Please connecting to

the Rain Classroom

High Voltage Engineering

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2025-2-20

Course Learning Requirements

1 Course positioning and characteristics

2 Course assessment requirements

3 Course learning tips

What kind of class ?
Any requirements ?
How to learn ?

How to Bridge the Gap between Industry and Universities?

----- CIGRE 2014 EPEE theme

Common challenges in the international engineering education community

1 Course positioning and characteristics(Electrical Engineering)

- Public Basic Courses：

mathematics, physics, chemistry, literature, history, philosophy, art, politics, economics, law, religion, physical education, foreign languages...

- Technical Fundamental Courses：
- Professional Basic Courses：
- Specialized Courses：

1 Course positioning and characteristics(Electrical Engineering)

- Public Basic Courses：

Electrical Information
（power & IT）
Technological base

- Technical Fundamental Courses：

engineering drawing, principles of electric circuits, electromagnetic field, analog & digital electronics, signal processing, automatic control, computer software and hardware, communication, network, AI.....

- Professional Basic Courses：

- Specialized Courses：

Graduation from university：

Received higher education

Received systematic scientific training

Professional ability in a certain direction

1 Course positioning and characteristics(Electrical Engineering)

Understand the framework of a second level discipline from one course

Several courses combined to understand Electrical Engineering

- Public Basic Courses
- Technical Fundamental Courses：
- Professional Basic Courses：

Electrical Machinery, High Voltage Engineering
Power System Analysis, Power Electronics

Electrical Engineering：
Power System and Automation,
Power Electronic Technology,
Electrical Theory and New Technologies
Electrical Machines and Appliances,
High Voltage and Insulation Technology,

- Specialized Courses：

Exploring Learning Course:
High Voltage and New Insulation Materials

1 Course positioning and characteristics(Electrical Engineering)

- **Public Basic Courses：**
  mathematics, physics, chemistry, literature, history, philosophy, art, politics, economics, law, religion, physical education, foreign languages....

- **Technical Fundamental Courses：**
  engineering drawing, principles of electric circuits, electromagnetic field, analog digital electronics, signal processing, automatic control, computer software and hardware, communication, network, AI, ……

- **Professional Basic Courses：**
  Electrical Machinery,
  Power System Analysis,
  High Voltage Engineering
  Power Electronics

- **Specialized Courses:** (Choose) a series of courses for each major

balanced nutrition + personality choice

build personal knowledge structure

2 Course assessment requirements

preview before class ! ! !

take notes in class, discuss after class !

- Teaching ： lecture + Q&A discussion
- Assessment (in English)：
  - final open-book exam, homework, HV experiment and report, AI related project training report,
- Exam scope： all the things taught and required in class
- HV experiment: May - June (3 students/group)
  - The class representative is responsible for homework/report collecting, and grouping the class

3 Course learning tips

The Confusion of Entering Professional Courses

- ✓ Seem to understand everything when listening, but don't know how to do when using;
- ✓ Does it mean understanding, even though knowing how to do homework ?
- ✓ Is there a standard answer? Are all the collected answers correct?
- ✓ The habit and skills of question-solving seem to be no more effective;
- ✓ Self study is not easy, feeling like the course scope is broad, can't grasp the key points and can't organize thoughts clearly;
- ✓ Frequently using knowlege learned before, but almost forget about them;
- ✓ ……

Professional courses extract problems and seek solutions from practical applications, requiring extracurricular supplementation of engineering background and common sense. It is best not limited to textbooks, but including hands-on practice.

3 Course learning tips

- Differences in scientific, technological, and engineering concerns：

Scientific Issues Focus on why it works?

The answer is unique, with clear boundary conditions

Technological Issues Focus on how to make it works?

More than one method, the constraint conditions may change

Engineering Issues Focus on optimization?

Multiple plans, complex situations, and non-technical factors

Three above problems are all exist in the course of High Voltage Engineering please pay attention to distinguishing them when learning.

master scientific principles, know technical means, understand engineering specifications

3 Course learning tips

- The Confusion of Entering Professional Courses
- Differences in scientific, technological, and engineering concerns
- Pay attention to researching and learning methods for "high voltage"

  Often, it is necessary to directly face physical phenomena and engineering application scenarios, to discover and extract problems, and to understand the requirements before solving the problem
- Understand industry background and technical policies

  Expand knowledge of industrial and engineering backgrounds
- Combining industry development, theory+practice

Pay more attention to discovering problems organize & refine questions foresee the problem

