



**Colegio de San Juan de Letran**  
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Library and Media Services

## **RESEARCH GUIDE: ENGINEERING DATA ANALYSIS**

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## RESEARCH GUIDES

### ENGINEERING DATA ANALYSIS

#### I. SCOPE NOTE

*Engineering Data Analysis (EDA) is an indispensable analysis tool for the engineering team of the industries to analyze processes, integration, and yield (conversion rate) effectively in order to enhance the competitiveness of the company. [fs-technology.com](http://fs-technology.com)*

#### II. SEARCH AIDS (BT: Broader Term, RT: Related Term, NT: Narrow Term)

##### BT:

- Engineering Data Analysis

##### RT:

- Data collection
- Probability
- Discrete probability distribution
- Continuous probability distribution
- Joint probability distribution
- Sampling distribution
- Point estimation of parameters
- Statistical intervals
- Test of hypothesis for a single sample
- Statistical inference of two samples
- Simple linear regression and correlation
- Rules of probability

##### NT:

- Design of experiments
- Counting rules
- Multiplication rule
- Addition rule
- Complement rule
- Binomial distribution
- Poisson distribution
- Normal distribution
- Mean
- Point estimate
- Interval estimate
- Tolerance interval
- Confidence interval
- Prediction interval
- Empirical models
- Modeling linear relationships

- Strength of linear relation
- T-tests
- Residual analysis
- Coefficient of determination

### III. INFORMATION RESOURCES

#### A. LIBRARY RESOURCES

*Note: For the appropriate access credentials, please contact the Letran Bataan Library*

#### ➤ E-JOURNALS

- Computers in Industry.  
[https://www.proquest.com/central/publication/publications\\_45387](https://www.proquest.com/central/publication/publications_45387)
- Chance. [https://www.proquest.com/central/publication/publications\\_55420](https://www.proquest.com/central/publication/publications_55420)
- Journal of Physics: Conference Series.  
[https://www.proquest.com/central/publication/publications\\_4998668](https://www.proquest.com/central/publication/publications_4998668)
- Technology, Knowledge and Learning.  
[https://www.proquest.com/central/publication/publications\\_1496342](https://www.proquest.com/central/publication/publications_1496342)
- Journal of Quality Technology.  
[https://www.proquest.com/central/publication/publications\\_34668](https://www.proquest.com/central/publication/publications_34668)
- IEEE Signal Processing Magazine.  
[https://www.proquest.com/central/publication/publications\\_85449](https://www.proquest.com/central/publication/publications_85449)
- International Journal of Engineering Research in Africa.  
[https://www.proquest.com/central/publication/publications\\_2029174](https://www.proquest.com/central/publication/publications_2029174)
- PLoS One. [https://www.proquest.com/central/publication/publications\\_1436336](https://www.proquest.com/central/publication/publications_1436336)
- IBM Systems Journal.  
[https://www.proquest.com/central/publication/publications\\_35072](https://www.proquest.com/central/publication/publications_35072)
- Computers & Industrial Engineering.  
[https://www.proquest.com/central/publication/publications\\_9545](https://www.proquest.com/central/publication/publications_9545)
- IOP Conference Series. Materials Science and Engineering.  
[https://www.proquest.com/central/publication/publications\\_4998670](https://www.proquest.com/central/publication/publications_4998670)
- IEEE Transactions on Software Engineering.  
[https://search.proquest.com/central/publication/publications\\_21418](https://search.proquest.com/central/publication/publications_21418)
- IEEE Transactions on Engineering Management.  
[https://search.proquest.com/central/publication/publications\\_4949](https://search.proquest.com/central/publication/publications_4949)
- International Journal of Information Engineering & Electronic Business.  
[https://search.proquest.com/central/publication/publications\\_2026670](https://search.proquest.com/central/publication/publications_2026670)
- Technometrics. [https://search.proquest.com/central/publication/publications\\_24108](https://search.proquest.com/central/publication/publications_24108)
- Engineering Management Journal.  
[https://search.proquest.com/central/publication/publications\\_30720](https://search.proquest.com/central/publication/publications_30720)

