11.	Course unit:							NE/MT2012/23/11/M3
MATHEMATICS – module 3							

Semester	Weeks in the semester	Hours in week			Hours in the semester			ECTS
		A	C	L	A	C	L	
1	15	1	2		15	30		7
2	15	1	2		15	30		7
3	15	1	2		15	30		7

III/3. Learning outcomes and sylabus

Learning outcomes – semester 3		Field-specific
LO1	Distinguishes basic types of differential equations and can solve them.	K_W01
LO2	Knows basic concepts of the probability calculus and can use them in analyzing random variables.	K_U11
LO3	Determines confidence intervals for various parameters, and formulates and verifies statistical hypotheses.	K_U11

Syllabus

SEMESTER 3	MATHEMATICS	LECTURES	15 HOURS

1. Ordinary differential equations: selected types of first order equations (np. równania o zmiennych rozdzielonych, równania jednorodne, równania liniowe), selected types of second order differential equations: particular cases, linear differential equations of second order with constant coefficients;
2. Probability calculus: elementary events, random events, definition of probability, properties of probability, conditional probability, independence of random events, Bernoulli scheme, total probability, Bayes formula, random variables, probability distributions of random variables, parameters of random variables, 2D discrete and continuous random variables, covariance, correlation coefficients, correlated random variables, independence of random variables.
3. Fundamentals of mathematical statistics: basic terms and theorems, some probability distributions occurring in mathematical statistics, estimators, confidence intervals, statistical hypotheses and their verification, statistical tests.

SEMESTER 3	MATHEMATICS	TUTORIALS	30 HOURS

The tutorials cover topics and problems lectured.