Goal：cultivate high-quality talents with

"initial professional depth and industry breadth"

3 Course learning tips

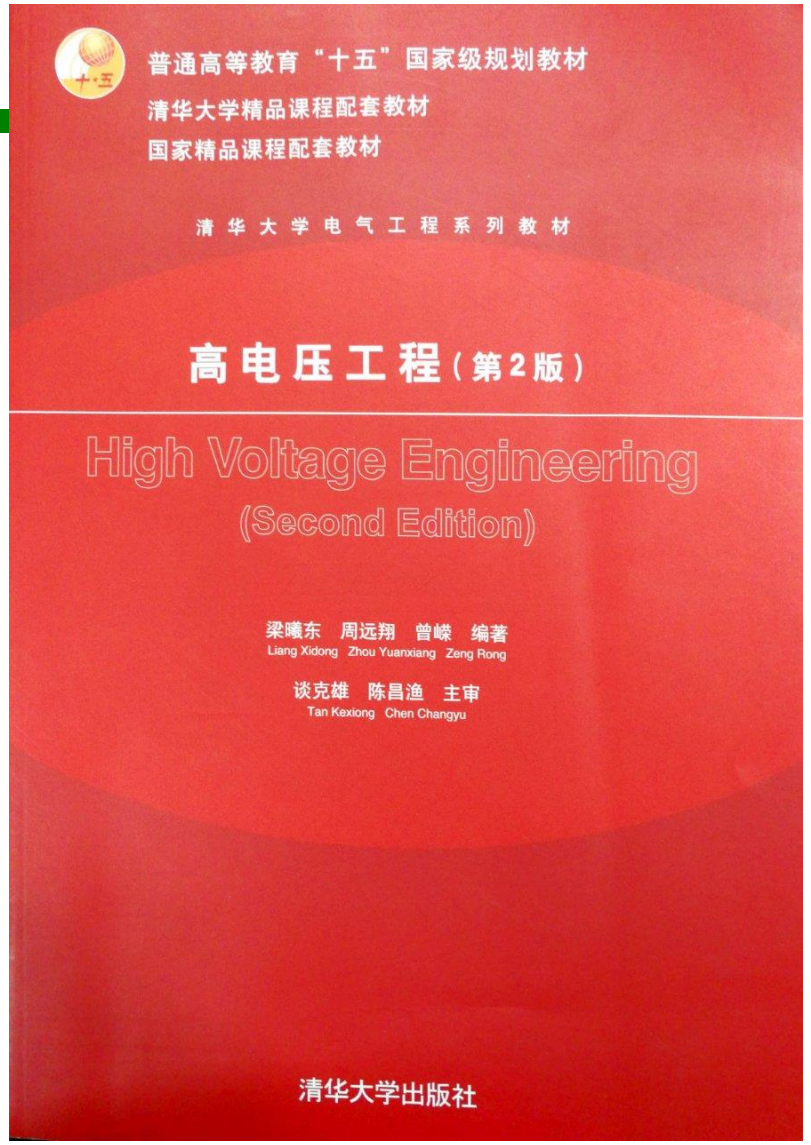
The textbook for this course：

High Voltage Engineering
(Second edition)

By Xidong LIANG, Yuanxiang ZHOU and Rong ZENG

Tsinghua university press, 2015

And several other references



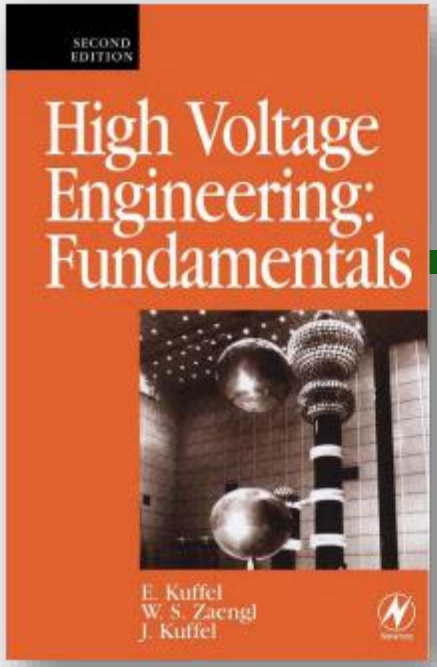
3 Course learning tips

Main References

Have you read any professional journals or monographs?

