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

OODIPSP  PERSONAL STUDY PLAN TOOL FOR PLANNING OF STUDIES

Dr. Kari Kärkkäinen

Room TS440 (4th floor)
Email: kari.karkkainen@oulu.fi, Tel: 029 448 2848, Mobile: 040 571 4761
Web: http://www.ee.oulu.fi/~kk/

Web Home for Enrolled WCE Students: http://www.oulu.fi/cwc/wce
Web Home for WCE Applicants: http://www.oulu.fi/university/masters/wce
WCE CURRICULMN STRUCTURE

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

<table>
<thead>
<tr>
<th>Study Modules</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic WCE studies (RAN: 40, RF: 36 ECTS)</td>
<td>36 ECTS</td>
</tr>
<tr>
<td>Advanced WCE studies (RAN: 30, RF: 36/37 ECTS)</td>
<td>36/37 ECTS</td>
</tr>
<tr>
<td>Optional WCE studies (RAN: ≥ 17, RF: ≥ 12/13 ECTS)</td>
<td>12/13 ECTS</td>
</tr>
<tr>
<td>Practical training (3 ECTS)</td>
<td>3 ECTS</td>
</tr>
<tr>
<td>M.Sc. (Diploma) Thesis work (30 ECTS)</td>
<td>30 ECTS</td>
</tr>
<tr>
<td>In total</td>
<td>120 ECTS</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):
- Introduction to optimization
- Numerical matrix analysis
- Statistical signal processing I
- Statistical signal processing II
- Wireless communications I
- Wireless communications II
- Radio engineering I
- Communication networks I

Advanced studies (choose):
- Multiantenna communications
- Statistical communications theory
- Wireless body area networks
- Information theory
- Channel coding and modulation
- Convex optimization
- Modern topics in telecommun. & radioengineering
- Telecommmun. Eng. project or Electronics design & construction exercise

Optional studies (choose):
- 30 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

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 other elective courses

Optional WCE subject studies ~ 3-4 courses
• RAN ≥ 17 ECTS
• RF ≥ 12-13 ECTS
OPTIONAL STUDIES

• Optional (elective) courses plan must be submitted always to PSP advisor & coordinator Kari before taking courses.
• Finnish language studies are also suggested as electives during 1st year (max. 10 ECTS).
• 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 dept.
  • Information processing science dept.
  • Oulu Business School studies
• You always have to ask coordinator’s opinion about suitability before taking them!
LANGUAGE STUDIES AS ELECTIVES

• No other languages than Finnish are allowed to be included into PSP.
• However, you are free to take other languages besides your 60 ECTS WCE study load/year, but not include them into your degree content!
• Max. 10 ECTS Finnish language studies is allowed into electives.
  • Check the schedules of Finnish courses and the 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
  • 900013Y Beginners' Finnish Course 1 - 3 ECTS credits
  • 900053Y Beginners' Finnish Course 2 - 5 ECTS credits
WCE-RAN SCHEDULE – 1ST YEAR 2019-2020

Autumn 2019
Periods 1-2

**Numerical Matrix Analysis** (5 cr, 1 p)
**Statistical Signal Processing I** (5 cr, 1 p)
**Wireless Commun. I** (5 cr, 1 p)

**Introduction to Optimization** (5 cr, 2 p)
**Communications Networks I** (5 cr, 2 p)
**Radio Channels** (5 cr, 2 p)

**Simulations & Tools for Telecom.** (5 cr, 2 p)

Spring 2020
Periods 3-4

**Communications Networks II** (7 cr, 3-4 p)
**Statistical Signal Processing II** (5 cr, 3 p)
**Antennas** (5 cr, 4 p)

**Wireless Body Area networks** (5 cr, 3-4 p) *)
**Wireless Commun. II** (5 cr, 3 p)
**Advanced Practical Training** (3 cr)
(recommended in summer 2020, training report will be done on autumn 2020 term)

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

Basic Studies (all 40 cr obligatory)
Advanced Studies (choose ≥ 33 cr)
Optional Studies (choose ≥ 17 cr)

*) = will be lectured on even years (2020, 2022)  
**) = will be lectured on odd years (2021, 2023)

WCE Orientation 14.10.2019
WCE-RAN SCHEDULE – 2ND YEAR 2020-2021

Autumn 2020
Periods 1-2

- Telecommunication Engineering Project (5 cr) or Electronics Design and Construction Exercise (6 cr, 1-2 p) (one of these is obligatory)
- Convex Optimization (7 cr, 1-2 p) *
- Statistical Commun. Theory (7 cr, 1-2 p) *
- Information Theory (5 cr, 1 p) *
- Multiantenna Commun. (5 cr, 1 p) **
  (not available for student group 2019-2021)
- Channel Coding & Modul. (5 cr, 1p) **
  (not available for student group 2019-2021)

Spring 2021
Periods 3-4

- Master’s Thesis Work, Maturity Test, Seminar (30 cr, 3-4 p)
- Commun. Signal Proc. (5 cr, 4 p) **
- Radio Engineering I (5 cr, 2 p)
- Signal Processing Systems (5 cr, 2 p)
- Convex Optimization (7 cr, 1-2 p) *

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

Basic Studies (all 40 cr obligatory)
Advanced Studies (choose ≥ 33 cr)
Optional Studies (choose ≥ 17 cr)

*) = will be lectured on even years (2020, 2022)  **) = will be lectured on odd years (2021, 2023)

WCE Orientation 14.10.2019
WCE-RF SCHEDULE – 1ST YEAR 2019-2020

Autumn 2019
Periods 1-2
- Statistical Signal Processing I (5 cr, 1 p)
- Electronics Design II (6 cr, 1 p)
- Wireless Commun. I (5 cr, 1 p)

