1. Course Title

Fundamentals of Information Networks

2. Instructor

Teruaki YOKOYAMA

3. Term

Fall 2

4. Outline and Objectives

In this course the students study the technologies for constructing and operating computer network which underlying the Internet infrastructure. The aim is to gain a fundamental understanding and knowledge of the Internet technologies for their work in future. The course consists of lectures along with the layered network technologies that are the essential structure of the Internet technologies. The lectures contain the content about the link technology, IP/TCP/UDP technologies, some network applications and some network related technologies.

5. Goals (Attainment Targets)

(1) To understand how the Internet communication is separated into the layered function.
(2) To understand how the Internet works.
(3) To become able to decide network related matters for your purpose.

6. Correspondence relationship between Educational goals and Course goals

<table>
<tr><th colspan="3">Educational goals</th><th>Course goals</th></tr>
<tr><td rowspan="2">High level ICT skill</td><td colspan="2">Basic academic skills</td><td>(1) (2)</td></tr>
<tr><td colspan="2">Specialized knowledge and literacy</td><td>(3)</td></tr>
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<tr><td colspan="3">Professional ethics</td><td></td></tr>
</table>

7. Requirements

Fundamentals of Computer Systems (achievement of attainment targets is required)

8. Textbooks

This course does not use a textbook. Students can obtain lecture materials on Moodle.

9. Reference Books

None

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	quiz	report	presentation	deliverable	other
(1)				○		
(2)				○		
(3)			○			
Total			60	40		

11. Notes

None

Course Schedule
(Notice) This schedule is a tentative plan, there might be changes, additions, revisions etc. at the time of delivering the course.

Lesson 1: Introduction (lecture, 90 min.)

This lesson explains an outline of the course and a brief summary of the Internet technologies. The Internet consists of stacked multiple protocols, which is called "layered network architecture". As a beginning of the Internet studying, students learn the layered network architecture of the Internet communication to help them to obtain the perspective view how the Internet communication mechanism works.

1. Orientation (learning objectives, schedule, evaluation)
2. A summary of the present Internet technologies and applications
3. An introduction of the layered network architecture

Lesson 2: Link-layer technology (1) (lecture, 90 min.)

This lesson explains the function of the link layer and the physical layer mechanisms. The link layer deals with a reliable data transmission between pairs of nodes that connected with same link media. The lesson introduces current major link technologies, e.g. the Ethernet, the WiFi, the LTE and so on, to help students to judge appropriate link technologies for their demanding.

1. A brief summary of the link layer mechanism
2. An introduction of the major link technologies

Lesson 3: Link-layer technology (2) (lecture, 90 min.)

This lesson continues to explain the link layer mechanism. Students learn fundamental functions about the link layer mechanism, e.g. media access control and network topology creation with link connection. They experience the link layer functions through practical exercises. The aim is to understand the link layer communication capabilities and limitations.

1. A study of the link layer functions (MAC, Addressing, Topology)
2. Practical exercises (check MAC address, ARP table)

Lesson 4: Network-layer technology (1) (lecture, 90 min.)

This lesson explains the function of the network layer mechanism. The network layer is responsible for a data transmission over the multiple link media. This lesson introduces the Internet Protocol (IP) as the representative network layer protocol of the current Internet and its related technologies. Students learn the fundamental of the IP technologies first, e.g. the IP address, the addressing assignment rules, the IP packet structure. Then students learn additional IP related technologies, such as Dynamic Host Configuration Protocol (DHCP) and Network Address Translation (NAT) mechanisms.

1. A brief summary of the IP mechanism.
2. A study of the network layer functions (IP address, IP packet)
3. A study of the network layer related mechanisms (DHCP, NAT)

Lesson 5: Network-layer technology (2) (lecture, 90 min.)

The network layer deals with packet forwarding and routing functions. The router is a computer to support the IP packet transmission over different link media. While the transmission, the routers have to decide an appropriate route sender node to receiver node. This lesson introduces the principle of the routing mechanisms. The aim is to understand the network layer communication capabilities and limitations. Moreover, this lesson explains Internet Communication Message Protocol (ICMP) that is used for control message transmission with IP mechanism.
1. A study of the routing mechanism (IP forwarding, Static/Dynamic routing)
2. A study of the ICMP protocol (ICMP message type, ICMP applications)
3. Practical exercises (check routing table, check dynamic routing function, traceroute, ping)

Lesson 6: Transport-layer technology (lecture, 90 min.)

This lesson explains the function of the transport layer mechanism. The transport layer deals with logical units of a data transmission. The major transport layer protocols are Transmission Control Protocol (TCP) and User Datagram Packet (UDP). TCP provides error-free data transmission with their packet retransmission mechanism. TCP also regulates bandwidth usage of the transmission for keeping fair use and avoiding congestion at the link media. Meanwhile, UDP does not provide any reliable control for data transmission. In this lecture, students learn TCP and UDP mechanisms and their works. The aim is to understand the transport layer communication characteristics.

1. A study of the transport layer functions (TCP, Flow control, Congestion avoidance, UDP)
2. Practical exercises (monitor TCP/UDP transmission, check TCP flow control)

Lesson 7: Presentation and discussion ((Presentation and Discussion, 90 min.)

In this lesson, students have to present their presentation. The presentation must include the situation of the Internet deployment in student's country. Otherwise, the interested link-layer technologies and its usage are acceptable as the presentation. Students have 15 minutes for their presentation and discussion.

1. Presenting student's presentation.
2. Having discussion based on their presentations.

Lesson 8: Review for lectures (lecture, 90 min.)

In this lesson, students have an opportunity to clear their doubts and to demand an additional lecture about the things they want to know more.

1. A review of the previous lectures
2. An opportunity for having questions
3. An opportunity for demanding an additional lecture

Lesson 9: Domain Name technology (lecture, 90 min.)

This lesson explains the concept of domain name on the Internet and how the naming space is operated. Domain name is one of the significant technologies for the ordinary users. It is operated with DNS (Domain Name System) as the huge scale distributed databases. With the DNS, the ordinary users can access to the host on the Internet without any concern for IP addresses and physical location. Students learn the divide-and-conquer operation of the domain name and how the DNS supports the operation. The aim is to understand the principle of the naming function on the Internet and its application.

1. A study of the concept of domain name on the Internet (Structure and Management)
2. A study of the mechanism of DNS (divide-and-conquer strategy, distributed operation)

Lesson 10: Application-layer technology (lecture, 90 min.)

This lesson explains the function of the application layer abstraction. The application layer is an abstraction layer providing communication methods designed for process-to-process data transmission across an IP network. As hiring communication on the application layer function, Socket API is provided for network programming. Students learn the abstraction of the layer and some examples for network application. The aim is to understand the method to use communication functions for their demand.