- Textbooks:《高电压绝缘》、《高电压试验技术》、
  《电力系统过电压与绝缘配合》、
  《High Voltage Engineering》etc.
- Standards：Relevant international standards, national standards, and electric power industry standards
- Journals： IEEE Trans. PD, IEEE Trans. DEI, Electra,
  高电压技术、电网技术、高压电器 etc.
- Others： such as《中国电气工程大典》、《中国电力年鉴》etc.

Make full use of resources from Internet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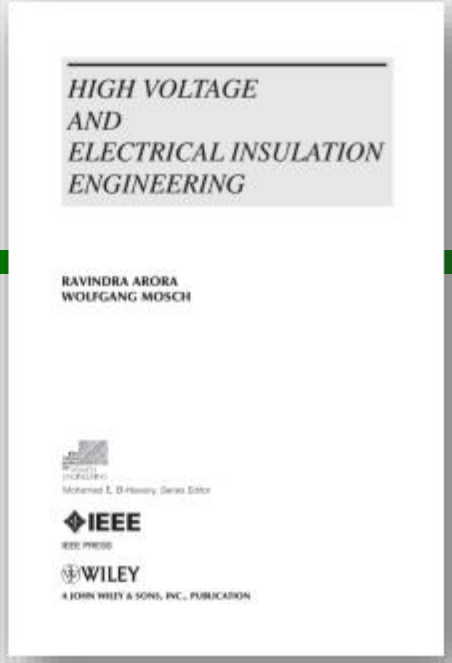
J. Kuffel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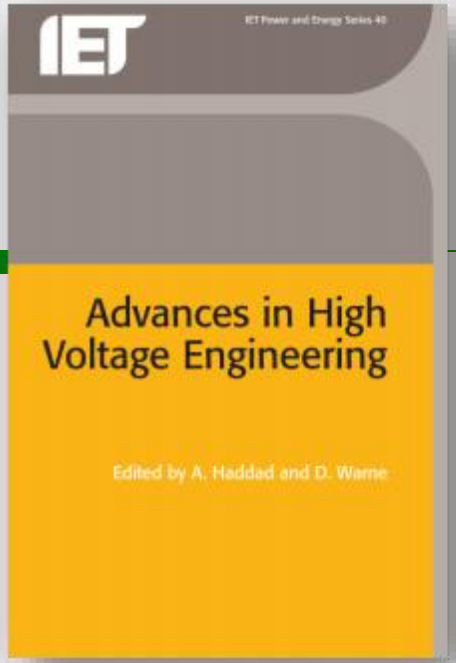
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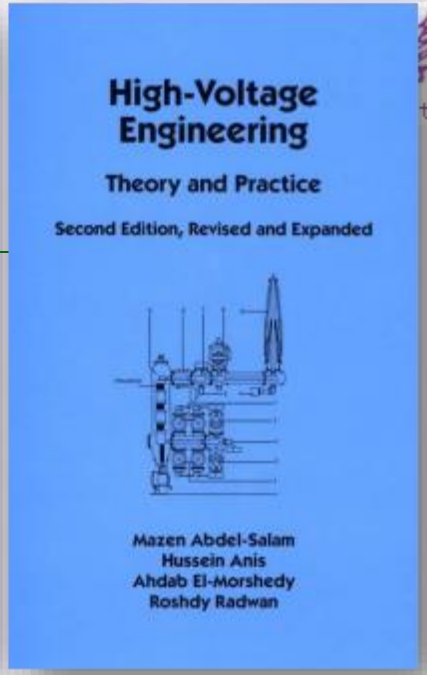