Spring 2020
Periods 3-4
- Radio Engineering I (5 cr, 2 p)
- Electronics Design III (6 cr, 2 p)
- Radio Channels (5 cr, 2 p)

- Statistical Signal Processing II (5 cr, 3 p)
- Radio Engineering II (6 cr, 3 p)
- Microel. & Packaging Technologies (5 cr, 3 p)

- RF Components and Measurem. (5 cr, 4 p)
- Antennas (5 cr, 4 p)
- Advanced Practical Training (3 cr) (recommended in summer 2020, training report will be done on autumn 2020 term)

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

Basic Studies (all 36 cr obligatory)
Advanced Studies (choose ≥ 36/37 cr)
Optional Studies (choose ≥ 12/13 cr)

*) = will be lectured on even years (2020, 2022)  
**) = will be lectured on odd years (2021, 2023)
**WCE-RF SCHEDULE – 2ND YEAR 2020-2021**

**Autumn 2020**
Periods 1-2

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

**Spring 2021**
Periods 3-4

- **Master’s Thesis Work, Maturity Test, Seminar** (30 cr, 3-4 p)
- **Telecommunication Engineering Project** (5 cr)
- or **Electronics Design and Construction Exercise** (6 cr, 1-2 p) (one of these is obligatory)

---

*) = will be lectured on even years (2020, 2022)  
**) = will be lectured on odd years (2021, 2023)
WEBOODI:
HTTPS://WEBOODI.OUULU.FI/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 1.8.2019-31.7.2020 for each course by typing course name or course code here.

Start Oodi PSP creation from here (→ Students PSPs) and choose WCE program 2019-2021.
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.
  • 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 you today.
• Important part of PSP is study goals and following progress.
• You must create your own PSP by 1.11.2019!
  • 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](http://www.oulu.fi/oodienglish/node/19271))
YOUR PERSONAL STUDY PLAN AT OODI PSP

PSP & Study right is accepted for 4 yrs, although UO scholarship is only for 2 yrs. Remember it!
# OODIPSP – SEEN FROM KARI’S SIDE

Advisor

Read also [OodiPSP - Advisor’s Guide](#) and [OodiPSP Grouping Tool](#).

<table>
<thead>
<tr>
<th>My students</th>
<th>Submitted for review (45)</th>
<th>Submitted for approval (0)</th>
<th>Grouping students</th>
<th>Create a group</th>
</tr>
</thead>
</table>

Show students from My group: WCE-students group 2019-2021/Kari Kärkkäinen

| Total 11 students |
|-------------------|--------------------------|---------------------------|-------------------|----------------|
| Student number    | Name                     | PSP                       | Processed         | Degree programme / Major subject |
| 261252            | Ranasinghe Mudiyanaselge, Vismika Maduka Ranasinghe | primary approved          | 02.09.2019        | ITEE/KV_MO/DoD2005/Master of Scien/MP in EI&CE |
| 2622059           | Hilleshein, Henrique     |                           |                   |                             |
| 2642932           | Singh, Damanpreet        |                           |                   |                             |
| 2646129           | Singh, Sanjeev           |                           |                   |                             |
| 2646161           | Khan, Amir Raza          |                           |                   |                             |
| 2646174           | Eldeeb, Eslam Essam Abdelhameed Amer |               |                   |                             |
| 2646187           | SHAKIL, ASIF             |                           |                   |                             |
| 2646213           | Chorab, Krystian Marcel  |                           |                   |                             |
| 2646239           | Mahinge Don, Vimesha Tharinduni Samarasekara |                   |                   |                             |
| 2646271           | Salaman Arachchige Don, Tharaka Poorna Kaushalya |               |                   |                             |
| 2646297           | Gamachchi Gamage, Kavinda Gamage |                      |                   |                             |

Semester: No selection
New group: DD-WCE 2018 aloitteenet

Move to new group  Remove from current group

WCE Orientation 14.10.2019
<table>
<thead>
<tr>
<th>Course Description</th>
<th>Planned ECTS</th>
<th>Completed ECTS</th>
<th>Obtained grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>A451225 Module of the Option, Wireless Communications Engineering</td>
<td>35/40-44</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Compulsory</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>031025A Introduction to Optimization</td>
<td>5</td>
<td>5</td>
<td>27.10.2016</td>
</tr>
<tr>
<td>521321S Elements of Information Theory and Coding</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>521316S Broadband Communications Systems</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>521323S Wireless Communications I</td>
<td>5</td>
<td>5</td>
<td>14.02.2017</td>
</tr>
<tr>
<td>521323S-02 Wireless Communications I, Exercise</td>
<td>0</td>
<td>hyv</td>
<td>14.02.2017</td>
</tr>
<tr>
<td>521340S Communication Networks I</td>
<td>5</td>
<td>5</td>
<td>09.02.2017</td>
</tr>
<tr>
<td>521340S-01 Communication Networks 1, partial credit</td>
<td>0</td>
<td>4</td>
<td>15.03.2017</td>
</tr>
<tr>
<td>521340S-02 Communication Networks 1, partial credit</td>
<td>0</td>
<td>hyv</td>
<td>08.02.2017</td>
</tr>
<tr>
<td>521324S Communication Signal Processing I</td>
<td>5</td>
<td>5</td>
<td>19.04.2017</td>
</tr>
<tr>
<td>521385S Mobile Telecommunication Systems</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced module</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<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></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A453271 Advanced module, Wireless Communications Engineering</td>
<td>29/16-35</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Two courses from this set of four courses must be selected</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>521327S Radio Engineering II</td>
<td>6</td>
<td>6</td>
<td>08.05.2017</td>
</tr>
<tr>
<td>521317S Wireless Communications II</td>
<td>8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>