1. A study of the concept of the application layer
2. Practical exercise (Socket programming examples)

Lesson 11: WWW technology (lecture, 90 min.)

This lesson explains World Wide Web technology as a representative application on the Internet. WWW is a major application on the Internet. WWW can support various kinds of services. WWW technology consists of three technologies such as HTTP, URL and HTML. Through the lecture of the technologies, students learn how to make WWW technology with them. Students also learn about the possible applications on the Internet from some examples. The aim is to understand WWW capability and to become able to design WWW services.

1. A study of the summary for the WWW technology
2. A study for key technologies of WWW (HTTP, URL, HTML)
3. A study of the typical examples of the application on WWW

Lesson 12: Other technologies (lecture, 90 min.)

This lesson explains network related important technologies, Public key cryptosystem, Virtualization and Distributed computing. Public key cryptosystem is one of the most significant techniques against security concerns on communication via the Internet. Virtualization is expected that it may contribute to give more flexibility and more controllability to networking by software-based network control. Distributed Computing provides powerful and interesting services based on communication on the Internet. Students learn these technologies for understanding more about applications and the capabilities in future.

1. A study of Public key cryptosystem
2. A study of Virtualization technologies (Virtual Machine, Virtual Network, Cloud Computing)
3. A study of Distributed Computing (Server-Client, Clustering, Distributed Computing, P2P)

Lesson 13: Presentation and discussion ((Presentation and Discussion, 90 min.)

In this lesson, students have to present their presentation. Students are required to choose the technical mechanisms or the services. And students investigate them and present their presentations. Students and teacher have a discussion with their presentations.

1. Presenting student’s presentation.
2. Having discussion based on their presentations.

Lesson 14: Review for lectures (lecture, 90 min.)

In this lesson, students have an opportunity to clear their doubts and to demand an additional lecture through about the things they want to know more.

1. A review of the previous lectures
2. An opportunity for having questions
3. An opportunity for demanding an additional lecture

Lesson 15: Conclusion (lecture, 90 min.)

In this lesson, the course content from the 1st up to 14th is reviewed briefly for confirming and promoting student’s understanding.

1. A summary of the whole course content
2. Giving a report as the last exam of the course

1. Course Title

Fundamentals of Open Source Software

2. Instructor

Markon Sandor

3. Term

Fall 1

4. Outline and Objectives

Open Source Software is becoming an important resource for development, especially in developing countries. A working understanding of the economical and technical background of the Free / Open Source Software movement (FOSS) is essential for its effective use. ICT innovators need an active knowledge of the available FOSS resources, including hosting sites, projects, communities, legal frameworks, organizations etc.

The course takes students through the history and current status of the FOSS world, and starts them exploring it, by connecting their personal experiences with corresponding FOSS projects. Students will experience finding and using Open Source Software projects. They also learn how to initiate a new project, or join and extend an existing project. By completing the course, students will be ready to apply OSS methods and resources in their work.

5. Goals (Attainment Targets)

(1). Can identify the licensing of open source systems and make decisions on their use, based on an understanding of the legal, economical and technical issues.
(2). Can find open source projects related to a given development problem.
(3). Can install from source code an open source project and start using it.
(4). Can choose the correct license, development model, and development community for open source projects, and can initiate a new project or join an existing project.
(5). Can use the major development platforms and tools that are common for open source projects.
(6). Experience participating in a public open source project.

6. Correspondence relationship between Educational goals and Course goals

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7. Requirements

Fundamentals of Computer Systems (achievement of attainment targets is required)

8. Textbooks

None. This course uses only material freely available on the Internet (links will be provided on Moodle).

9. Reference Books

None

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	quiz	report	presentation	deliverable	other
(1)			○			
(2)				○	○	
(3)				○	○	
(4)				○	○	
(5)			○			
Total			40	30	30	

11. Notes

None

Course Schedule
(Notice) This schedule is a tentative plan, there might be changes, additions, revisions etc. at the time of delivering the course.

Lesson 1: Orientation, introduction, motivation (discussion and demonstration, 90 min)

Students will be engaged in a discussion about their perception and understanding of Open Source Software issues. We review the areas that are to be covered in the course, and identify common issues of importance. A sample Open Source Software project is reviewed, we install and test it together as a starting reference point for the course.

Lesson 2: History, background, current status (lecture, discussion, 90 min)

We discuss the emergence of Free Software and Open Source Software movements, using examples and practical issues, some of them from personal experience. We then review how OSS is being used now, discuss areas of success and failure, trends, outlook.

Lesson 3: Where are the projects? (discussion, demonstrations, 90 min)

We review OSS repositories and development organizations, with emphasis on finding projects and resources relevant to a given development task. Students choose together a topic of common interest and we explore OSS repositories to find resources for it.

Lesson 4: Legal and social issues (lecture, discussion, 90 min)

Starting with the concepts of copyrights and patents for software, we discuss issues like protecting creative work, building up common foundations of culture, freedom of creation and expression, the dilemma of sharing or exclusivity, motivations for contributing etc. Common licensing models for OSS projects will be reviewed and discussed from the point of view of practical consequences of choices for licensing, both for the developer and the user.

Lesson 5: Business issues (lecture, discussion, 90 min)

How to make money out of free software? We discuss business models for companies, developers and users, including OSS-oriented IT companies, manufacturers developing OSS components for their physical products, service providers, independent consultants and others.

Lesson 6: Technical foundations of OSS 1. (lecture, exercises, 90 min)

Some of the important coding conventions and development methodologies of OSS development are explored using examples from Apache and the Linux kernel. We cover the use of version control systems, bug reporting, release control, project organization, developer and user forums.

Lesson 7: Technical foundations of OSS 2. (lecture, exercises)

We review some major development languages, libraries and frameworks that are commonly used in OSS projects. We look at the source code of Apache as an example, discussing issues like naming, commenting, structuring.

Lesson 8: Using OSS 1. (group work, 90 min)

Students form working groups, each of which selects a development topic to be solved using OSS. Each group creates a Tankyu chart, setting up a hypothesis for solving the issue, and a plan for finding OSS resources.

Lesson 9: Using OSS 2. (group work and discussion, 90 min)

Each group presents their plan and findings, to be reviewed by the class. Points to be checked include relevance of the resources to the problem, maturity of the OSS projects, practical usability of the current release, and the feasibility of joining and adapting the projects.

Lesson 10: Everyday OSS (demonstration and discussion, 90 min)

We discuss living with Android, Linux, LibreOffice, Firefox, Thunderbird, and other OSS components, without requiring any non-free software. Who can and who cannot leave the commercial software world? Can a company, a school, a government office, a grandmother standardize on OSS? What are the missing pieces? What are the advantages and pitfalls? What is coming in the near future? How can we contribute?

