

2022 Projet Proposition d'un module de cours à destination des doctorants

I. Informations générales :

Etablissement d'accueil <i>Institution</i>	<input checked="" type="checkbox"/> UP <input type="checkbox"/> ENSMA
TITRE du cours en français <i>French title</i>	Analyse statistique des données expérimentales
TITRE du cours en anglais <i>English title</i>	Statistical Analysis of Experimental Data
Enseignant <i>Teacher</i>	Mihaï Arghir Tel : 05.49.49.65.40 Email : mihai.arghir@univ-poitiers.fr

Jours	Horaire	Salle
01/09/2022	10:30-12:30	
08/09/2022	10:30-12:30	
15/09/2022	10:30-12:30	
22/09/2022	10:30-12:30	
29/09/2022	10:30-12:30	

II. Brève description du cours proposé

Statistical Analysis of Experimental Data
 Systematic errors: sources, reduction, quantification (0.5 h)
 Statistical analysis of measurements subject to random errors (3.5 h)
 Sources and treatment of random errors
 Mean, median, standard deviation and variance
 Graphical data analysis techniques, normal distribution

Standard error of the mean, chi-squared and Student t distributions
 Goodness of fit to a normal distribution
 Rogue data points (data outliers)
 Aggregation of measurement system errors (1h)
 Aggregation of errors from separate measurement system components
 Total error when combining multiple measurements
 Parametrical identification. (3h)
 The least square method and the least absolute value method.
 Nonlinear regression, quality of fit, residuals and applicability of fit
 Exercices (2-4 h)

[1] Morris, A.S., Langari, R., Measurement and Instrumentation. Theory and Application, Academic Press, 2012.

[2] Protassov, K., Analyse Statistique des Données Expérimentales, EDP Sciences

[3] Schoukens, J., Pintelon, R., Rolan, Y, Mastering System Identifications in 100 Exercises, IEEE Press, 2012.

[4] ***, Mathcad Data Analysis Extension Pack