#### ➤ E-THESES

- Latorre, J. T. (2014). Leadership preparation in engineering: A study of perceptions of leadership attributes, preparedness, and policy implications (Order No. 3635347). Available from ProQuest Central. (1619175265). Retrieved from <https://www.proquest.com/dissertations-theses/leadership-preparation-engineering-study/docview/1619175265/se-2?accountid=190548>
- Cagle West, M. (2010). Effective software engineering leadership for development programs (Order No. 3448401). Available from ProQuest Central. (860741301). Retrieved from <https://www.proquest.com/dissertations-theses/effective-software-engineering-leadership/docview/860741301/se-2?accountid=190548>
- Ashford, B. M. (2001). Guidance for improved performance of extraction process techniques employed in reverse engineering (Order No. 3041392). Available from ProQuest Central. (276306029). Retrieved from <https://www.proquest.com/dissertations-theses/guidance-improved-performance-extraction-process/docview/276306029/se-2?accountid=190548>
- Amin, M. S. (2018). Developing a recall mitigation framework for complex systems (Order No. 10689922). Available from ProQuest Central. (2021738028). Retrieved from <https://www.proquest.com/dissertations-theses/developing-recall-mitigation-framework-complex/docview/2021738028/se-2?accountid=190548>
- Huang, Y. (2014). Improving engineering students' non-technical professional skills and attitudes to engineering through inquiry based lab learning (Order No. 3623615). Available from ProQuest Central. (1550352992). Retrieved from <https://www.proquest.com/dissertations-theses/improving-engineering-students-non-technical/docview/1550352992/se-2?accountid=190548>
- Brown, M. S., Jr. (2019). The effects of informal learning environments on engineering education (Order No. 13814118). Available from ProQuest Central. (2310735579). Retrieved from <https://www.proquest.com/dissertations-theses/effects-informal-learning-environments-on/docview/2310735579/se-2?accountid=190548>
- Mamaril, N. J. A. (2014). Measuring undergraduate students' engineering self-efficacy: A scale validation study (Order No. 3583959). Available from ProQuest Central. (1609201486). Retrieved from <https://www.proquest.com/dissertations-theses/measuring-undergraduate-students-engineering-self/docview/1609201486/se-2?accountid=190548>
- Hibberts, M. F. (2017). Known-groups validity and generalizability of a measure of engineering design (Order No. 10642209). Available from ProQuest Central. (1972101618). Retrieved from <https://search.proquest.com/docview/1972101618?accountid=190548>
- Campbell, R. K. (2018). Cyber incident anomaly detection using multivariate analysis and machine learning (Order No. 10784357). Available from ProQuest Central. (2031540664). Retrieved from <https://search.proquest.com/docview/2031540664?accountid=190548>
- Deshotel, M. W. (2017). Enhancing undergraduate water resources engineering education using data and modeling resources situated in real-world ecosystems: Design principles and challenges for scaling and sustainability (Order No. 10266036). Available

- from ProQuest Central. (1941586927). Retrieved from <https://search.proquest.com/docview/1941586927?accountid=190548>
- Garigue, R. J. (2005). Evaluating data interoperability: A policy -driven ontological analysis model (Order No. NR06735). Available from ProQuest Central. (276347723). Retrieved from <https://search.proquest.com/docview/276347723?accountid=190548>
  - Koski, H. L. (2011). An analysis of the coast guard's surface fleet reliability program for medium endurance cutters (Order No. 1496339). Available from ProQuest Central. (881102133). Retrieved from <https://search.proquest.com/docview/881102133?accountid=190548>

