KURIKULUM 2015

PRODI MAGISTER STATISTIKA

KEMENTRIAN, RISET DAN PENDIDIKAN TINGGI

FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM

UNIVERSITAS BENGKULU

2015

KURIKULUM PRODI MAGISTER STATISTIKA FMIPA UNIVERSITAS BENGKULU

Kode		Mata kuliah	SKS	Semester
Mata Kuliah Wajib (28 SKS)				
STA	6101	Metode Statistika	4	1
STA	6102	Model Linier	4	1
STA	6103	Teori Peluang	3	1
STA	6204	Teori Statistika Inferensia I	3	2
STA	6205	Analisis Deret Waktu	3	2
STA	6206	Proses Stokastik Terapan	3	2
STA	6307	Teori Statistika Inferensia II	3	3
STA	6308	Rancangan Percobaan Lanjut	3	3
STA	6309	Teori Statistika Nonparametrika	3	3
STA	6001	Kolokium	5	Ganjil, Genap
STA	6002	Seminar Hasil	5	Ganjil, Genap
STA	6003	Penelitian dan Penulisan Tesis	18	Ganjil, Genap
STA	6004	Publikasi Karya Ilmiah	10	Ganjil, Genap
Mata Kuliah Pilihan				
STA	6511	Analisis Survival	3	Ganjil
STA	6512	Teori Survai Sampel	3	Ganjil
STA	6513	Teori Pengambilan Keputusan	3	Ganjil
STA	6514	Statistika Spasial	3	Ganjil
STA	6621	Analisis Data Kategorik	3	Genap
STA	6622	Analisis Multivariat	3	Genap
STA	6623	Teori Antrian	3	Genap
STA	6624	Statistika Komputasi	3	Genap

STRUKTUR KURIKULUM

Setiap mahasiswa program pasca sarjana Statistika Universitas Bengkulu harus menempuh teori / mata kuliah sebanyak minimal **34** SKS yang terdiri dari 28 SKS mata kuliah wajib yang tersebar kedalam 3 Semester, dan sisanya dapat diambil pada semester 2 dan 3. Selain itu mahasiswa diwajibkan membuat proposal Tesis yang akan dihargai sebanyak **5** SKS, Penelitian dan Penulisan Tesis sebesar **18** SKS, Seminar Statistika **5** SKS, dan Karya Ilmiah **10** SKS sehingga totalnya minimal **72** SKS.

Mata Kuliah Wajib

a. Semester I
    a. STA 6101 4 Metode Statistika
    b. STA 6102 4 Model Linier
    c. STA 6103 3 Teori Peluang
b. Semester II
    a. STA 6204 3 Teori Statistika Inferensia I
    b. STA 6205 3 Analisis Deret Waktu
    c. STA 6206 3 Proses Stokastik Terapan
c. Semester III
    a. STA 6307 3 Teori Statistika Inferensia II
    b. STA 6308 3 Rancangan Percobaan Lanjut
    c. STA 6309 3 Teori Statistika Nonparametrika

Mata Kuliah Pilihan

a. Semester Ganjil
    a. STA 6511 3 Analisis Survival
    b. STA 6512 3 Teori Survai Sampel
    c. STA 6513 3 Teori Pengambilan Keputusan
    d. STA 6514 3 Statistika Spasial
b. Semester Genap
    a. STA 6621 3 Analisis Data Kategorik
    b. STA 6622 3 Analisis Multivariat
    c. STA 6623 3 Teori Antrian
    d. STA 6624 3 Statistika Komputasi

STA 6101 4 Metode Statistika

Pendahuluan, Sebaran Frekuensi, Rata-rata dan standar deviasi, Sebaran Normal, Pengujian Hipotesis, Pembandingan dua sampel, Sebaran Binomial, Metode jalan pintas dan nonparametrik, Regresi, Korelasi, Analisis Frekuensi klasifikasi satu dan dua arah, Anova klasifikasi satu arah, Model Pengaruh Acak dan tetap, Anova Klasifikasi dua arah, Gagal pemenuhan asumsi, Percobaan berfaktor, Regresi Linier Berganda, Analisis Kovarian, hubungan nonlinier, tabel dua arah dengan sampel dan proporsi tak sama, Survai sampel.

