



INSTITUT TEKNOLOGI SEPULUH NOPEMBER (ITS)
FAKULTAS TEKNOLOGI ELEKTRO DAN INFORMATIKA CERDAS
DEPARTEMEN TEKNIK ELEKTRO
Program Studi Magister (S2) Teknik Elektro

1	Nama Mata Kuliah / Course Name :	Pengenalan Bidang Riset / <i>Introduction to Research Field</i>
2	Course Code :	EE235102
3	Kredit / Credits :	3 SKS
4	Semester / Semester :	1

Deskripsi Mata Kuliah / Course Description

MK ini mendiskusikan dasar kajian riset dan penulisan ilmiah. Untuk menambah wawasan mahasiswa, berbagai topik riset yang populer didiskusikan dengan harapan mahasiswa mendapatkan gambaran topik riset untuk tesis.

This MK discusses the basics of research studies and scientific writing. To increase students' insight, various popular research topics are discussed with the hope that students will get an overview of research topics for their thesis.

Capaian Pembelajaran Lulusan (CPL) Yang Dibebankan Mata Kuliah / Program Learning Outcomes Charged to The Course

1. (CPL-02) Mampu mengembangkan dan memecahkan permasalahan ipteks dalam bidang keilmuannya melalui riset dengan pendekatan inter atau multidisiplin hingga menghasilkan karya inovatif dan teruji, serta mendapat pengakuan nasional dan internasional.

(PLO-01) Able to develop and solve science and technology problems in their scientific fields through research with an inter or multidisciplinary approach to produce innovative and tested work, and receive national and international recognition.
2. (CPL-03) Mampu mengelola pembelajaran diri sendiri, dan mengembangkan diri sebagai pribadi pembelajar sepanjang hayat untuk bersaing di tingkat nasional, maupun internasional, dalam rangka berkontribusi nyata untuk menyelesaikan masalah dengan memperhatikan prinsip keberlanjutan.

(PLO-03) Able to manage self-learning, and develop oneself as a lifelong learner to compete at national and international levels, in order to make a real contribution to solving problems while paying attention to the principle of sustainability.
3. (CPL-04) Mampu menguasai konsep, prinsip keilmuan secara komprehensif, prinsip rekayasa, dan pengetahuan faktual tentang Teknologi Informasi untuk

mengembangkan prosedur dan strategi yang diperlukan pada analisis dan perancangan sistem terkait bidang Teknik Elektro.

(PLO-04) Able to master concepts, scientific principles comprehensively, engineering principles, and factual knowledge about Information Technology to develop procedures and strategies required in the analysis and design of systems related to the field of Electrical Engineering.

Capaian Pembelajaran Mata Kuliah / Course Learning Outcomes

1. Mahasiswa dapat memahami Dasar Kajian Riset / *Students can understand the Basics of Research Studies.*
2. Mahasiswa dapat memahami Pengantar Penulisan Ilmiah / *Students can understand the Introduction to Scientific Writing.*
3. Mahasiswa dapat merancang bangun Sistem Tenaga Listrik (STL) / *Students can design and build Electric Power Systems (STL).*
4. Mahasiswa dapat memaparkan topik riset Pembangkitan Sumber-sumber Energi Listrik / *Students can explain research topics on Generation of Electrical Energy Sources.*
5. Mahasiswa dapat memaparkan topik riset Energi Baru Terbarukan (EBT) / *Students can explain research topics on New Renewable Energy (EBT).*
6. Mahasiswa dapat memaparkan topik riset Pengendalian STL / *Students can explain research topics on STL Control.*
7. Mahasiswa dapat memaparkan topik riset *Smart Grid* untuk Penunjang *Smart City* / *Students can explain research topics on Smart Grid to Support Smart City.*

Pokok Bahasan / Contents

1. Dasar Kajian Riset / *Research Study Basis*
2. Pengantar Penulisan Ilmiah / *Introduction to Scientific Writing*
3. Topik Riset Rancang Bangun Sistem Tenaga Listrik (STL) / *Research Topic Design of Electric Power System (STL)*
4. Topik Riset Pembangkitan Sumber-sumber Energi Listrik / *Research Topic Generation of Electric Energy Sources*
5. Topik Riset Energi Baru Terbarukan (EBT) / *Research Topic New Renewable Energy (EBT)*
6. Topik Riset Pengendalian STL / *Research Topic STL Control*
7. Topik Riset *Smart Grid* untuk Penunjang *Smart City* / *Research Topic Smart Grid to Support Smart City*

Prasyarat / Pre-requisite

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Pustaka / Reference

Utama / *Primary:*

1. Dipankar Deb, et al., *Engineering Research Methodology: A Practical Insight for Researchers*, Springer, 2019.
2. Hugh Kearns & Maria Gardiner, *The Seven Secrets of Highly Successful Research Students*, Thinkwell, 2012.

Pendukung / *Support :*

3. Imam Robandi, Modern Power System Control, Penerbit Andi, Yogyakarta, 2009
4. Fuad & Anderson, Power System Control and Stability, Wiley-IEEE Press, 2003
5. Prabha Kundur, Power System Stability and Control, McGraw Hill, 2nd edition, 2022
6. Mircea Eremia, et al., Advanced Solutions in Power Systems HVDC, FACTS, and Artificial Intelligence, IEEE Press, 2016
7. Mohamed A. & Ali Mohamed, Modeling and Simulation of Smart Grid Integrated with Hybrid Renewable Energy Systems, Springer, 2018