

1. Course Code

2224

2. Course Title

Information Network Exercises

3. Teacher

YOKOYAMA, Teruaki

4. Term

Fall 2

5. Course Overview and Objectives

The students experience the technologies for constructing and operating computer network and communication functionalities in programming. The aim is to gain an understanding and knowledge of the Internet technologies. The course consists of workshops along with the IP technologies on routers that are the essential technology of the Internet. Moreover, students will experience how to employ communication function on the Internet in their programming, such as Socket and HTTP.

6. Course Goals (Attainment Targets)

- (1) To know how the Internet works on routers
- (2) To know mechanism of http communication
- (3) To know mechanism of Web API and its application
- (4)
- (5)
- (6)

7. Correspondence relationship between Educational goals and Course goals

| Educational goals of the school | | | Course Goals |
|---------------------------------|--|---------------------------|--------------|
| High level ICT skills | Basic academic skills | | |
| | Specialized knowledge and literacy | | (1),(2),(3) |
| Human skill (Tankyu skill) | Ability to continually improve own strengths | | |
| | Ability to discover and resolve the problem in society | Problem setting | |
| | | Hypothesis planning | |
| | | Hypothesis testing | |
| | | Practice | |
| | Fundamental Competencies for Working Persons | Ability to step forward | |
| | | Ability to think through | |
| | | Ability to work in a team | |
| Professional ethics | | | |

8. Course Requirements (Courses / Knowledge prerequisite for this course)

Fundamentals of Information Networks (2201). Basic understanding of shell environment on Linux or command line on Windows.

9. Textbooks (Required Books for this course)

none

10. Reference Books (optional books for further study)

none

11. Evaluation

| Goals | Evaluation method & point allocation | | | | | |
|------------|--------------------------------------|------|---------|--------------|--------------|-------|
| | examination | Quiz | Reports | Presentation | Deliverables | Other |
| (1) | | | ○ | | | ○ |
| (2) | | | ○ | | | ○ |
| (3) | | | ○ | | | ○ |
| (4) | | | | | | |
| (5) | | | | | | |
| (6) | | | | | | |
| Allocation | | | 30 | | | 70 |

12. Notes

Tuesday Lessons are taught by Shima

Saturday Lessons are taught by Yokoyama

13. Course plan

(Notice) This plan is tentative and might be changed at the time of delivery

Saturday-Lesson 1: Introduction (Lecture 90min)

- Overview of this lecture
- Communication on the Internet

Saturday-Lesson 2: Preparation (Exercise 90min)

- Grouping
- RPI setup

Saturday-Lesson 3: Network Construction (1) (Lecture 90min)

- Basic instruction for Linux (SSH, IP address assignment, Routing)

Saturday-Lesson 4: Network Construction (2) (Exercise 90min)

- Initial setup for RPI router
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Saturday-Lesson 5,6,7,8: Network Construction (3)(4)(5)(6) (Exercise 360min)

- Network construction

1st level construction, one PC under one router

- Network test

ICMP (ping/traceroute), tcpdump

Saturday-Lesson 9,10,11,12: Network Construction (7)(8)(9)(10)

(Exercise 360min)

- Network construction

2nd level construction, multiple routers

- Routing configuration

concept, routing add/del

Saturday-Lesson 13,14: Network Construction (11)(12)

(Exercise 180min)

- Additional functions

Dynamic routing, ipfilter

NAT, DHCP, performance evaluation tools

Saturday-Lesson 15: Report

(Exercise 90min)

- Report and presentation
