



AAiT

*Plan of Radio Network
Planning and Optimization
course (ECEG-6326)*

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Course contents (1/4)

Chapter	Contents	Assignment\Project
1	<p>Introduction to mobile technologies</p> <ul style="list-style-type: none">❖ History❖ Basics❖ Evolution❖ Standardization❖ Market share	<p>Survey Assignment: History, evolution and market share of mobile systems in Ethiopia: Service, Subscription, Device, Technology & Vendor. Evaluation: Presentation</p>
2	<p>Wideband Code Division Multiple Access (WCDMA)</p> <ul style="list-style-type: none">❖ UMTS radio access network architecture❖ Physical layer❖ Channel concepts❖ Physical layer procedures❖ UMTS radio access bearer concepts, QoS, and protocols❖ Radio resource management	<p>Assignment: Problems Evaluation: Quiz out of the Assignment</p>

Course contents (2/4)

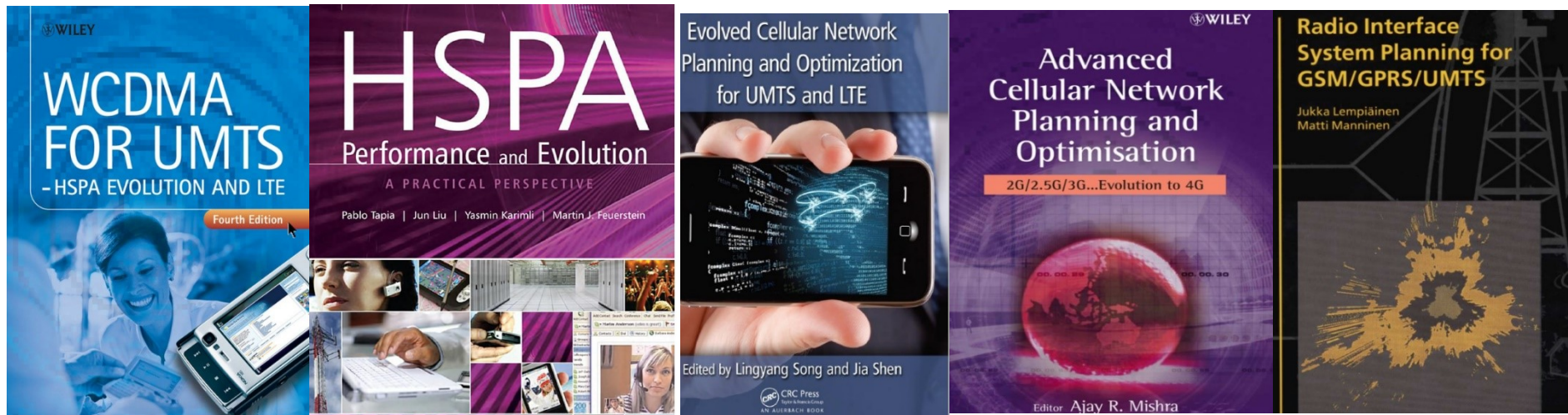
Chapter	Contents	Assignment\Project
3	<p>Fundamentals of CNPO</p> <ul style="list-style-type: none">❖ CNPO process❖ Target demand definition❖ Channel models (pathloss and fading)❖ Antennas❖ Noise and Interference❖ CNPO tools (WinProp introduced)❖ QoS/QoE measurements and optimization	<p>Assignment: Problems</p> <p>Evaluation: Quiz out of the Assignment</p>
4	<p>UMTS-WCDMA network planning and optimization</p> <ul style="list-style-type: none">❖ UMTS-WCDMA products and parameters❖ UMTS-WCDMA dimensioning❖ UMTS-WCDMA detailed planning❖ UMTS-WCDMA network optimization	<p>Dimensioning project: UMTS-WCDMA product survey and UMTS-WCDMA Dimensioning</p> <p>Evaluation: Presentation</p>

Course contents (3/4)

Chapter	Contents	Assignment\Project
5	<p>High Speed Packet Access (HSPA) and HSPA+</p> <ul style="list-style-type: none">❖ Main enhancements of HSPA❖ HSPA channels❖ HSPA Radio features❖ Downlink multiantenna methods in HSPA❖ Enhancements of HSPA+	<p>Assignment: Problems</p> <p>Evaluation: Quiz out of the Assignment</p>
6	<p>HSPA/HSPA+ network planning and optimization</p> <ul style="list-style-type: none">❖ HSPA/HSPA+ requirements and targets❖ HSPA/HSPA+ dimensioning❖ HSPA/HSPA+ Planning❖ HSPA/HSPA+ optimization	<p>Dimensioning project: HSPA/HSPA+ product survey and HSPA/HSPA+ Dimensioning</p> <p>Evaluation: Presentation</p>

References

- ✓ Course is not based on a single book.
- ✓ The following books give additional insight into the topics of the course (and represent good sources to consult)



Course practicalities

- ❖ Lecture → Friday 10:00 am
 - ❖ Evaluation: Quizzes/Presentations + Exams
 - ❖ Course materials and information shared through course page or email
 - ❖ Contacts:
 - beneyamb.haile@aait.edu.et
 - beneyamb.haile@gmail.com
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Course evaluation

- ❖ 30% Quizzes and Project Presentation
 - ❖ 25% Mid exam
 - ❖ 45% Final exam
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Motivation for the Course



Who perform network planning project?

Who	Pros	Cons
Operator -Planning fully by the operator	Suitable for operators with extensive knowledge and experience to their networks and network planning	Challenging to use latest equipment and features
Consultancy company -Planning by consultancy company + the operator	-Only required special know-how bought from company (vendor or non-vendor) -Better to control vendor (s)	Management overhead
Vendor with Turnkey -Planning is part of Turnkey agreement	Operator defines only planning criteria and may/may not operate the network after roll-out	Challenging to control vendor and after roll-out

- ✓ Who perform our network optimization?
- ✓ Are we successful?
- ✓ What do we lack?

