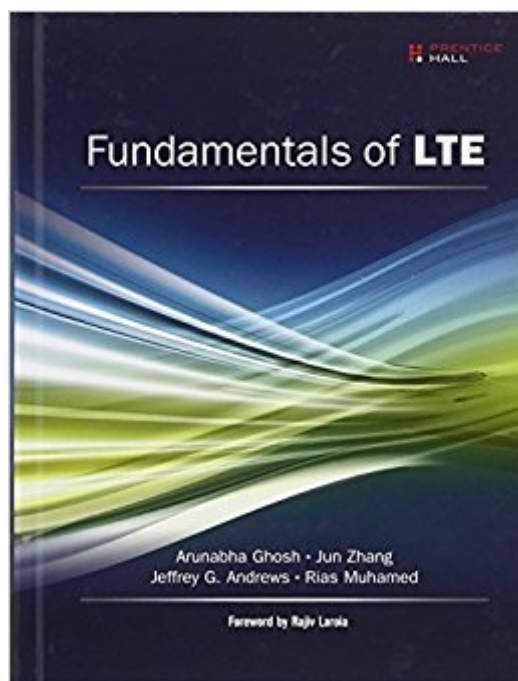


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# Fundamentals Of LTE (Prentice Hall Communications Engineering And Emerging Technologies Series From Ted Rappaport)



## Synopsis

The Definitive Guide to LTE Technology – Long-Term Evolution (LTE) is the next step in the GSM evolutionary path beyond 3G technology, and it is strongly positioned to be the dominant global standard for 4G cellular networks. LTE also represents the first generation of cellular networks to be based on a flat IP architecture and is designed to seamlessly support a variety of different services, such as broadband data, voice, and multicast video. Its design incorporates many of the key innovations of digital communication, such as MIMO (multiple input multiple output) and OFDMA (orthogonal frequency division multiple access), that mandate new skills to plan, build, and deploy an LTE network. In Fundamentals of LTE, four leading experts from academia and industry explain the technical foundations of LTE in a tutorial style – providing a comprehensive overview of the standards. Following the same approach that made their recent Fundamentals of WiMAX successful, the authors offer a complete framework for understanding and evaluating LTE. Topics include Cellular wireless history and evolution: Technical advances, market drivers, and foundational networking and communications technologies Multicarrier modulation theory and practice: OFDM system design, peak-to-average power ratios, and SC-FDE solutions Frequency Domain Multiple Access: OFDMA downlinks, SC-FDMA uplinks, resource allocation, and LTE-specific implementation Multiple antenna techniques and tradeoffs: spatial diversity, interference cancellation, spatial multiplexing, and multiuser/networked MIMO LTE standard overview: air interface protocol, channel structure, and physical layers Downlink and uplink transport channel processing: channel encoding, modulation mapping, Hybrid ARQ, multi-antenna processing, and more Physical/MAC layer procedures and scheduling: channel-aware scheduling, closed/open-loop multi-antenna processing, and more Packet flow, radio resource, and mobility management: RLC, PDCP, RRM, and LTE radio access network mobility/handoff procedures

## Book Information

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## Customer Reviews

“Fundamentals of LTE is a clear yet detailed introduction to the 3GPP Long-Term Evolution.

I would recommend it both to those wishing to get up to speed on the fundamentals of LTE and those who are already involved but in need of a reference for this critical technology.

•Dr. Alan Gatherer CTO of Baseband System-on-Chip Huawei

“Excellent . . . . A comprehensive and in-depth treatment of what is likely to become the dominant world broadband wireless standard.

•Dr. Reinaldo Valenzuela Director of Wireless Communications Research Bell Labs, Alcatel-Lucent

“Fundamentals of LTE is a well-written and self-contained book featuring a unique blend of leading industry and academic perspectives.

Comprehensive and highly accessible.

•Dr. Angel Lozano Professor, Information & Communication Technologies University of Pompeu, Fabra

“This book offers a good entry point to the world of LTE for newcomers, since it contains useful background material for understanding the technology. It can serve as an instrumental reference for the general LTE community.

•Dr. Eko Onggosanusi Senior member of technical staff and 3GPP RAN1 lead delegate Texas Instruments

The Definitive Guide to LTE Technology Long-Term Evolution (LTE) is the next step in the GSM evolutionary path beyond 3G technology, and it is strongly positioned to be the dominant global standard for 4G cellular networks. LTE also represents the first generation of cellular networks to be based on a flat IP architecture and is designed to seamlessly support a variety of different services, such as broadband data, voice, and multicast video. Its design incorporates many of the key innovations of digital communication, such as MIMO (multiple input multiple output) and OFDMA (orthogonal frequency division multiple access), that mandate new skills to plan, build, and deploy an LTE network. In "Fundamentals of LTE," four leading experts from academia and industry explain the technical foundations of LTE in a tutorial style- providing a comprehensive overview of

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I ordered this book in Kindle format, but read it on the Cloud Reader app. The book is an excellent introduction to the lower layers of the LTE standard, explaining many things that are scattered throughout several standards documents. It can provide one with a firm basic understanding of the way LTE works, which makes reading through the standards documents for the PHY, MAC, etc. that much easier.

I am an RF Engineer, tasked with optimizing the radio link between the phone and the tower (or in LTE terminology, the User Equipment and e-Node B). Admittedly, this is the first BOOK about LTE I have read. Without other perspective, I give it a 3 star rating because of how useful it will be to me in my role. This is a great reference text for LTE--detailed as it is--on the background considerations and ALL the possibilities and thought that went into the LTE standard, but it's really over my head! It has little information, probably quite understandably, about vendor implementation and how to solve practical issues. What I needed to learn from the book could be reduced to 50 pages instead of 383, that's why I'll keep it on my shelf as a reference text, just in case. But otherwise I've taken extensive notes, which is really all I need. The author(s) is a good teacher; he keeps re-expressing relevant points previously covered at the appropriate time in each lesson, and gives good summaries at the end of each chapter. The book is thoroughly indexed, and the text of each chapter points the reader to where other matters are more fully explained in other chapters/sections. Though it has a very useful list of acronyms, about 10 important acronyms are not on the list (an oversight by the editors).

But the book could really benefit (I could really benefit) from also having a glossary, it would be worth extending the page count to 400. I suggest others on my level take advantage of the authors pedagogical style and the book's index in the following manner: start with the summary at the end of each chapter and if you see something you want to dig into, then go into the chapter for more details or use the index to find the actual lesson. By this means you can extract the most information with the least investment of time. Not all books are written well enough to use (or trust) this method to cover the material. This one is.

We use this book and Goldsmith's book as textbooks for wireless communications. It gives a brief but clear description while Goldsmith gives a detailed calculation which is a perfect combination.

Good book details are unbelievable I wish it had a CD to go with it so as to have it on my PC as well

The book is split into a big tutorial section on the technologies used in LTE, and a review of the standard itself. The tutorial is well-written and [except for the misunderstanding of the Friis equation's physics, which I've already whined about on the book's page] clear. The standard review is inevitably dull but very helpful for those needing to understand how this very complex communications protocol works. Incomprehensible acronyms, an inevitable curse of the field, are only moderately overused. Note that this book emphasizes the physical and link layers; it's about radios, subcarriers and their allocation, code choices, and the use of multiple antennas, not the evolved packet core (EPC) or IP Multimedia Subsystem (IMS). (See what I mean about acronyms?) Network engineers should probably get another book.

very recommend . great and good experience. It's so sharp. I cut myself the first time I used it.

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