


**L.N. GUMILYOV EURASIAN NATIONAL UNIVERSITY  
FACULTY OF INFORMATION TECHNOLOGIES  
INFORMATION SYSTEMS DEPARTMENT**

**Approved**  
by the Dean of Faculty  
\_\_\_\_\_ Nurbekova Zh.K.  
\_\_\_\_\_, 2018.

**SYLLABUS**  
**Designing applications of information systems**  
Semester: Spring 2019  
2018/2019 Academic Year  
3 credits (2/0/1)  
1<sup>st</sup> year Master's students

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**Astana, 2018**

	Л.Н. Гумилев атындағы Еуразия ұлттық университеті	Оқу (модульдік) жұмыс бағдарламасы (Syllabus)	Басылым: бірінші
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## 1. Short description of the subject

### Aims of the subject:

Brush up students' knowledge of essential developers' tools such as the Unix shell, Git, and Github; then apply skills to investigate HTTP, the Web's fundamental protocol and basic networking skills like DNS, NAT, IPv6, Bandwidth, Latency and how to use tcp dump to explore the packages in the network; master SQL databases and build multi-user web applications using the Flask framework, SQL Alchemy, and authentication providers such as Google and Facebook; students will learn the CRUD pattern (Create, Read, Update, Delete) and how it relates to RESTful architectures and to the operations of a database-backed web service, learn the difference between authentication and authorization and some best practices in developing a login system; students will take a baseline installation of a Linux distribution on a virtual machine and prepare it to host your web applications, to include installing updates, securing it from a number of attack vectors, and installing and configuring web and database servers.

### Objectives of the subject:

Students will learn about building out the infrastructure that powers and supports the many web, desktop, mobile and integrated applications in the world.

### After completing the course masters students should understand:

- Problems and features of the full stack web application design and organizational structure of computing resources.

### Students should be able to:

- Develop full stack web applications using Python, SQL, CRUD pattern, RESTful architecture, and networking protocols.

### Prerequisites of the subject:

- “Analysis and modeling of information processes”;
- “Design of Information Systems Applications”.

### Post requisites:


- Management of modern enterprise and IT infrastructure building
- Master's thesis

## COURSE ASSESSMENT PARAMETERS

Class participation	10%
Assignments (stages of project)	50%
Midterm exam	10%
Final exam	30%
<b>Total</b>	<b>100%</b>

**During the evaluation of students, points described below should be necessarily taken into account:**

- Attendance to classes
- Actively and productively participation to practical study
- Study required and supplementary literatures
- Performance of task
- Performance of individual research project
- Submission of given tasks on time (meeting deadlines)

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### Academic Policy

ENU standard academic policy is used.

**Attention.** In case of missing 20% attendance to lessons, student will be taken from discipline with filling in F (Fail) grade.

### General Topics

Subject	Description
PART 1. Developer Fundamentals	1. Shell Workshop. Version Control 2. The Web from Python 3. Addressing and Networks. Protocol Layers 4. Quiz 1
PART 2. Databases with SQL and Python	5. Data and Tables. 6. Python DB-API 7. Deeper into SQL 8. Quiz 2.
PART 3. Servers, Authorization, and CRUD	9. Working with CRUD. Making a Web Server 10. Developing with Frameworks. Iterative Development Authentication vs Authorization. Local Permission System 11. Accessing Published APIs. Creating Your Own APIs. Writing Developer-Friendly APIs 12. Quiz 3.
PART 4. Deploying to Linux Servers	13. Intro to Linux. Linux Security 14. Web Application Servers 15. Quiz 4.


### Grading

Grade	Number Equivalent	Percentage	Grades in common system
A	4,0	95-100	Excellent
A-	3,67	90-94	
B+	3,33	85-89	Good
B	3,0	80-84	
B-	2,67	75-79	
C+	2,33	70-74	Satisfactory
C	2,0	65-69	
C-	1,67	60-64	
D+	1,33	55-59	
D	1,0	50-54	
F	0	0-49	Unsatisfactory

### Books and Other Complementary Materials of the Course

№		Source Type	Amount
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ЕҰУ Ф 703-13-17 Оқу (модульдік) жұмыс бағдарламасы (Syllabus). Бірінші басылым

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	Authors, Title, Year of Publication		Library	Department
General Resources				
1	Mark Lutz. Learning Python, 5th Edition. Powerful Object-Oriented Programming. O'Reilly Media, June 2013, P: 1648.	Book (pdf)		
2	Tomasz Dyl, Kamil Przeorski. Mastering Full-Stack React Web Development. Packt Publishing, April 2017, P: 386.	Book (pdf)		
3	Jasmin Azemovic. SQL Server on Linux. Packt Publishing, August 2017, P: 222.	Book (pdf)		
4	Miguel Grinberg. Flask Web Development, Developing Web Applications with Python. O'Reilly Media, May 2014, P: 258.	Book (pdf)		
5	Shalabh Aggarwal, Gareth Dwyer, Jack Stouffer. Flask: Building Python Web Services. Packt Publishing, March 2017, P: 770.	Book (pdf)		