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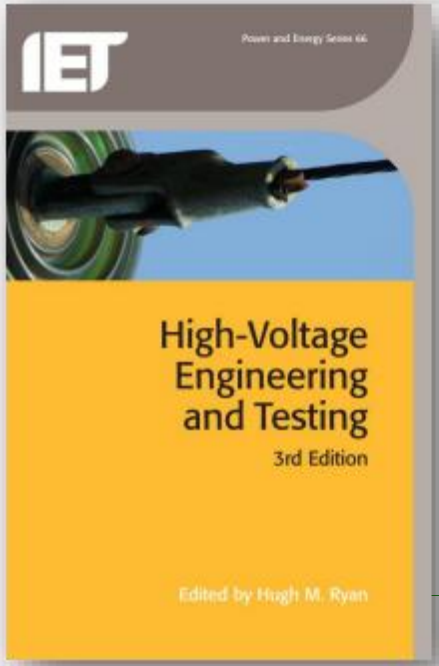
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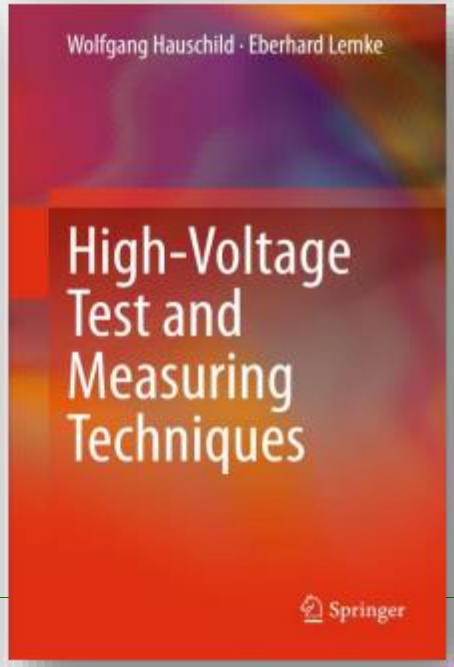
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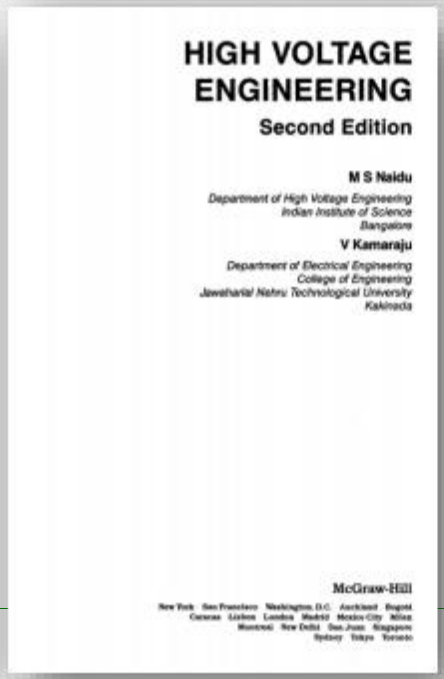
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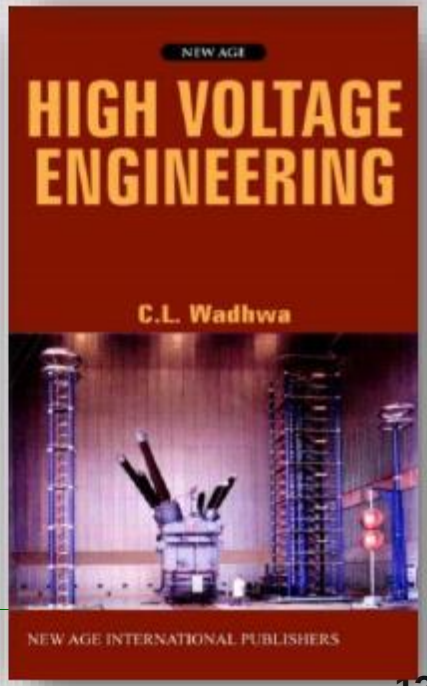
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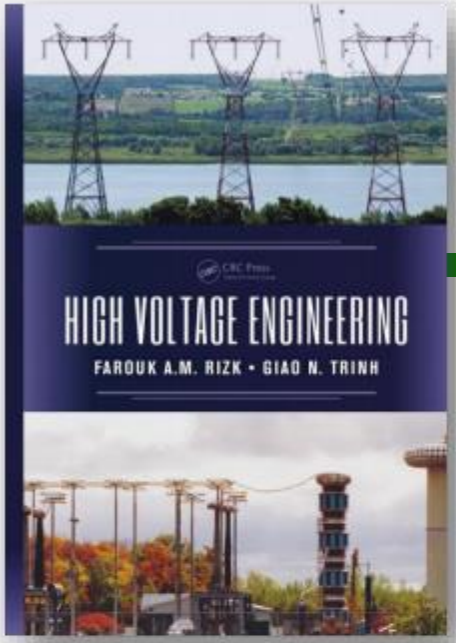
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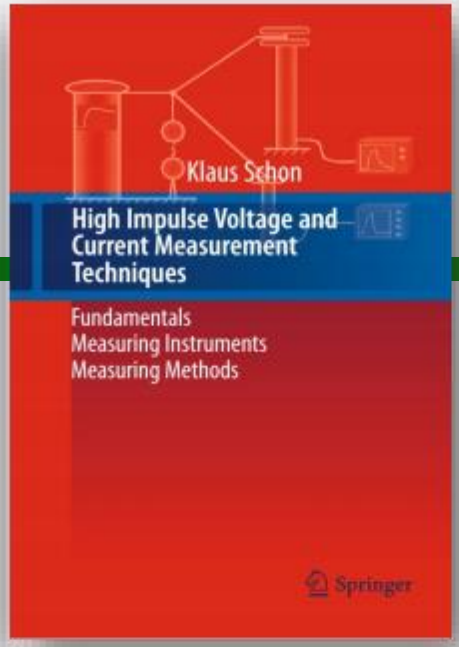
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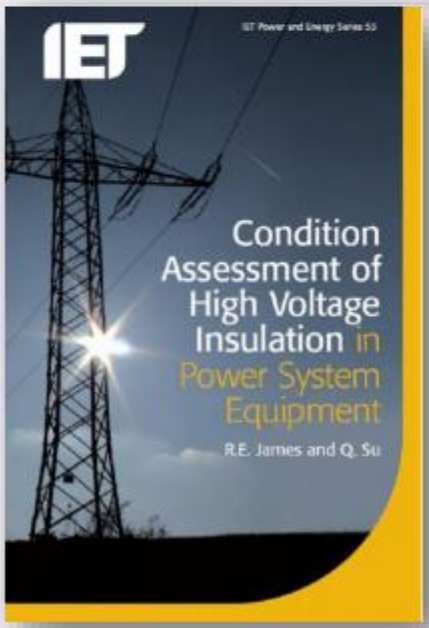
Measuring Instruments
Measuring Methods
Springer