Lesson 11: Using OSS 3. (group work, 90 min)

Final presentation of the “Using OSS” project.

Lesson 12: Developing OSS 1. (group work, 90 min)

The groups select a development topic (might be the same as the “Using OSS” project) that requires a new OSS project for solution. Each group sets up a new OSS project at SourceForge, GoogleCode or another hub and starts development.

Lesson 13: Developing OSS 2. (group work, 90 min)

The groups present their status, discussing progress and issues that they have encountered.

Lesson 14: Developing OSS 3. (group work, 90 min)

Final presentation of the “Developing OSS” projects.

Lesson 15: Wrap-up (discussion, 90 min)

Based on what we have learned in the course, we discuss what each student will do using OSS during their studies and after graduating. We also review the impact of OSS on our countries and the society, and discuss what we can do to contribute.

1. Course Title

Foundations of Computer Systems

2. Instructor

Samiullah PARACHA

3. Term

Fall 1

4. Outline and Objectives

The premise of this course is to introduce students to the foundations of computer systems and expose them to concepts they have not yet explored. As such, it covers the basic theory of digital computers; the organization & structure of a computer system; hardware/ software; the role of an operating system; and application development tools & methods. Looking at these basic themes from an advanced perspective will reveal many new connections. The aim is to build a stronger foundation in the knowledge and understanding of computer systems through interactive lecturing, classroom/ home assignments (i.e. practice exercises, reports etc.), lab activities, presentation and mid/final examinations.

5. Goals (Attainment Targets)

After the completion of this course, students will be able to:

(1). understand the basic theory of digital computers;
(2). know the organization & structure of a computer system;
(3). grasp the concepts of hardware, software & the role of an operating system; and
(4). find out application development tools & methods.

6. Correspondence relationship between Educational goals and Course goals

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</table>

7. Requirements

None

8. Textbooks

This course does not use a textbook. Students can obtain lecture materials on Moodle.

9. Reference Books

- Computer Architecture and Organization by William Stallings
- Fundamentals of Computer organization and Design by Sivarama P. Dandamudi
- Digital Electronics - An Introduction to Theory and Practice by W H Gothmann
- Binary Functions and Their Applications by Stormer, H., Beckmann, Martin J
- The Number System by H. A. Thurston

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	Quiz	Report	Presentation	deliverable	other
(1)	○	○	○			
(2)	○	○	○			
(3)	○	○		○		
(4)	○	○		○		
Total	60	20	10	10		

11. Notes

None

Course Schedule
(Notice) This schedule is a tentative plan, there might be changes, additions, and revisions at the time of delivering the course.

Lesson 1 Data, Information and Knowledge (Q and A)

This lecture outlines the complete Course, and introduces the concepts of data, information and knowledge. Students will be able to identify the difference between analog and digital signals. They will also acquaint themselves with various number systems and practice binary arithmetic and conversions. Interactive techniques and strategies will be applied to engage students in the learning process, retain more information and be more satisfied. Students can also compare their responses to their classmates in an easy and effective manner.

Lesson 2 Codes (Concept Review Quiz)

In this lesson, students will acquaint themselves with codes, their history and different types. Various coding systems such as ASCII, EBCDIC & UNICODE will be introduced and students will learn Binary-Coded-Decimal (BCD) arithmetic techniques. The lecture will be interactive followed by classroom/ home practice assignments to ensure active learning. At the end of the lecture there will be a well chosen list of further readings for those who want to find out more.

Lesson 3 Digital Logic Circuit Design: Putting logic to use (Exercise)

This lecture will present Boolean Logic, Logic Gates, Universal Gates, Exclusive-OR/ NOR Gates illustrated by diagrams to the students. They will also learn Boolean Operations and acquaint themselves with the Standard form of Boolean Expressions, various Rules, Laws and Theorems of Boolean Algebra. To encourage active participation, techniques such as straightforward questioning, rhetorical questioning, brainstorming, quizzes and surveying will be used at different points in the lecture that will be followed by classroom/ home practice assignments.

Lesson 4 Combinational Logic Design (Exercise)

This lecture will introduce Combinational Circuits, Adders and Subtractors and illustrated with appropriate diagrams and examples. Students will also practice Codes Conversion, particularly:

- Binary to BCD
- BCD to Binary
- BCD to Excess-3
- Excess-3 to BCD

Brainstorming can be used at different points in the lecture: (i) to invite everyone in the group to participate and to put them at ease; (ii) to change the pace; (iii) to regain the group's attention; and (iv) apply certain `facts' presented so far.

Lesson 5 Multiplexers & Demultiplexers (Report)

This lecture will cover topics such as Digital Encoders, Decoders, Multiplexers & Demultiplexers. The advantages & disadvantages, structure & functions of these circuits will be illustrated through suitable diagrams and examples. Handouts of slides will be distributed among students allowing students to participate more in thinking about the concepts under discussion rather than writing down every word of the lecture.

Lesson 6 Sequential Circuit (Exercise)

This lecture will cover sequential circuits, including:

- Types of Sequential Circuit
- Clock Signals
- Storage Elements
    - Latches
    - Flip-flops

The lecture will be interactive followed by classroom/ home practice assignments to ensure active learning. At the end of the lecture there will be a well-chosen list of further readings for those who want to find out more.

Lesson 7 Midterm Review (Q & A Session)

In this session, students have an opportunity to clarify their doubts and revise to perform well in the midterm exam. It includes:

- A review of the previous lectures
- An opportunity for having questions
- An opportunity for demanding an additional lecture

- Midterm Exam

Lesson 8 Historical Evolution of Computer Technology (Video Documentary)

This lecture will provide an overview of the historical evolution of computer technology from Abacus to Microprocessors. In particular the origin and the five generations of computers will be discussed in detail. At the end of the lecture there will be a well-chosen list of further readings for those who want to find out more.

Lesson 9 Organization & Structure of a Computer System (Home Assignment)

This lecture will introduce the organization, structure, functions and various operations of a Computer System. The following topics will be covered:

1. Central Processing Unit (CPU)
2. Control Unit (CU)
3. Arithmetic Logic Unit (ALU)
4. Memory
5. Input/ Output Devices

Lesson 10 Operating System (Quiz)

This lecture will provide students with an understanding of the Operating System and its structure. Different types of Operating Systems, their applications, use & history will also be discussed. In addition topics such is multiprogramming, file management, language processing, interrupts, how do operating systems handle interrupts will also be the focus of this lecture. To encourage active participation, techniques such as straightforward questioning, rhetorical questioning, brainstorming, quizzes and surveying will be used at different points in the lecture which will be followed by classroom/ home practice assignments.