## B. OPEN ACCESS

### ➤ FREE E-BOOKS

- Ruppert, David and Matteson, David S. (2015). Statistics and Data Analysis for Financial Engineering with R examples. 2<sup>nd</sup> edition. Switzerland: Springer. <https://www.pdfdrive.com/statistics-and-data-analysis-for-financial-engineering-with-rexamples-d157863728.html>
- Mailund, Thomas. (2017). Beginning Data Science in R Data Analysis, Visualization, and Modelling for the Data Scientist. New York: Apress. <https://www.pdfdrive.com/beginning-data-science-in-r-data-analysis-visualization-andmodelling-for-the-data-scientist-d181093942.html>
- Berk, Kenneth N. and Carey, Patrick. (2010). Data Analysis with Microsoft® Excel Updated for Office 2007. Australia: Brooks/Cole Cengage Learning. <https://www.pdfdrive.com/data-analysis-with-microsoft-excel-d25241812.html>
- Winston, Wayne. (2014). Microsoft Excel 2013: Data Analysis and Business Modeling. California: Microsoft Press. <https://www.pdfdrive.com/microsoft-excel-2013-dataanalysis-and-business-modeling-d41555581.html>
- Brandt, Siegmund. (2014). Data Analysis Statistical and Computational Methods for Scientists and Engineers, 4<sup>th</sup> edition. Switzerland: Springer. <https://www.pdfdrive.com/data-analysis-statistical-and-computational-methods-forscientists-and-engineers-d165969301.html>

### ➤ FREE E-JOURNALS

- Data Science and Engineering (DSE). <https://www.springer.com/journal/41019>
- Data. <https://www.mdpi.com/journal/data>
- Engineering Reports. <https://onlinelibrary.wiley.com/journal/25778196>
- Statistical Analysis & Data Mining. <https://onlinelibrary.wiley.com/journal/19321872>
- Open Engineering. <https://www.degruyter.com/journal/key/eng/html?lang=en>
- International Journal of Engineering and Applied Physics. <https://ijeap.org/ijeap>
- Computational Statistics & Data Analysis. <https://www.journals.elsevier.com/computational-statistics-and-data-analysis>
- International Journal of Data Analysis Techniques & Strategies. <https://www.inderscience.com/jhome.php?jcode=ijdat>

- Engineering Reports. <https://onlinelibrary.wiley.com/journal/25778196>
- International Journal of Data Analysis & Statistics. <http://www.sciencepublishinggroup.com/journal/index?journalid=367>
- International Journal of Engineering & Business Management. <https://journals.sagepub.com/home/enb>

#### ➤ FREE E-THESES

- Kavasidis, I. (2016). Multifaceted analysis for medical data understanding: from data acquisition to multidimensional signal processing to knowledge discovery. (Thesis). Università degli Studi di Catania. Retrieved from <http://hdl.handle.net/10761/3925>
- Sarra Fiore, A. (2012). Complex Networks: Data Analysis, Models, Tools, Applications. (Thesis). Università degli Studi di Catania. Retrieved from <http://hdl.handle.net/10761/1073>
- Benedetti, A. (2014). Investigation of the CO2 carbonation reaction: kinetic models, CFD simulations and thermogravimetric data analysis. (Thesis). Università degli Studi di Padova. Retrieved from [http://tesi.cab.unipd.it/46359/1/Tesi\\_Benedetti.pdf](http://tesi.cab.unipd.it/46359/1/Tesi_Benedetti.pdf)
- Sarra Fiore, A. (2012). Complex Networks: Data Analysis, Models, Tools, Applications. (Thesis). Università degli Studi di Catania. Retrieved from <http://hdl.handle.net/10761/1073>
- Adamczak, K. M. (2012). Examining Historical Climate with Respect to Future Permafrost and Engineering Design: An Analysis of Common Assumptions and Calculations. (Master's Thesis). University of Alberta. Retrieved from <https://era.library.ualberta.ca/files/wp988k651>
- Wang, A. I. (2016). Statistical methods for quality improvements in data-rich engineering applications. (Thesis). Hong Kong University of Science and Technology. Retrieved from [http://repository.ust.hk/ir/bitstream/1783.1-97876/1/th\\_redirect.html](http://repository.ust.hk/ir/bitstream/1783.1-97876/1/th_redirect.html)
- Alfaleh, A. A. (2014). Use of Topological Data Analysis in Reservoir Engineering: Application to Inverted 4D Seismic Data. (Thesis). Texas A&M University. Retrieved from <http://hdl.handle.net/1969.1/154176>

