

**1. Course Code**

2294

**2. Course Title**

M21e: Requirement Analysis and Design

**3. Teacher**

HIRAISHI, Teruhiko

**4. Term**

Fall 1

**5. Course Requirements (Courses / Knowledge for this course) and Important Information**

None.

**6. Course Overview and Objectives**

This course intends the students to comprehend all processes of information systems, and to understand the upstream processes, requirements definition, and systems architecture design, using case study.

According to a case study, class begins from receiving the RFP(Request for Proposal).

Students are expected to act as suppliers, to analyse stakeholders, to define requirements, and to design architectures.

**7. Course Outline**

- 1 Orientation
- 2 Outline of requirements development
- 3 Outline of RFP(Request for Proposal)
- 4 Structuring stakeholders
- 5 Issues & purpose
- 6 Requirement organization(1)
- 7 Requirement organization(2)
- 8 Developing requirement definition document
- 9 Recent topics on requirement development
- 10 Designing architectures(1)Functional block diagram/Use case diagram
- 11 Designing architectures(2)Use case diagram./Activity diagram
- 12 Designing architectures(3)Class diagram
- 13 Designing architectures(4)State machine diagram
- 14 Designing architectures(5)Data flow e diagram
- 15 Review of the requirement definition document
- 16 Difficulty and measures/Notice of report submission

**8. Textbooks (Required Books for this course)**

None.

**9. Reference Books (optional books for further study)**

None.

**10. Course Goals (Attainment Targets)**

- (1) To be able to explain all processes of systems developments.
- (2) To be able to comprehend the purpose and method of requirement definition, and to analyze the requirements.
- (3) To be able to develop requirement definition documents.
- (4) To be able to understand importance of systems architecture and to be able to develop systems architecture.

- (5)
- (6)
- (7)
- (8)

### 11. Correspondence relationship between Educational goals and Course goals

| Educational goals of the school |  | Course Goals             |         |
|---------------------------------|--|--------------------------|---------|
| High level ICT skills           | Basic academic skills                                  | (1)                      |         |
|                                 | Specialized knowledge and literacy                     | (2),(3),(4)              |         |
| Human skill (Tankyu skill)      | Ability to continually improve own strengths           | (2)                      |         |
|                                 | Ability to discover and resolve the problem in society | Problem setting          | (2),(3) |
|                                 |  | Hypothesis planning      | (2),(3) |
|                                 |  | Hypothesis testing       | (2),(3) |
|                                 |  | Practice                 | (3),(4) |
|                                 | Fundamental Competencies for Working Persons           | Ability to step forward  | (3),(4) |
|                                 |  | Ability to think through | (2),(3) |
| Ability to work in a team       |  | (2),(3),(4)              |         |
| Professional ethics             |  |                          |         |

### 12. Evaluation

| Goals      | Evaluation method & point allocation |      |         |              |              |       |
|------------|--------------------------------------|------|---------|--------------|--------------|-------|
|            | examination                          | Quiz | Reports | Presentation | Deliverables | Other |
| (1)        |                                      |      | ○       | ○            |              |       |
| (2)        |                                      |      | ○       | ○            |              |       |
| (3)        |                                      |      | ○       | ○            |              |       |
| (4)        |                                      |      | ○       | ○            |              |       |
| (5)        |                                      |      |         |              |              |       |
| (6)        |                                      |      |         |              |              |       |
| (7)        |                                      |      |         |              |              |       |
| (8)        |                                      |      |         |              |              |       |
| Allocation |                                      |      | 40      | 60           |              |       |

### 13. Evaluation Criteria

|              |   |
|--------------|---|
| Examination  |   |
| Quiz         |   |
| Reports      | Confirm that students understand the content of the lesson by describing problems and countermeasure based on the knowledge and skills acquired in the lessons and their thoughts.  |
| Presentation | Each section will be presented by the presenter on behalf of the groups. Evaluations are conducted by both other teams and lecturer, for the intelligibility of the explanation rather than the correctness of the content. |
| Deliverables |   |
| Other        |   |

| 14. Active Learning  |  |              |
|--|--|--------------|
| Hourly percentage of active learning within the whole class time |  | 80%          |
| 1  | Active learning such as problem solving assignment using the knowledge and skills acquired in class. | All the time |
| 2  | Active learning such as group works and discussions.   | All the time |
| 3  | Outcome presentations and feedbacks.   | All the time |
| 4  | Students actively make decisions on how the class should be conducted.                               | Sometimes    |

#### 15. Notes

This course intends not only to learn theoretical concept ,but also by thinking themselves, by acting, and by experiencing, acquiring practical skills. Through team discussions and project management, this course intends to improve not only the students' technological skills, but also facilitation, negotiation, and presentation skills.

#### 16. Course plan

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

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Lesson 1: Orientation lecture&practice,90min

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Comprehend the outline of the course.

- (1)Orientation
- (2)Flow of development processes
- (3)What is architecture?

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Lesson 2: Outline of requirements development lecture&practice,90min

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Comprehend the requirements development

- (1) What is requirements development?
- (2) Processes of the requirements development.

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Lesson 3: Outline of RFP lecture&practice,90min

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Read the case study, and comprehend RFP(Request for Proposal)

- (1) What is RFP?
- (2) Comprehend RFP

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Lesson 4: Structuring stakeholders lecture&practice,90min

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Read case study, and structure stakeholders.

- (1) Structuring stakeholders
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Lesson 5: Issues & purpose lecture&practice,90min

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Identify essential issues and the purpose of the system through the case study

- (1) Extract the issues of the organization
- (2) Extract the purpose of the system

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Lesson 6-7: Requirement organization lecture&practice,2\*90min

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Using stakeholder list, develop requirement organization sheet, which will be the basis of the requirement definition document.

- (1) Develop requirement organization sheet

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Lesson 8: Developing requirement definition document lecture&practice,90min

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After summarizing the purpose of the system, requirements organization, develop requirements definition document.

- (1) Develop requirements definition document

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Lesson 9: Recent topics on requirement development lecture&practice,90min

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Introduce recent topics on requirement development, and introduce the concept of the model.

- (1) Recent topics on requirement development
- (2) Concept of model.
- (3) Functional block diagram

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Lesson 10: Designing architectures(1) lecture&practice,90min

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Understand the base of the models. Especially the functional block diagrams, and use case diagram.

- (1) Functional block diagram(continued)
- (2) Use case diagram.

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Lesson 11: Designing architectures(2) lecture&practice,90min

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Understand the base of the models. Especially the functional block diagrams, and use case diagram.

- (1) Use case diagram
  - (2) Activity diagram.
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Lesson 12: Designing architectures(3)

lecture&practice,90min

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Using functional and non-functional requirements, develop system architecture.

(1) Class diagram

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Lesson 13: Designing architectures(4)

lecture&practice,90min

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Using functional and non-functional requirements, develop system architecture.

(4) State machine diagram

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Lesson 14: Designing architectures(5)

lecture&practice,90min

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Using functional and non-functional requirements, develop system architecture.

( 1 ) Data flow diagram

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Lesson 15: Review of the requirement definition document

practice , 90 min

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Review of the requirement definition document

(1) Review of the requirement definition document.

(2) Difficulty and measures

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Lesson 16: Notification of report submission

practice,90min

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Notification on class report

(1)Notification on class report

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