Referensi :

1. **Panik, M.J.** 2005. *Advanced Statistics from en Elementary Point of View.* Elsevier Academic Press. Burlington, MA. USA.
2. **Snedecor, G.W. and W.G. Cochran**. 1980. *Statistical Methods.* 7th ed. (or newer). The Iowa State University Press. Ames, Iowa, U.S.A.
3. **Steel, R.G.D. and J.H. Torrie**. 1981. *Principles and Procedures of Statistics. A Biometrical Approach.* McGraw-Hill International Book Company. Singapore.

STA 6102 4 Model Linier

Konsep-konsep Matematik, konsep-konsep Statistik, Sebaran Normal Multidimensi, Sebaran bentuk kuadratik, Model Model Linier, Model Linier Umum, Teknik Komputasi, Penerapan Model Linier umum, Sampling dari Sebaran Normal Multivariat, Regresi Berganda, Korelasi, Aplikasi Model Regresi, Model Rancangan Dua Faktor, Model Komponen Ragam.
Referensi :

1. **Graybill, F.A.** 1969. *Introduction to Matrices with Application in Statistics*. Wadsworth Publishing Company Inc. Belmont, California, U.S.A.
2. **Graybill, F.A.** 1976. *Theory and Application of the Linear Models*. Wadsworth & Brooks/Cole Advanced Books & Software. Pacific Grove, California, U.S.A.
3. **McCulloch, C.E. and S.R. Searle.** 2001. *Generalized, Linear, and Mixed Models.* John Wiley & Sons, Inc. New York, NY. USA.

STA 6103 3 Teori Peluang

Pendahuluan, Peluang, Kombinatorik, Peubah Acak, Nilai Harapan, Sebaran khusus, dan Teorema Limit.
Referensi :

1. **Dudley, R.M.** 2004. *Real Analysis and Probability*.Cambridge University Press. Cambridge. UK.
2. **Gillies, D.** 2000. *Philosophical Tkeories of Probability.* Routledge. Taylor & Francis Group. London. UK.
3. **Heathcote, C.R.** 1971. *Probability : Elements of the Mathematical Theory*. Wiley Interscience Division. John Wiley & Sons, Inc. New York, U.S.A.
4. **Larsen, R.J. and M.L. Marx**. 1985. *An Introduction to Probability and Its Applications*. Prentice-Hall, Inc. Englewoods Cliffs, New Jersey, U.S.A.

STA 6204 3 Teori Statistika Inferensia I

Peluang, Peubah Acak dan Sebarannya, Sebaran bersama, Fungsi Peubah Acak, Sifat-sifat Peubah Acak dan Sebaran Normal beserta sebaran yang berkaitan.
Referensi :

1. **Bain, J. and M. Engelhardt**. 1987. *Introduction to Probability and Mathematical Statistics*. Duxbury Press. Boston, Massachussets, U.S.A.
2. **Bickel, P.J. and K.A. Doksum**. 1977. *Mathematical Statistics. Basic Ideas and Selected Topics*. Holden Day, Inc. Oakland, California, U.S.A.
3. **Mendenhall, W., R.L. Scheaffer, and D.D. Wackerly**. 1986. *Mathematical Statistics with Applications*. 3rd edition. Duxbury Press. Boston, Massachussets, U.S.A.
4. **Mood, A.M., F.A. Graybill, and D.C. Boes**. 1974. *Introduction to the Theory of Statistics*. 3rd edition. McGraw-Hill International Book Company. Singapore.
5. **Mukhopadhyay, N**. 2000. *Probability and Statistical Inference*. Marcel Dekker, Inc. New York. NY. USA.
6. **Rohatgi, V.K**. 1976. *An Introduction to Probability Theory and Mathematical Statistics.* John Wiley and Sons. New York, U.S.A.