Lesson 11 Programming Language (Q and A)

This lecture will discuss both the history and future of programming languages. Some of the difficulties in writing such a history will be indicated. A key part of the lecture will be a tree showing the chronological development of languages and their interrelationships. Reasons for the proliferation of languages will be given. Major languages will be significance-wise with key concepts other than specific languages will be discussed.

Lesson 12 Introduction to Software Development (Report)

This lecture provides an introduction to the practical software development life cycle and stages. It also provides information about the documentation required for all serious software development projects. Guidelines are provided about criteria for selecting hardware and software platforms.

Lesson 13 Introduction to Human–Computer-Interaction (Quiz)

This lecture will involve the study of users-computer interaction. The objective will be to familiarize students with some of the basic human and machine related factors that influence the design and development of interactive computing systems. The lecture will also highlight the role of Human-Computer-Interaction (HCI) and User-Centered-Design (USD) in Software Development.

Lesson 14 The Internet and Services (Documentary)

The purpose of this lecture is to discuss the history of the Internet Explain how to access and connect to the Internet; analyze an IP address Identify the components of a Web address; explain the purpose of a Web browser Search for information on the Web Describe the types of Web sites; recognize how Web pages use graphics, animation, audio, video, virtual reality, and plug-ins; identify the steps required for Web publishing; explain how e-mail, FTP, newsgroups and message boards, mailing lists, chat rooms; instant messaging, and Internet telephony work; identify the rules of netiquette; and describe the types of e-commerce.

Lesson 15 Term-end: Presentation+ Report+Quiz

In this lesson, students have an opportunity to clarify their doubts and revise to perform well in the final exam. It includes:

- A review of the previous lectures
- An opportunity for having questions
- An opportunity for demanding an additional lecture
- Confirmation of understanding and assessment

1. Course Title

Computer Programing Exercises

2. Instructor

Markon Sandor

3. Term

Fall 3

4. Outline and Objectives

Programming is the foundation of every other subject in ICT. By becoming proficient in programming, students will be able to actively participate in projects involving system creation. Programming is also necessary for testing ideas, constructing and maintaining networks and servers, and in many other areas.

The course first reviews the fundamentals of procedural programming through experimental exploration, using the dynamic, interactive Python language. Next, students are introduced to static typing using C in the Linux environment and Java in the Processing framework, so they will be prepared to continue their studies with Java for Android programming, and C for generic programming.

The course also introduces students to other common languages like C++ for Linux programming, Common Lisp for AI (Artificial Intelligence) programming, Mathematica for scientific programming etc. so they can continue extending their repertoire after finishing the course.

5. Goals (Attainment Targets)

(1). Become able to read, understand, and modify programs written in Python and Java.
(2). Become able to use the development environment of Processing.
(3). Become able to develop a small but complete system in Processing.
(4). Can write and use Python scripts for everyday tasks.

6. Correspondence relationship between Educational goals and Course goals

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7. Requirements

Fundamentals of Computer Systems (achievement of attainment targets is required)

8. Textbooks

None. This course uses only material freely available on the Internet (links will be provided on Moodle).

9. Reference Books

None

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	quiz	report	presentation	deliverable	other
(1)			○			
(2)			○			
(3)				○	○	
(4)				○	○	
Total			40	30	30	

11. Notes

None

Course Schedule

(Notice) This schedule is a tentative plan, there might be changes, additions, revisions etc. at the time of delivering the course.

Lesson 1: Orientation, introduction, motivation (lecture and demonstration, 90 min)

What is programming? We consider solving everyday tasks, first by natural language, then by writing exact and detailed instructions. Students learn the basics of the Python language through a few simple exercises and use it to test their understanding of the elements of programming principles.

Lesson 2: Analyzing an Open Source program (group work, 90 min)

A small real-world C program is reviewed in detail, motivating the need for "Code Reading" skills and tools. We discuss the differences of the C syntax from Python, the need for declarations and compilation, and other C-related issues.

Lesson 3: Code Reading fundamentals, review of the program (lecture, 90 min)

We review some commonly used tools and techniques for code reading, and use them to analyze a larger piece of OSS system.

Lesson 4: C programming topics and pitfalls (group work, 90 min)

We work through a set of examples from OSS systems showing how C is used in practice, with emphasis on avoiding bad coding, dangerous constructs,

Lesson 5: Java programming topics 1. (lecture and group discussion, 90 min)

Java is introduced as an object-oriented and safer alternative to C. We review the object-oriented way of thinking and its use to develop models for systems.

Lesson 6: Java programming topics 2. (lecture and group discussion, 90 min)

We review some important Java libraries used in Android programming, including graphics, user interactions, and networking.

Lesson 7: Java programming topics 3. (lecture and group discussion, 90 min)

We review the Processing language and programming environment, in particular its use for rapid prototyping of interactive programs. Students develop original demonstrations with graphics and sound, using Processing.

Lesson 8: Java exercises 1. (group work, 90 min)

Groups of students develop Java applications for Android, using Eclipse.

Lesson 9: Java exercises 2. (group work, 90 min)

Presentation of the group work results.

Lesson 10: Python topics 1. (lecture and discussion, 90 min)

The power of the Python language is demonstrated through using it for common tasks. Reviewed concepts include dynamic development, advanced data types, iterations, exceptions, objects, modules.

Lesson 11: Python topics 2. (lecture and discussion, 90 min)

We review Python libraries, including networking, graphics, numerical computation, databases.

Lesson 12: Python topics 3. (lecture and discussion, 90 min)

We review practical development in Python, with structuring and building a project, testing, using the unit test facilities, and deployment.

Lesson 13: Python exercises 1. (group work, 90 min)

Student groups use Python to build and test a small but complete system providing a well-defined new functionality, in a given short time.

Lesson 14: Python exercises 2. (group work, 90 min)

Presentation and discussion of the results of the group work.

Lesson 15: Wrap-up (discussion, 90 min)

Students review their experience with programming; discussions are directed to helping to make programming a natural, integral part of their life with ICT. We also discuss other programming languages and methods including Mathematica and Commin Lisp, and the choices available for finding the best tools.

1. Course Title

Information Security

2. Instructor

Hisato Shima

3. Term

Fall 2

4. Outline and Objectives

In this course the student learns basics of information security, in management aspect and technical aspect. Students understand of various types of Security incidents and attacks, and learn methods to prevent, detect and react information security incidents. Students will also learn basics of application of cryptography which are one of the key building blocks to implement security functions.

At the last session, teams of students will make presentation of their study project for a topic related to information security.

