

**RENCANA PEMBELAJARAN SEMESTER  
PASCA SARJANA TERAPAN S2 TEKNIK INFORMATIKA  
POLITEKNIK ELEKTRONIKA NEGERI SURABAYA**



Mata Kuliah	Advanced Data Science		
Bobot SKS	3		
Kelompok MK	MK Pilihan	Jam/minggu	3
Tim Pengampu MK	Tessy Badriyah		Nold: RF-DTEL-PSTE-4.05.Rev.01[031]

Capaian Pembelajaran	- Mahasiswa mempunyai dasar pemahaman yang baik untuk konsep data science dan topik data science lanjutan dan memahami aplikasinya menggunakan Python untuk penyelesaian persoalan dalam dunia nyata.
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Pokok Bahasan	<ol style="list-style-type: none"> <li>Memahami konsep Data Science dan penggunaan Python dan library-nya (NumPy, Pandas, Matplotlib) sebagai tools</li> <li>Mengelola data dari berbagai macam struktur data yang berbeda (SQL, NoSQL dan Web data).</li> <li>Memahami teknik Pembelajaran Data dan Visualisasinya</li> <li>Menangani Reduksi dimensi data dan deteksi Outlier</li> <li>Memahami persoalan dan solusi yang dapat diberikan oleh Data Science</li> </ol>
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Referensi	<ol style="list-style-type: none"> <li>MADHAVAN, S. <b>Mastering Python for Data Science</b>. Packt Publishing, 2015. 294 ISBN 1784390151, 9781784390150.</li> <li>MUELLER, J. P.; MASSARON, L. <b>Python for Data Science For Dummies</b>. Wiley, 2015. ISBN 9781118843987. Disponível em: &lt; <a href="https://books.google.co.id/books?id=iCnvCQAAQBAJ">https://books.google.co.id/books?id=iCnvCQAAQBAJ</a> &gt;.</li> <li>MÜLLER, A. C.; GUIDO, S. <b>Introduction to Machine Learning with Python: A Guide for Data Scientists</b>. O'Reilly Media, 2016. ISBN 9781449369897. Disponível em: &lt; <a href="https://books.google.co.id/books?id=vbQIDQAAQBAJ">https://books.google.co.id/books?id=vbQIDQAAQBAJ</a> &gt;.</li> </ol>
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MK Prasyarat	Algoritma dan Pemrograman
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Media Pembelajaran	Software: OS Windows, Python Hardware: PC/Laptop, LCD Projector
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Mgg Ke-	Topik	Bahan Kajian (Materi Pembelajaran)
(1)	Introduction to Data Science and and getting match with Python	Python Capabilities for Data Science
(2)	Reviewing Basic Python Programming	Brief review about Python Programming
(3)	Working with the Real Data in Data Science	Managing Data from Relational Database (SQL), NoSQL database dan Data from Web
(4)	Working with the Data using NumPy and Pandas	Using NumPy and Pandas for Scientific Computing and Data Analysis
(5)	Supervised Learning in Python	SVM in Python and any other methods using tools Scikit-learn
(6)	Reducing Dimensionality	Understanding Singular Value Decomposition
(7)	Detecting Outliers in Data	Considering Detection of Outliers

**UJIAN TENGAH SEMESTER (UTS)**

(8)	Exploring Four Simple and Effective Algorithms	Linear Regression, Logistic Regression, Naive Bayes, Nearest Neighbours
(9)	Model Evaluation and Improvement	Performing Cross-Validation, Selection and Optimization
(10)	Essentials Data Science Resource Collections	Gaining insights with Data Science and resource collections
(11)	Data Science in Recommender System System	How a recommendation system works and What Data Science can do

(12)	Collaborative Filtering Recommender System	Python code for Recommendation systems
(13)	Business Problems and Data Science Solutions	From business problems to data mining tasks and its process
(14)	Data Science and Business Strategy	Competitive advantage via Data Science and Examine Data Science Case Studies
	<b>UJIAN AKHIR SEMESTER (UAS)</b>	