STA 6205 3 Analisis Deret Waktu

Pengertian, Teknik Deskripsi Sederhana, Model-model peluang untuk deret waktu, Estimasi dalam domain waktu, peramalan, proses stasioner dalam domain waktu, analisis spektral, proses-proses bivariat, sistem-sistem linier, model state-space dan Kalman filter, model-model nonlinier, pemodelan deret waktu multivariat, topik lainnya.
Referensi :

1. **Box, G. and G. Jenkins**. 1970. *Time series analysis: Forecasting and control*, Holden-Day . San Francisco. U.S.A.

2. **Chatfield, C**. 1995. *The Analysis of Time Series. An Introduction. 5th ed*. Chapman & Hall/CRC. Washington, DC., U.S.A.
3. **Kirchgassner, G. and J. Wolters**. 2007. *Introduction to Modern Time Series Analysis*. Springer Verlag. Berlin, Germany.

STA 6206 3 Proses Stokastik Terapan

Pendahuluan, Proses Poisson, Teori Renewal, Rantai Markov, Rantai Markov Waktu Kontinu, Gerak Brown dan Proses Markov lainnya, Random Walks dan Martingale, Relasi Tertata Stokastik.

Referensi :

1. **Karlin, S. and H.M. Taylor**. 1975. *A First Course in Stochastic Processes. 2nd ed.* Academic Press. New York. U.S.A.
2. **Lefebvre, M**. 2007. *Applied Stochastic Processes.* Springer Science Business Media LLC. New York, U.S.A.
3. **Ross, S.M**. 1983. *Stochastic Processes*. John Wiley & Sons. New York, U.S.A.

STA 6307 3 Teori Statistika Inferensia II

Limit sebaran peubah acak, Sebaran Nilai Ekstrim, Teori Estimasi Titik, Teori Estimasi Interval, Pengujian Hipotesis Statistika.

Referensi :

1. **Bain, J. and M. Engelhardt**. 1987. *Introduction to Probability and Mathematical Statistics*. Duxbury Press. Boston, Massachussets, U.S.A.
2. **Bickel, P.J. and K.A. Doksum**. 1977. *Mathematical Statistics. Basic Ideas and Selected Topics*. Holden Day, Inc. Oakland, California, U.S.A.
3. **Mendenhall, W., R.L. Scheaffer, and D.D. Wackerly**. 1986. *Mathematical Statistics with Applications*. 3rd edition. Duxbury Press. Boston, Massachussets, U.S.A.
4. **Mood, A.M., F.A. Graybill, and D.C. Boes**. 1974. *Introduction to the Theory of Statistics*. 3rd edition. McGraw-Hill International Book Company. Singapore.
5. **Rohatgi, V.K**. 1976. *An Introduction to Probability Theory and Mathematical Statistics.* John Wiley and Sons. New York, U.S.A.
6. **Young, G.A. and R.L. Smith**. 2005. Essentials of Statistical Inference. Cambridge University Press. Cambridge. UK.

STA 6308 3 Rancangan Percobaan Lanjut

Aspek pengendalian error dan rancangan perlakuan, dengan menitik beratkan pada pengembangan historis dan kenyataan praktis dan hubungan keduanya. Materi mencakup: Incomplete block dan row-column designs, Symmetrical and asymmetrical factorial designs, Systems of confounding, Fractional factorial designs, including main effect plans, Supersaturated designs, Robust design or Taguchi experiments, Lattice designs, Crossover designs.

Referensi :

1. **Dean, A and D. Voss**. 1999. *Design and Analysis of Experiments.* Springer Verlag. New York, U.S.A.
2. **Hinkelman, K and O. Kempthorne**. 2005. *Design and Analysis of Experiments. Volume 2 Advanced Experimental Design*. Wiley Series in Probability and Statistics. John Wiley & Sons. New York, U.S.A.

STA 6309 3 Teori Statistika Nonparametrika

Pendahuluan, Statistik Tataan, Keteracakan, Kebaikan-suai, Prosedur satu sampel dan sampel berpasangan, problem dua sampel, statistik rank linier, uji kesamaan k sampel saling independen, ukuran asosiasi, ARE, analisis data cacah.

Referensi :

1. **Gibbons, J.D. and S. Chakraborti**. 2003. *Nonparametric Statistical Inference*. 4th ed. Marcel Dekker, Inc. New York. U.S.A.
2. **Govindarajulu, Z**. 2007. *Nonparametric Inference*. World Scientific. New Jersey. U.S.A.