5. Goals (Attainment Targets)

(1) To become able to explain various Information security threat and controls for it.
(2) To become able to explain information security incident response.
(3) To become able to explain the usage of Common Key cryptography and Public Key cryptography.
(4) To become able to explain the mechanism to protect confidentiality and completeness of data.
(5) To become able to explain the mechanism to authenticate users and servers.
(6) To become able to analyze a security incident and develop a countermeasure.
(7) To become able to explain the professional ethics and law related information security.

6. Correspondence relationship between Educational goals and Course goals

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<tr><td colspan="3">Professional ethics</td><td>(7)</td></tr>
</table>

7 Requirements

Fundamentals of Information Networks (achievement of attainment targets is required)

8. Textbooks

None

9. Reference Books

To be announced in the class

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	quiz	report	presentation	deliverable	other
(1)			○	○		
(2)			○	○		
(3)		○				
(4)		○	○			
(5)		○	○			
(6)		○	○	○		
(7)		○				
Total		40	30	30		

11. Notes

None

Course Schedule

(Notice) This schedule is a tentative plan, there might be changes, additions, revisions etc. at the time of delivering the course.

Lesson 1: Overview of Information Security (Lecture 90 min)

The overview of this course will be explained. Several examples of security incidents are introduced. Students understand the goal and scope of this course.

1. Orientation (learning objectives, performance evaluation, etc.)
2. What is Information Security?
3. Examples of Information Security Incidents
4. Organization for Information Security Management

Lesson 2: Basics of Information Security and Human aspect (Lecture 90 min)

Students learns the three concepts of information security and other basic concepts. Human and Management Aspect of Security measure is explained.

1. The three concepts of Information Security (Confidentiality, Integrity, Availability)
2. Basic terminologies in Information Security
3. Human Aspect of Information Security
4. Social Engineering

Lesson 3: Information Security for Server Systems (Lecture 90 min)

Security Attacks for Server systems will be explained and discuss counter measure for attacks.

1. Attacks for Systems connected to the Internet and counter measure
2. Attacks for Web Servers and counter measure
3. Denial of Service Attack
4. Attacks for Network

Lesson 4: Information Security for Client devices (Lecture 90 min)

Security Attacks for Client devices will be explained and discuss counter measure for attacks.

1. Attacks for Personal Computers and Smart phones, and counter measure
2. How the malicious software intrude the device
3. What the malicious software does to the system
4. Stolen and Lost Devices

Lesson 5: Information Security Risk management (Lecture 60 min, Exercise 30 min)

Students learns Risk Management process for Information Systems

1. What is Risk Management process
2. Identifying Information Assets
3. Identifying Security Risk and evaluation
4. Risk Treatment

Lesson 6: Information Security Risk management Exercise (Exercise 90 min)

Students exercises Risk Management process

1. Identifying Information Assets
2. Identifying Security Risk and evaluation
3. Risk Treatment
4. Presentation of exercise result

Lesson 7: Security Risk management as an Organization (Exercise 90 min)

Students learn how an organization manage security risk, including, establishing policy, building organization and internal rules.

1. Information Security Management System (ISMS)
2. Information Security Policy, Standards and Procedures
3. Incident Response
4. Business Continuity Plan
5. Security Audit

Lesson 8: Professional Ethics and Law (Lecture 90 min)

Law and Regulation related to Information Security will be discussed. We also discuss about Professional Ethics and ICT expert.

1. Japanese Law related to Information Security
2. Personal Information Protection
3. Copyright
4. Professional Ethics as ICT expert

Lesson 9: Information Security and Cryptography (Exercise 90 min)

Use of Cryptography is essential to protect Information Security. In this section Students learns about basic concept of cryptography

1. What is Cryptography?
2. Classic Cryptography
3. Requirements for Secure Communication
4. Common Key Cryptography and Public Key Cryptography

Lesson 10: Common Key Cryptography (Lecture 45 min, Exercise 45 min)

Students learn and exercise Common Key Cryptography

1. Common Key Cryptography algorithms: DES, Triple DES, AES
2. Exercise on Common Key Cryptography
3. Encryption modes
4. Exercise on Encryption modes

Lesson 11: Public Key Cryptography (Lecture 90 min)

Students learn about Public Key Cryptography.

1. Problems of Key distribution for Common Key Cryptography
2. What is Public Key Cryptography
3. RSA
4. Hybrid encryption

Lesson 12: Public Key Cryptography Exercise (Exercise 90 min)

Students exercise Public Key Cryptography and Hybrid encryption.

1. Exercise of Public Key Cryptography
2. Exercise of Hybrid encryption

Lesson 13: Data Integrity and Digital Signature (Lecture 60 min, Exercise 30 min)

Students learns how to detect unauthorized change of data

1. Integrity of Data and authentication
2. Hash Function
3. Digital Signature
4. Exercise of Hash functions and Digital Signature

Lesson 14: Authentication and PKI (Lecture 60 min, Exercise 30 min)

Students learns about User Authentication, Server Authentication and Public Key Infrastructure (PKI)

1. What is Authentication
2. Passwords, Challenge Response Authentication
3. Public key Infrastructure (PKI) and Certificate Authority
4. Exercise on PKI

Lesson 15: Presentation and Discussion (Presentation and Discussion 90 min)

Groups of Students will make presentations for the topic they selected and researched. After each presentation, we have Q&A and Discussion session in the class.

1. Course Title

ICT Solutions

2. Instructor

Chika Yoshida

3. Term

Spring 2

4. Outline and Objectives

Today, Information and Communication Technology (ICT) is a necessary infrastructure in globe.
Also ICT solutions take key roles in E-business environment for all industry.
In this course, students will learn what ICT solutions are and which roles these take for the business. Students will also be able to introduce the solutions and occasion where these are required. The course consists lecture session and group work session including discussion and presentation. In the group work, students will have an experience of decision making such as what kind of solutions company select in the simulate situation.

5. Goals (Attainment Targets)

It aims the students understand the roles of ICT solutions and to be able to describe the characteristic of solutions. Students will be able to select suitable solutions in actual situation.
(1) Able to explain the roles of ICT solutions for business with the historical background.
(2) Able to explain vertical and horizontal ICT solutions for industrial situation.
(3) Able to distinguish the feature of solutions between package solutions and custom made solution
(4) Able to distinguish the purpose of solutions between mission critical solutions and web business solutions
(5) Able to select and decide the solutions for actual occasion.