#### C. PROFESSIONAL ORGANIZATIONS

- Data Science Council of America. <https://www.dasca.org/>
- Advanced Analytics Institute. <https://www.uts.edu.au/research-and-teaching/ourresearch/advanced-analytics-institute>
- The International Machine Learning Society. <http://www.machinelearning.org/>
- National Society for Professional Engineers. <https://www.nspe.org/>
- American Association of Engineering Societies. <https://www.aaes.org/>

#### D. OTHER RELATED WEB PORTALS

- Data Engineering Podcast. <https://www.dataengineeringpodcast.com/>
- Medium. [https://medium.com/@Pinterest\\_Engineering](https://medium.com/@Pinterest_Engineering)
- Uber Engineering. <https://eng.uber.com/>
- The Netflix Tech Blog. <https://netflixtechblog.com/>
- O'Reilly. <https://www.oreilly.com/radar/topics/data/>

- AWS Big Data Blog. <https://aws.amazon.com/blogs/big-data/>
- Maxime Beauchemin. <https://maximebeauchemin.medium.com/>
- Towards Data Science. <https://towardsdatascience.com/>
- Analytics Vidhya. [https://www.analyticsvidhya.com/blog/?utm\\_source=feed\\_navbar](https://www.analyticsvidhya.com/blog/?utm_source=feed_navbar)
- PY Data. <https://www.youtube.com/user/PyDataTV/videos>

#### E. RELATED RESEARCH GUIDES

- Northwestern Libraries. <https://libguides.northwestern.edu/data2/matlab>
- NYU Libraries. <https://guides.nyu.edu/stats>
- QUT Research Guide. <https://libguides.library.qut.edu.au/STEMdatasets>
- University of Colorado. <https://libguides.colorado.edu/materials/data>

#### IV. TUTORIALS

- Data Analytics Tutorial 2018 Part 1 | Data Analysis Tutorial | Data Analytics for Beginners 2018. [https://www.youtube.com/watch?v=5m3h\\_aPih9Q](https://www.youtube.com/watch?v=5m3h_aPih9Q)
- Tutorial: Statistics and Data Analysis. [https://www.youtube.com/watch?v=XbHeCL\\_8UhA](https://www.youtube.com/watch?v=XbHeCL_8UhA)
- Fundamentals of Engineering Statistical Analysis | Depicting Quantitative Data. <https://www.youtube.com/watch?v=nQhtrjWKQX8>
- Data Analytics for Beginners | Introduction to Data Analytics | Data Analytics Tutorial. <https://www.youtube.com/watch?v=THODdNXOjRw>
- Data Analytics For Beginners | Introduction To Data Analytics | Data Analytics Using R | Edureka. <https://www.youtube.com/watch?v=fWE93St-RaQ>
- Engineering Data Analysis (with R and ggplot2). [https://www.youtube.com/watch?v=TaxJwC\\_MP9Q](https://www.youtube.com/watch?v=TaxJwC_MP9Q)
- Fundamentals of Engineering Statistical Analysis. <https://www.youtube.com/watch?v=3wi9jEss-PA>
- Statistics for Data Science Full Course | Probability and Statistics for Engineers | Great Learning. <https://www.youtube.com/watch?v=innk6tpRCW0>
- Learn Data Science Tutorial - Full Course for Beginners. <https://www.youtube.com/watch?v=ua-CiDNNj30>
- Data Science Tutorial for Beginners - 1 | What is Data Science? | Data Analytics Tools | Edureka. <https://www.youtube.com/watch?v=dMpdoprDEDI>
- Introduction to Data Science with R - Data Analysis Part 1. <https://www.youtube.com/watch?v=32o0DnuRjfg>
- Lynda. <https://www.lynda.com/Data-Analysis-training-tutorials/1303-0.html>
- Udemy. <https://www.udemy.com/topic/data-analysis/free/>
- Data Camp. <https://www.datacamp.com/courses/>
- Tutorials Point. [https://www.tutorialspoint.com/excel\\_data\\_analysis/data\\_analysis\\_overview.htm](https://www.tutorialspoint.com/excel_data_analysis/data_analysis_overview.htm)
- Simpli Learn. <https://www.simplilearn.com/tutorials/data-science-tutorial>



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