STA 6511 3 Analisis Survival

Kosep Survival, Model model parametrik : distribusi, estimasi, model regresi dan model dengan fraksi yang survive; Metode nonparametrik satu sampel; metode nonparametrik dua sampel, metode nonparametrik k sampel, regresi nonparametrik : *Cox Proportional Hazards Model* dan *Time Accelerated Time Models*; Kesesuaian model (Goodness of fit) dan topik topik lainnya.

Referensi :

1. **Allison, P.D**. 2004. *Survival Analysis using SAS. A Practical Guide*. SAS Publihsing, Inc. Cary, NC. U.S.A.
2. **Kleinbaum, D.G. and M. Klein**. 2005. *Survival Analysis. A Self-Learning Text. 2nd ed*. Springer. New York. U.S.A.
3. **Machin, D., B.C. Yin and M.K.B. Parmar**. 2006. *Survival Analysis. A Practical Approach. 2nd ed*. John Wiley & Sons. Susex. England.
4. **Miller, R.G. Jr**. 1981. *Survival Analysis*. John Wiley & Sons. New York. U.S.A.

STA 6512 3 Teori Survai Sampel

Konsep dasar, Pengambilan sampel acak sederhana tanpa pengembalian, pengambilan sampel dengan peluang bervariasi, Pengambilan sampel terstratifikasi, Metode estimasi tipe rasio, metode estimasi regresi, pemilihan satuan pengambilan sampel, sub sampel, pengambilan sampel sistematis, kesalahan bukan karena penarikan sampel.

Referensi :

1. **Chambers, R.L. and C.J. Skinner**. 2003. *Analysis of Survey Data*. John Wiley & Sons. New York. U.S.A.
2. **Chandhuri, A. and H. Stenger**. 2005. *Survey Sampling. Theory and Methods. 2nd ed*. Chapman & Hall/CRC. Washington, DC. U.S.A.
3. **Rao, P.S.R.S**. 2000. *Sampling Methodologies with Applications*. Chapman & Hall/CRC. Washington, DC. U.S.A.
4. **Sukhatme, P.V., B.V. Sukhatme, S. Sukhatme and C. Asok**. 1984. *Sampling Theory of Surveys Applications*. 3rd ed. Iowa State University Press. Ames, Iowa. U.S.A.

STA 6513 3 Teori Pengambilan Keputusan

Kriteria keputusan, teori utilitas, pohon keputusan, pohon keputusan dan aturan Bayes, pengambilan keputusan dengan distribusi normal, sedangkan katagori (1b) meliputi sebagai berikut: pengambilan keputusan banyak criteria atau goal programming, fungsi utilitas banyak kriteria, analytic hierarchy process (AHP), two-person zero-sum dan constant-sum games, strategi random, dominasi, solusi grafis, two-person non constant-sum games, dan n-person games.

Referensi :

1. **Winston, W.L.** (1994). *Operations Research. Applications and Algorithms*. *Third Edition*. California: Duxbury Press.
2. **Taha, Hamdy A.** (2007). *Operations Research. An Introduction. Eighth Ed*., New Jersey: Pearson Prentice Hall
3. **Hillier, F. and Lieberman, G.** (1990). *Introduction to Operations Research*, *5th Ed*. New York: MacGraw-Hill.

4. **Forgo, F., Szep, J., Szidarovszky, F.** (1999). *Introduction to the Theory of Games. Concepts, Methods, Applications.* Boston: Kluwer Academic Publishers.

STA 6514 3 Statistika Spasial

Peubah regional dan fungsi peubah acak, Variogram dan fungsi kovarian, Isotropik dan anisotropik, Kriging, Model linier regionalisasi dan aspek-aspeknya, Geostatistik peubah ganda.

Referensi :

1. Armstrong, M. (1998). Basic Linear Geostatistics, Berlin: Springer-Verlag
2. Cressie, N.(1993).*Statistics for Spatial Data*. John Wiley & Sons.
3. Wackernagel, H. (1995).*Multivariate Geostatistics, An Introduction with Applications*. Springer-Verlag.
4. Sandra L.A.(1996).*Practical handbook of Spatial Statistics*. CRC Press. Inc. USA.
5. Isaaks, E.H. and Srivastava, R.H.(1989).*Applied Geostatistics*. Oxford University Press.

