_US

Feed your account & PW here
WHAT CAN A STUDENT DO WITH OSAT?

• In OSAT-system a student can fill in an electronic:
  • RPL (Recognition of Prior Learning)-application
  • Application for extended study period for completion of studies
  • Study right reactivation
  • Application for degree certificate
  • Resignation form
  • Application of certificate of student status
  • System login to OSAT is with university account.
  • A student with no valid university account can login with Citizen's account (suomi.fi).
  • Only PDF-format (.pdf) application attachments are accepted.

• OSAT guide:
# ZOOM DISTANCE LEARNING ENVIRONMENT

## Meetings

### Upcoming

<table>
<thead>
<tr>
<th>Time</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:00 PM - 04:00 PM</td>
<td>WCE programme's orientation event for n... (Meeting ID: 665 4104 2552)</td>
</tr>
<tr>
<td>10:00 AM - 12:00 PM</td>
<td>LTHT-kurssin seuraavien luentoaiikojen TI kl... (Meeting ID: 679 5975 3855)</td>
</tr>
<tr>
<td>10:00 AM - 12:00 PM</td>
<td>LTHT-kurssin seuraavien luentoaiikojen TI kl... (Meeting ID: 679 5975 3855)</td>
</tr>
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### Previous

<table>
<thead>
<tr>
<th>Time</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Tomorrow</td>
<td>No Meeting Passcode or Waiting Room</td>
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### Personal Room

<table>
<thead>
<tr>
<th>Time</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tomorrow</td>
<td>No Meeting Passcode or Waiting Room</td>
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</table>

### Meeting Templates

<table>
<thead>
<tr>
<th>Time</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tomorrow</td>
<td>No Meeting Passcode or Waiting Room</td>
</tr>
</tbody>
</table>

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WCE Orientation 2.9.2021
CONFUSED ABOUT ALL THESE WEB-TOOLS?

• The most updated information of each course schedule is always located in PEPPI and MOODLE.
• Follow them for each course!
• Don’t worry about these tools! You will learn them sooner than you will believe.
• Advice: Ask your Kummi, or your older IMP colleague students. They will certainly help you.
• Join also the first lecture of each new course, because the most important information for passing the course is always given then!
PERSONAL STUDY PLAN (PSP)

- Electronic PSP-plan is created with OodiPSP tool within Weboodi.
- A tool both for student and personal study advisor.
- PSP is a plan that includes the necessary choices and timing in order to graduate, and choice or RAN or RF study options.
  - How am I going to go through my degree programme?
- By using OodiPSP student will get an overall picture of studies dealing with contents and timing
  - Degree structure as starting point, i.e. start with your curriculum documents shared to you.
- Important part of PSP is study goals and following progress.
- You must create your own PSP by 1.10.2021!
  - PSP supervisor asks you for study progress & PSP meeting
- Video how to create your own PSP with OodiPSP tool (http://www.oulu.fi/oodienglish/node/19271)
YOUR PERSONAL STUDY PLAN AT OODI PSP

Responsible person at faculty or departmental level:
Creating degree structures

Student: Create and update PSPs

Student: Send PSP for approval?
  Yes
  Student: sends PSP for approval
  Email to Advisor

No
  PSP not ok
  Email to student

Advisor: Checks and comments on PSP

Advisor: Approves and archives PSP

PSP ok!

Approved PSP

WCE Orientation 2.9.2021
# Example for OODI PSP Outlook

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Content 2016-17</th>
<th>Planned ECTS</th>
<th>Completed ECTS</th>
<th>Obtained Grade 1...5</th>
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</thead>
<tbody>
<tr>
<td>A451225</td>
<td>Module of the Option, Wireless Communications Engineering</td>
<td>2016-17</td>
<td>30</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Compulsory</td>
<td></td>
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</tr>
<tr>
<td>031025A</td>
<td>Introduction to Optimization</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>27.10.2016</td>
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<tr>
<td>521321S</td>
<td>Elements of Information Theory and Coding</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>22.12.2016</td>
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<td>521316S</td>
<td>Broadband Communications Systems</td>
<td>5</td>
<td>5</td>
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<tr>
<td>521323S</td>
<td>Wireless Communications I</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>14.02.2017</td>
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<tr>
<td>521323S-02</td>
<td>Wireless Communications I, Exercise</td>
<td>0</td>
<td>5</td>
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<td>14.02.2017</td>
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<tr>
<td>521340S</td>
<td>Communication Networks I</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>09.02.2017</td>
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<td>4</td>
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<td>15.03.2017</td>
</tr>
<tr>
<td>521340S-02</td>
<td>Communication Networks 1, partial credit</td>
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<td>4</td>
<td></td>
<td>hyv</td>
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<tr>
<td>521324S</td>
<td>Communication Signal Processing I</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>08.02.2017</td>
</tr>
<tr>
<td>521336S</td>
<td>Mobile Telecommunication Systems</td>
<td>5</td>
<td></td>
<td></td>
<td>19.04.2017</td>
</tr>
<tr>
<td>Advanced module</td>
<td>Either Antennas or Radio Channels is chosen as compulsory (they are lectured in alternate years). Furthermore, choose the minimum of two courses from the set list.</td>
<td>29/16-31</td>
<td>11</td>
<td>29/16-35</td>
<td></td>
</tr>
<tr>
<td>A453271</td>
<td>Advanced module, Wireless Communications Engineering</td>
<td>2016-17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two courses from this set of four courses must be selected</td>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>521327S</td>
<td>Radio Engineering II</td>
<td>6</td>
<td>6</td>
<td>4</td>
<td>08.05.2017</td>
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<tr>
<td>521317S</td>
<td>Wireless Communications II</td>
<td>8</td>
<td></td>
<td></td>
<td>2016-17:S</td>
</tr>
</tbody>
</table>
YOUR ORIGINAL B.SC. DOCUMENTATION

- Bring your *original bachelor’s degree diploma certificate and transcript of records* to Faculty of ITEE student services cluster as will be told today by ITEE faculty’s officers.
- You must *show your passport and residence permit card* when bringing your documents.
- You will get a receipt that you have left your documents at the faculty office.
- You’ll get your documents back within one month.
- Coordinator will inform you, when you can pick up them back.
ENJOY YOUR STAY IN FINLAND!

FIND LIFE-LONG FRIENDS, AND CREATE SOCIAL & ACADEMIC NETWORKS IN ORDER TO BE CONNECTED IN A GLOBAL WIRELESS WORLD, WITH 5G AND BEYOND SYSTEMS (SEE OUR 6GENESIS FLAGSHIP PROGRAMME)!

HOPEFULLY COVID-19 PANDEMIA PASSES SOON!

Regards, WCE staff