6. Correspondence relationship between Educational goals and Course goals

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</table>

7 Requirements

None

8. Textbooks

None

9. Reference Books

Business Drive Technology, Haag Baltzan Phillips, ISBN 978-0-07-312368-4

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	quiz	report	presentation	deliverable	other
(1)			○			
(2)				○		
(3)				○		
(4)				○		
(5)				○		
Total			20	80		

11. Notes

None

Course Schedule

(Notice) This schedule is a tentative plan; there may be changes, additions, and revisions etc. at the time of delivering the course.

Lesson 1 Introduction to ICT solutions (Lecture, 90min)

Explanations of Course logistics and overview of ICT solutions

(1) Course logistics (Course schedule, Syllabus, Evaluation, etc.)

(2) Information and Communication Role of ICT in Business

(3) Information Technology Basics

Lesson 2 ICT solutions category (Lecture, 90min)

To learn a various kind of ICT solutions from solution Map.

(1) Basics classification of ICT solution.

(2) Difference of solutions for mission critical systems and web based solutions

(3) Difference of custom solutions and package solution c

Lesson 3 Custom solution by development (1) (Lecture and Exercise, 90min)

To learn Software development models from development model diagram.

(1) What is Waterfall development model?

(2) What is incremental and iterative development model?

(3) System development and Out sourcing

Lesson 4 Custom solution by development (2) (Group Discussion and presentation, 90min)

To discuss in group and give a short presentation about custom-development solutions according student's experience or knowledge

(1) Discuss about custom development students have experienced or known cases.

(2) Give a short presentation about the discussion

(3) Discuss about advantage and disadvantage in class.

Lesson 5 Package solution by development (1) (Lecture, 90min)

Explanation of ICT package solutions and cases.

(1) What is CRM (Customer Relationship Management) solution?

(2) What is SCM (Supply Chain Management) solution?

(3) What is ERP (Enterprise Resource Planning) solution?

Lesson 6 Package solution by development (2) (Group Discussion and Presentation, 90min)

To discuss in group and give a short presentation about Package solutions according student's experience or knowledge

(1) Discussion about custom development solutions students have experienced or known cases.

(2) Giving a short presentation about the discussion

(3) Discussion about advantage and disadvantage and suitable field for the solution in class.

Lesson 7 E-Business application (1) (Lecture, 90min)

Explanation of E-business solutions and cases.

(1) What is B to C (Business to Consumer) solution?

(2) What is B to B (Business to Consumer) solution?

(2) What is B to B to C (Business to Business to Consumer) solution?

(3) What is B to E (Business to Employee) solution?

Lesson 8 E-Business application (2) (Group Discussion and Presentation, 90min)

To discuss in group and give a short presentation about Package solutions according student's experience or knowledge

(1) Discussion about E-Business solutions students have experienced or known cases.

(2) Giving a short presentation about the discussion.

(3) Discussion about advantage and disadvantage and suitable field for the solution in class.

Lesson 9 Cloud solutions for business (1) (Lecture, 90min)

Explanation of Cloud business solutions and cases.
(1) What are Cloud Computing and Cloud Business?
(2) Infrastructure of Cloud computing.
(3) Market shift to Cloud computing.

Lesson 10 Cloud solutions for business (2) (Group Discussion and Presentation, 90min)

To discuss in group and give a short presentation about Cloud solutions according student's experience or knowledge
(1) Discussion about Cloud solutions students have experienced or known cases.
(2) Giving a short presentation about the discussion
(3) Discussion about advantage and disadvantage and suitable field for the solution in class.

Lesson 11 Agile Development on Cloud (1) (Lecture, 90min)

Explanation of Agile development on Paas and cases.
(1) What is Agile development?
(2) Shifting Development model
(3) Development on Cloud.

Lesson 12 Agile Development on Cloud (2) (Group Discussion and Presentation, 90min)

To discuss in group and give a short presentation about Agile development on Cloud according student's experience or knowledge
(1) Discussion about Agile development students have experienced or known cases.
(2) Giving a short presentation about the discussion
(3) Discussion about advantage and disadvantage and suitable field for the solution in class.

Lesson 13 Case study: Bid for Customer Solutions " (Explanation and Discussion, 90min)

Explanation of case study "Bid for Customer Solution"
(1) Explanation of RFP (Request for Proposal)
(2) Discuss about what solution you choose for the proposal and decide each role.

Lesson 14 Global trend of ICT solutions (Lecture, 90min)

Explanation of Global trend for ICT solutions
(1) Ratio of Development Method in Glove
(2) Difference of system development structure and contract
(3) Outsourcing models

Lesson15 Case study presentation and Summary of the Course (Presentation and Lecture, 90min)

Students make presentation of their case study result, and discuss about them.
(1) Presentation for Bidding.
(2) Discussion about the case study
(3) Summary and review of the course

1. Course Title

Software Engineering

2. Instructor

Mamoru ITO

3. Term

Spring 1

4. Outline and Objectives

Software plays an increasingly important role in the evolution of ICT systems. However, it is actually hard to develop software on time, on budget, and on target. It is widely believed that many of software development projects fails or are challenged. This course will provide comprehensive and interdisciplinary learning opportunities for those who wish to tackle with the challenges of software projects.

5. Goals (Attainment Targets)

(1) To understand software lifecycle and process models
(2) To be able to utilize basic techniques on software development
(3) To understand how to develop software in the right way
(4) To develop an understanding of the environment that surrounds software projects

6. Correspondence relationship between Educational goals and Course goals

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</table>

7 Requirements

None

8. Textbooks

This course does not use a textbook. Students can obtain lecture materials on Moodle.

9. Reference Books

None

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	quiz	report	presentation	deliverable	other
(1)	○	○	○			
(2)	○	○	○			
(3)	○	○	○	○		
(4)				○		
Total	30	30	20	20		

11. Notes

None

Course Schedule
(Notice) This schedule is a tentative plan, there might be changes, additions, revisions, etc. at the time of delivering the course.

Lesson 1 Basic Principles of Computers (Lecture: 90 min)

Software runs on a computer. The basic knowledge on computers expands an understanding of software development. We will learn how a computer works in this lesson.

1. Introduction
2. Computer organization
3. Machine language and assembly language
4. Flow of a program
5. Interrupt handling

Lesson 2 Introduction to Data Structures and Algorithms (Lecture: 90 min)

The data structures and algorithms should be considered for us to design a computer program. This lesson will provide students with the introduction of data structures and algorithms.

1. Major data structures – array, list, stack, queue, and tree
2. Flowcharting
3. Major algorithms - sorting algorithms and search algorithms

Lesson 3 Software and Software Engineering (Lecture: 90 min)

Software grows increasingly important along with the popularization of computers. We will discuss the reality surrounding software development after understanding of features of software and learn the necessity of software engineering.