STA 6621 3 Analisis Data Kategorik

Pendahuluan, sebaran dan inferensi data kategorik, tabel kontingensi, GLM, regresi logistik, model logit untuk respon multinomial, model loglinier untuk tabel kontingensi, model matched-pairs, data respon kategorik berulang, pengaruh acak, model campuran linier umum untuk repon kategorik, model campuran lain untuk data kategorik.

Referensi :

1. **Agresti, A**. 2002. *Categorical Data Analysis. 2nd ed*. John Wiley & Sons. New York. U.S.A.
2. **Fienberg, S.E**. 2007. *The Analysis of Cross-Classified Categorical Data. 2nd ed*. Springer Science Business Media LLC. New York, U.S.A.

STA 6622 3 Analisis Multivariat

Statistika Deskriptif Multivariabel, Review Aljabar Matriks, Peubah Acak Multivariat, Sebaran Multivariat, Teori Multivariat normal, Estimasi Parameter, Pengujian Hipotesis, Dekomposisi Matriks Data dengan menggunakan Faktor, Analisis Komponen Utama, Analisis Faktor Eksploratori, Analisis Klaster, Analisis Diskriminan, Analisis Korespondensi, Analisis Korelasi Kanonik, Penskalaan Multidimensi, Analisis Konjoin.

Referensi :

1. **Hardle W. and L. Simar**. 2007. *Applied Multivariate Statistical Analysis. 2nd ed*. Springer-Verlag Berlin. Germany.
2. **Haris, R**. 2001. *A Primer of Multivariate Statistics. 3rd ed.* Lawrence Earlbaum Associates Publisher. Mahwah. New Jersey. U.S.A.
3. **Rencher, A.C**. 2002. *Methods of Multivariate Analysis. 2nd ed.* John Wiley & Sons. New York. U.S.A.

STA 6623 3 Teori Antrian

Pemodelan proses layanan dan kedatangan, proses kelahiran dan kematian, sistem antrian M/M/1/GD/ ∞ / ∞ dan rumus antrian $L = \lambda W$, sistem antrian M/M/1/GD/c/ ∞ , sistem antrian M/M/s/GD/ ∞ / ∞ , model antrian M/G/ ∞ /GD/ ∞ / ∞ dan GI/G/ ∞ /GD/ ∞ / ∞ , sistem antrian M/G/1/GD/ ∞ / ∞ , model perbaikan mesin dengan sumber daya terhingga, antrian exponential series dan jaringan antrian terbuka, sistem antrian M/G/s/GD/s/ ∞ , model antrian prioritas.

Referensi :

1. Winston, W.L. (1994). *Operations Research. Applications and Algorithms*. Third Edition. California: Duxbury Press.
2. Taha, Hamdy A. (2007). *Operations Research. An Introduction.* Eighth Edition, New Jersey: Pearson Prentice Hall

3. Hillier, F. and Lieberman, G. (1990). *Introduction to Operations Research*, Fifth Edition, New York: MacGraw-Hill.
4. Gross, D., Shortle, J.F., Thompson, J.M., Harris, C.M. (2009). *Fundamentals of Queueing Theory, Set.* Fourth Edition. New Jersey: John Wiley and Sons

STA 6624 3 Statistika Komputasi

Analisis Statistika (SAS/TTEST, SAS/STAT, SAS/ETS, SAS/QC, SAS/ ANOVA), Pengolahan Matriks (SAS/IML), Manajemen Data (SAS/FSP), Aplikasi Interaktif (SAS/AF, SCL (Screen Control Language)), Pemetaan (SAS/GRAPH), Sistem Informasi Eksekutif (SAS/EIS), Penarikan contoh berbasis komputerdan simulasi.

Referensi :

1. Cody , R.P., Smith J.K. (2006)· *Applied Statistics and the SAS Programming Language.* Fifth Edition. United States:Prentice Hall.