

# Syllabus

## 1. Program information

1.1. Institution	ACADEMY OF ECONOMIC STUDIES
1.2. Faculty	Economic Cybernetics, Statistics and Informatics
1.3. Departments	(Department) INFORMATICA SI CIBERNETICA ECONOMICA
1.4. Field of study	Economic Informatics
1.5. Cycle studies	Master Studies
1.6. Education type	Full-time
1.7. Study program	IT&C Security
1.8. Language study	
1.9. Academic year	2017-2018

## 2. Course information

2.1. Name	<b>Software Quality Management &amp; Assurance</b>								
2.2. Code	<b>17.0241IF2.1-0007</b>								
2.3. Year of studies	<b>2</b>	2.4. Semester	<b>1</b>	2.5. Assessment type	<b>Exam</b>	2.6. Course type	<b>O</b>	2.7. Number of ECTS	<b>4</b>
2.8. Instructors									

## 3. Total estimated time

3.1. Number of weeks	14.00		
3.2. Number of hours per week	2.00	of which	
		C(C)	1.00
		S(S)	1.00
3.3. Total hours from curriculum	28.00	of which	
		C(C)	14.00
		S(S)	14.00
3.4. Total hours of study per semester (ECTS*25)	100.00		
3.5. Total hours of individual study	72.00		
<i>Time distribution for individual study</i>			
Study the textbook, course support, bibliography and notes			
Further reading in the library, on the online platforms and field			
Preparing seminars, labs, homework, portfolios and essays			
Tutoring			
Examinations			
Other activities			

## 4. Prerequisites

4.1. About curriculum	Electronic Signature, Security Standards and Protocols, Computer Networks Security, Secure Applications Programming, Embedded and Operating Systems Security
4.2. About skills	Java Programming

## 5. Requirements

C(C)	Course lectures take place in rooms with multimedia teaching equipment.
S(S)	Laboratories are held in rooms that have PCs with Internet access. The development environment used is Microsoft Visual Studio 2010 or 2012, Ubuntu within virtual machines with GCC, Java plus necessary tools.

## 6. Skills covered

	C6	Updating the scientific research methods and techniques in computer science applied in economy
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## 7. Course objectives

7.1. General objective	Presentation and deployment of testing scenarios for software quality assurance and management of the source code and executable modules, as well as web platforms taking into account the national and international regulations. The testing process automation for software quality assurance.
7.2. Specific objectives	Transfer tehnologic pentru: -automatizarea testarilor -elaborarea de scripturi si programe Python, Ruby, C/C++, Java si Scala pentru testare automata -utilizarea de unelte automate de testare si de teste de pentrare.

## 8. Course contents

8.1. C(C)		Teaching methods	Advices
1	Ruby Language, Standard Types, Arrays and Hashes, Control Structures.		
2	Containers, Blocks, Iterators, Variables, Classes and Objects. Seminar		
3	Ruby Platform, Basic Input and Output, Interactive Ruby Shell, Regular Expressions, Threads and Processes, Managing Exceptions.		
4	Reflection, ObjectSpace, Calling Methods Dynamically, System Hooks, Marshaling and Distributed Ruby.		
5	Ruby Web Programming, Cookies, Choice of Web Servers, SOAP and Web Services, Improving Performance.		
6	Ruby Gems, Structure of a Gem, Requiring code, Patterns, Specification Reference.		
7	Extending Ruby, Ruby Objects in C, Memory Allocation, Creating an Extension, Embedding a Ruby Interpreter, Bridging Ruby to other Languages.		
8	Metrics for evaluating the quality of secure informatic systems;		
9	Life cycle development management of secure informatic systems;		
10	Quality management of secure informatic systems;		
11	Cost management based on enforced standards.		

***Bibliography***

- D. Thomas, C. Fowler, A. Hunt , Programming Ruby, The Pragmatic Programmers Guide, Addison Wesley, 2005
- D. Flanagan, Y. Matsumoto , The Ruby Programming Language, O'Reilly, 2008
- H. Collingbourne , The Little Book of Ruby, Second Edition, Dark Neon, 2008
- G. Gordon Schulmeyer , Handbook of Software Quality Assurance, 2007
- Ion Ivan, Cristian Toma , Informatics Security Handbook - 2nd Edition, ASE Publishing House, 2009

8.2. S(S)		Teaching methods	Advices
1	Installing and Running Ruby under Windows and Linux, working with Amy Editor & SCite - Real Time Collaborative Ruby Editing. Scripts involving arrays, hashes and control structures.		
2	Working with classes, objects and blocks.		
3	Examples for reading and writing files.		
4	Examples with classes and objects, tracing program's execution, runtime callbacks.		
5	Writing Ruby Scripts for network, HTTP and web service access.		
6	Package the Ruby code in a gem.		
7	Create Ruby extensions in C, working with Ruby objects in C.		
8	Ruby Integrated Framework for testing automation - Selenium		

***Bibliography***

- D. Thomas, C. Fowler, A. Hunt , Programming Ruby, The Pragmatic Programmers Guide, Addison Wesley, 2005
- D. Flanagan, Y. Matsumoto , The Ruby Programming Language, O'Reilly, 2008
- H. Collingbourne , The Little Book of Ruby, Second Edition, Dark Neon, 2008
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**9. Course contents corroboration with the demands of epistemic community representatives, professional associations and representative employers**

Taking into account the best practices from IT&C field applied by big companies such as: Intel, Oracle, Microsoft, IBM, HP and professional consortiums such as: Apache, Red Hat, ISO/IEC.

**10. Assessment**

Activity	Assessment criteria	Assessment methods	Percentage in the final grade
10.1. S(S)		Applied activities, practical or project certificates/laboratory/tests, tests during the module, auditing tests	40.00
10.2. Final assessment		Final examination	60.00
10.3. Grading scale	Whole notes 1-10		
10.4. Minimum performance standard	Knowledge required: building and implementing a set of tests for vulnerabilities diagnosis. The point granted by default is included in the weights assigned to the types of assessments.		

Completion date,  
07/10/2016

Instructors,

Approval date of department

Director of department,