High Voltage


CHINA ELECTRICAL
中国电气
工程大典
ENGINEERING CANON
现代电气工程基础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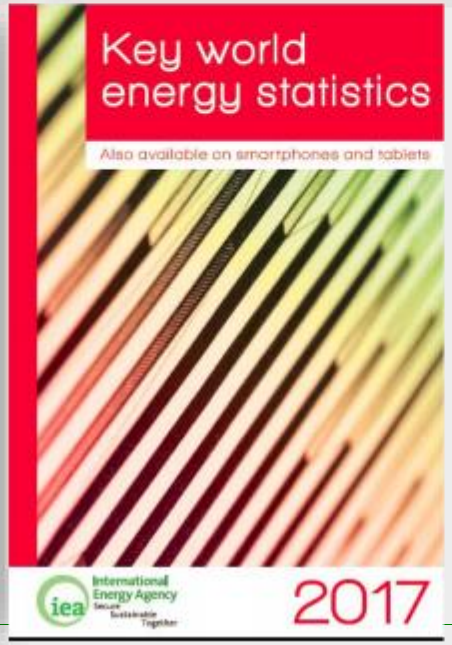
R.E. James and Q. Su


Key world energy statistics
Also available on smartphones and tablets
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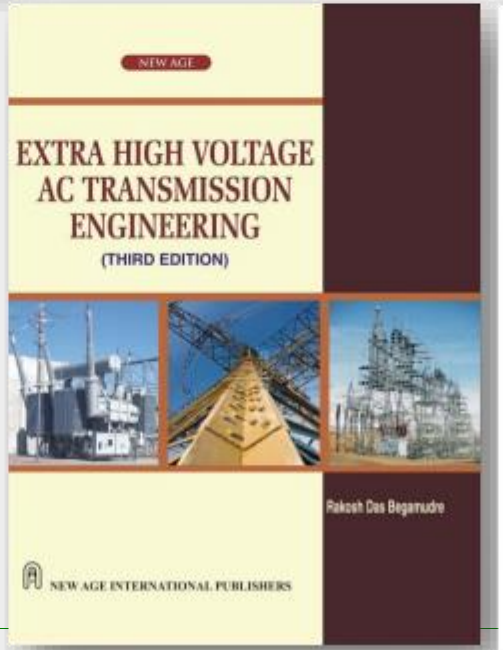
2017


NEW AGE
EXTRA HIGH VOLTAGE AC TRANSMISSION ENGINEERING
(THIRD EDITION)
Rakosh Das Begamudre
NEW AGE INTERNATIONAL PUBLISHERS


HIGH VOLTAGE ENGINEERING
高电压技术
中国电力科学研究院有限公司
2019-7

Course： Thursday morning, 9:50-12:15

Q&A： depending on your requirement,
Friday afternoon?

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Yuanxiang ZHOU HV lab. 104B
Chao WU HV lab. 308

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