

X

NPTEL

reviewer2@nptel.iitm.ac.in ▼

Courses » Applied Time-Series Analysis

Announcements

Course

Ask a Question

Progress



# Unit 8 - Week 3: Introduction to Random Processes, Auto- and Cross- Correlation Functions

## Course outline

R-based Exam

How to access the portal?

Assignment 0

R Tutorials

Week 1: Introduction & Overview

Week 2: Review of Probability & Statistics

Week 3: Introduction to Random Processes, Auto- and Cross- Correlation Functions

- Course Notes for Week 3
- Lecture 10A: Introduction to Random Processes-2
- Lecture 10B: Introduction to Random Processes-3
- Lecture 11A: Introduction to Random Processes-4
- Lecture 11B: Introduction to Random Processes-5
- Lecture 11C: Autocovariance &

## Week 3 Assignment

The due date for submitting this assignment has passed. **Due on 2018-02-14, 23:59 IST.** As per our records you have not submitted this assignment.

- 1) 1 point
- Yes  
 No
- No, the answer is incorrect.**  
**Score: 0**
- Accepted Answers:**  
*No*
- 2) 1 point
- Quadratic trend and periodicity  
 Stationarity  
 Linear trend  
 Quadratic trend only
- No, the answer is incorrect.**  
**Score: 0**
- Accepted Answers:**  
*Quadratic trend only*
- 3) Non-negative definiteness of ACVF for a stochastic process implies 1 point
- ACVF values are always positive-valued  
 Periodicity of that process  
 Spectral distribution is guaranteed to exist  
 ACVF is non-zero at all non-negative lags
- No, the answer is incorrect.**  
**Score: 0**
- Accepted Answers:**  
*Spectral distribution is guaranteed to exist*
- 4) 1 point

Autocorrelation Functions-1

Lecture 12A: Autocovariance & Autocorrelation Functions-2

Lecture 12B: Autocovariance & Autocorrelation Functions-3

Lecture 13A: Autocovariance & Autocorrelation Functions-4

Lecture 13B: Autocovariance & Autocorrelation Functions-5

Lecture 13C: Autocovariance & Autocorrelation Functions-6

Lecture 14A: Autocovariance & Autocorrelation Functions-7

Quiz : Week 3 Assignment

Data set: w3\_q5.Rdata

Week3 Assignment Solutions

Week 3 Feedback

**Week 4: Auto- and cross-correlation functions (contd.), Models for Linear Stationary Processes**

**Week 5: Models for Linear Stationary & Non-Stationary Processes**

**Week 6: Models for Linear Non-Stationary Processes (contd.), Fourier Transforms**

**Week 7: Fourier Transforms, DFT and Periodogram**

A process generates a sinusoidal wave, which is observed with error,  $v[k] = A \cos(2\pi f_0 k) + e[k]$ . Where  $e[k]$  is the usual zero-mean, unit-variance white noise sequence, and  $A, f_0$  are suitable constants. For this process, the sample covariance function given by

$$R_{vv}[l] = \frac{1}{N} \sum_{k=l+1}^N (v[k] - \bar{v})(v[k-l] - \bar{v})$$

is asymptotically (large samples,  $N \rightarrow \infty$ ) periodic. Then the frequency of  $R_{vv}[l]$  is \_\_\_\_\_

- $f_0$
- 
- 
- 0

No, the answer is incorrect.

Score: 0

Accepted Answers:

$f_0$

5) For the series given in w3\_q5.Rdata, what would be an appropriate model to build?

1 point

- No model possible
- AR model
- MA model
- ARMA model

No, the answer is incorrect.

Score: 0

Accepted Answers:

No model possible

6) 

1 point

- 
- 
- 
- 

No, the answer is incorrect.

Score: 0

Accepted Answers:

7)

1 point

- 
- 
- 
- 

No, the answer is incorrect.

Score: 0

Accepted Answers:

8)

1 point

- 
- 
- 
- 



Week 8: Spectral Representations & Estimation Theory

Week 9: Estimation Theory

Week 10: Estimation Methods

Week 11: Estimation methods (contd.)

Week 12: Estimation of Power Spectral Density & Time Series Models

Case Studies on Modelling

DOWNLOAD VIDEOS

Interactive Session

No, the answer is incorrect.

Score: 0

Accepted Answers:

9)

- Yes  
 No

No, the answer is incorrect.

Score: 0

Accepted Answers:

Yes

10) Which of the following sets of characteristics would usually best describe an AR(3) process ?

- An exponentially decay in ACF and abrupt cut-off in PACF beyond lag 3  
 An exponentially decay in PACF and abrupt cut-off in ACF beyond lag 3  
 An exponentially decay in both ACF and PACF  
 Abrupt cut-off in both ACF and PACF beyond lag 3

No, the answer is incorrect.

Score: 0

Accepted Answers:

An exponentially decay in ACF and abrupt cut-off in PACF beyond lag 3

1 point



0 points

Previous Page

End

© 2014 NPTEL - Privacy & Terms - Honor Code - FAQs -

A project of



In association with



Funded by

Government of India  
Ministry of Human Resource Development

Powered by