1. Features of software
2. Importance of software
3. Environment surrounding software development
4. Role of software engineering

Lesson 4 Software Development Processes (Lecture: 90 min)

A “Process” can be defined as a “set of interrelated or interacting activities, which transforms inputs into outputs”. Good process is required to produce good outputs. We will learn the overview of software lifecycle process models and the meaning of process improvement

1. Definition of software process
2. Lifecycle models
3. Present situation and issues on software process
4. Meaning of software improvement

Lesson 5 Requirements Analysis (Lecture: 90 min)

The role of software engineer is to realize the requirements of customers and users by use of software. But their requirements are sometimes ambiguous and lack consistency. We should acquire their requirements exhaustively and analyze them systematically. We will marshal the concepts of requirements and flow of requirement analysis.

1. Difference between need want and demand
2. Functional requirements and non-functional requirements
3. Flow of requirements analysis
4. Requirements modeling

Lesson 6 Software Design Techniques (Lecture: 90 min)

Optimum design technique should be selected based on the target and objectives of software development. This lesson introduce major software design techniques such as structured design and object-oriented design.

1. Introduction of major software design techniques
2. Structured design
3. Object-oriented design

Lesson 7 Object-oriented Technology and Software Reuse (Lecture: 90 min)

Object-oriented technology is becoming popular in association with increasing in size and complication of software. We will get a better grasp of object-oriented technology by focusing on reusability and maintainability.

1. Necessity and difficulty of software reuse
2. Software component
3. Framework
4. Design pattern

Lesson 8 Basics of Software Testing (Lecture: 90 min)

Software testing is becoming important because defects in software have the significant impact on the society. We will learn positioning of software testing, kinds of software testing, and testing techniques in this lesson.

1. Necessity and limitation of software testing
2. Flow of software development and testing phases
3. White box test and black box test
4. Major testing techniques

Lesson 9 Software Quality Engineering (Lecture: 90 min)

One of the objectives of software engineering is to develop high-quality software. Management on software quality is more important than that of hardware quality because software is invisible. We will understand the whole picture of software quality and necessary activities to achieve the required quality in this lesson.

1. Difference between quality and grade
2. Software quality model
3. Quantitative quality management
4. Software design review

Lesson 10 Overview of Project Management (Lecture: 90 min)

Generally, software is developed by a project team. The project team should be managed adequately. This lesson will clarify a project, project management, project lifecycle, and project organizations.

1. Definition of project and project management
2. Project lifecycle
3. Relationship with organizations and stakeholders
4. Trend in project management standards

Lesson 11 Project Management Processes (Lecture: 90 min)

A project team combines various management processes in order to achieve its mission. This lesson will provide students with overview of management processes and process flow.

1. Initiating processes
2. Planning processes
3. Executing/implementing processes
4. Monitoring and controlling/controlling processes
5. Closing processes

Lesson 12 Introduction to UML (Lecture: 90 min)

UML is becoming commonly-used with object-oriented technology. UML stands for Unified Modeling Language, which is a useful tool for analysis and design of complex software systems. We will learn how to describe major diagrams.

1. Use case diagram
2. Class diagram
3. Object diagram
4. State machines

Lesson 13 Requirements Modeling Excises (Excises: 90 min)

UML Modeling is used in both analysis and design. This lesson will focus on the modeling for requirements analysis. Students are divided into small groups to perform exercises in UML modeling.

1. Grouping
2. Explanation on the exercises
3. Performing the exercises

Lesson 14 Requirements Modeling Excises (Excises: 90 min)

Each group makes a presentation on their modeling results in front of students. We will discuss the results in an objective way to deepen our understandings.

1. Presentation
2. Questions and answer
3. Discussions

Lesson 15 Summary and the Latest Topics (Lecture: 90 min)

Software engineering is advancing as well as information and communication technologies. We will learn the latest trend in software engineering. Issues on engineering ethics also will be covered in this lesson.

1. Functional safety and inherent safety
2. Model-based design and formal methods
3. Engineering ethics in software

Lesson 16 Term‐end Examination (Examination: 90 min)

Term-end examination will be conducted to evaluate an achievement degree of each student.

1. Course Title

Requirements Analysis Exercises

2. Instructor

Chika Yoshida

3. Term

Spring 1

4. Outline and Objectives

Developing and managing a good requirement specification is one of the key factors for success of IT system development project.

In this course, students will learn how to elicit, analyze, and define requirements for IT system developments. Students will also learn how to analyze business strategy and how to derive IT system requirement it. The course consists lecture session and exercise session. In the exercise session, students will have an experience with actual requirement analysis process for practical subject in small groups.

5. Goals (Attainment Targets)

To understand the importance of requirement management and to be able to analyze customer's needs for system requirement to develop system requirement specification.

(1) Able to explain the importance of requirement analysis and requirement management in the IT system development process.
(2) Able to elicit user requirements using various techniques.
(3) Able to analyze and model system requirements
(4) Able to formulate a requirement specification document
(5) Able to prioritize and select the requirements
(6) Able to analyze business strategy to derive IT system requirements.

6. Correspondence relationship between Educational goals and Course goals

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</table>

7 Requirements

None

8. Textbooks

None

9. Reference Books

Just Enough Requirements Management, Alan M. Davis, Dorset House Publishing ISBN 0-932633-64-1

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	quiz	report	presentation	deliverable	other
(1)				○		
(2)					○	
(3)					○	
(4)					○	
(5)				○		
(6)				○		
Total				55	45	

11. Notes

None

Course Schedule
(Notice) This schedule is a tentative plan, there might be changes, additions, revisions etc. at the time of delivering the course.

Lesson 1 Introduction to Requirement Analysis (Lecture, 90min)

Explanation of Course logistics and overview of Requirement analysis
(1) Course logistics (Course schedule, Syllabus, Evaluation, etc.)
(2) What is requirement analysis?
(3) Requirement analysis in the system design process
(4) The context of requirements: Various development process and relations with stake holders

Lesson 2 Requirement Management (Lecture, 90min)

Explanation of Requirement management and the processes with documents.
(1) What is requirement Management?
(2) Typical process of requirement management
(3) Basics of requirement specification documents

Lesson 3 Requirement modeling (Lecture and Exercise, 90min)

Modeling of business requirements and system requirements
(1) What is requirement modeling?
(2) Scenarios and use cases
(3) Writing use case diagrams

Lesson 4 Business modeling (Lecture and Exercise, 90min)

Analyze business flow and model it using use case diagram and business flow diagram.
(1) What is business modeling?
(2) Writing activity diagram and business flow diagram

Lesson 5 Modeling Exercise (Exercise, 90min)

For a simple system development example, groups of students discuss and analyze the system to develop Use case diagram, Activity diagram and Business flow diagram. The groups make presentation and discuss about created diagrams.

Lesson 6 Requirement Elicitation (Lecture, 90min)

Learn how to effectively elicit requirements.
(1) What is requirement elicitation?
(2) Why do elicitation?
(3) Stake holders for requirement elicitation
(4) Elicitation techniques (Interviewing, Brain storming, Questionnaires, Prototyping etc.)

Lesson 7 Analysis and Visualization of Business strategy (Lecture and Exercise, 90min)

Learn how to analyze business strategy using strategy map
(1) Analyzing and visualizing business strategy using strategy map
(2) How to make strategy map?
(3) Samples of strategy map.

Lesson 8 Writing Strategy Map (Exercise, 90min)

For an example case, students identify business strategy and goals, and develops business and IT plans to achieve the goal.
(1) Identify business goals and challenges
(2) Develop innovation plans
(3) Business innovations and IT innovations
(4) Defining achievement target (KGI, KPI)

Lesson 9 Completion and Presentation of Strategy Map (Presentation and Discussion, 90min)

Complete the strategy map. Presentation and discussion with the strategy map.
(1) Completing the strategy map
(2) Presentation and discussion

Lesson 10 Requirements Triage (Lecture, 90min)

Learn techniques to develop just enough requirements.
(1) Why Requirement Triage (Prioritization and selection) is important?
(2) Prioritizing requirements by importance
(3) Estimating effort for requirements
(4) Selecting requirements

Lesson 11 Case study: Introduction and innovation planning (Lecture and Exercise, 90min)

In Lesson 11-15, Experience a requirement analysis process through a case study.
(1) Explanation of case study session and its subject
(2) Understand the business goal of the sample case
(3) Develop innovation plans and discuss about them
(4) Define business innovation plan and IT innovation plan

Lesson 12 Case study: Developing a strategy map (Exercise and Discussion, 90min)

Define achievement target and create strategy map
(1) Analyze and discuss business innovation plan and IT innovation plan
(2) Discuss and define achievement target (KGI, KPI)
(3) Create the strategy map

Lesson 13 Case study: Requirement Elicitation and Selection (Exercise and Discussion, 90min)

Derive requirement list form the strategy map
(1) Requirement elicitation from the strategy map
(2) Discuss and Define priorities
(3) Develops requirement list
(4) Create the use case diagram

Lesson 14 Case study: Requirement specification (Exercise and Discussion, 90min)

Analyze the requirement list and business flow to develop requirement specification
(1) Analyze the business flow
(2) Create business flow diagram and activity diagram
(3) Create requirement specification

Lesson15 Case study presentation and Summary of the course (Presentation and Lecture, 90min)

Students make presentation of their case study result, and discuss about them.
(1) Presentation of case study results and requirement specification
(2) Discussion about the case study
(3) Summary and review of the course

1. Course Title

Project Management Special Experiments

2. Instructor

Samiullah PARACHA

3. Term

Spring 2

4. Outline and Objectives

The purpose of this course is to give you an understanding of Software Project Management (SWPM) concepts. It has been specially designed to provide an overview of the various SWPM knowledge areas, in accordance with the widely acknowledged Project Knowledge Body of Knowledge (PMBoK) processes. It applies practical case study examples to show how PMBoK practices ensure effective management and successful delivery of software project. As you will be able to raise high-performing project teams who will not only deliver projects on time and under budget, but they will also respect your authority and believe in your abilities. The course will be run via lectures, interactive group discussion, case studies and group assignment development.

5. Goals (Attainment Targets)

The primary aim of the course is to acquaint students with broad understanding of the principles of SWPM across the entire scope of project delivery, from conception to completion. It also focuses on creating awareness of SWPM strategies that can help deal with unpredictable and complex project scenarios. Furthermore, it aims to develop students 'professional skills as Software Project Managers who are able to take active leadership roles in achieving project outcomes.

After the completion of this course, students will have:

(1). **Societal or Community Objective:** This objective can be seen as a community related objective in that it will make students aware of their need to communicate with and listen to the community as a whole, and project stakeholders particularly.

(2). **Project Team Objective:** This is a project team objective in that it demonstrates the students need to both manage and be part of a team of people through whom the project will be delivered.

(3). **Personal Objective:** The students should see this as a personal objective in that they will be leaders rather than followers in terms of making things happen.

6. Correspondence relationship between Educational goals and Course goals:

<table>
<tr><th colspan="3">Educational goals</th><th>Course goals</th></tr>
<tr><td rowspan="2">High level ICT skill</td><td colspan="2">Basic academic skills</td><td>(1) (3)</td></tr>
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<tr><td rowspan="8">Human skill
(Tankyu skill)</td><td colspan="2">Ability to continually improve own strengths</td><td>(1) (2) (3)</td></tr>
<tr><td rowspan="4">Ability to discover and resolve the problem in society</td><td>Problem setting</td><td>(1)</td></tr>
<tr><td>Hypothesis planning</td><td>(2)</td></tr>
<tr><td>Hypothesis testing</td><td>(2)</td></tr>
<tr><td>Practice</td><td>(1) (2) (3)</td></tr>
<tr><td rowspan="3">Fundamental Competencies for Working Persons</td><td>Ability to step forward</td><td>(1)</td></tr>
<tr><td>Ability to think through</td><td>(1) (3)</td></tr>
<tr><td>Ability to work in a team</td><td>(2)</td></tr>
<tr><td colspan="3">Professional ethics</td><td>(1) (2) (3)</td></tr>
</table>

7. Requirements

Software Engineering (achievement of attainment targets is required)
Requirements Analysis Exercises (achievement of attainment targets is required)

8. Textbooks

This course does not use a textbook. Students can obtain lecture materials on Moodle.

9. Reference Books

To find out more about software project management and project management in general please check out:

- Software Project Management For Dummies by Teresa Luckey and Joseph Phillips
- Software Project Management by E.M. Bennatan
- Software engineering by Roger S. Pressman
- A Guide to Project Management Body of Knowledge (PMBOK Guide)
- www.maxwideman.com
- www.4pm.com
- www.bettermanagement.com
- www.e-programme.com
- www.softwareprojects.org
- www.projectmanagement.ittoolbox.com
- www.managementhelp.org

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	Quiz	Report	Presentation	Deliverable	Other (Special Experiments)
(1)	○	○				○
(2)	○					○
(3)	○			○		○
Total	45	5		5		45

11. Notes

None

Course Schedule
(Notice) This is a tentative schedule and there might be changes, additions, and revisions later.

Lesson 1 The Fundamentals of Software Project Management (Lecture / Concept Mapping)

First a complete course outline will be introduced, after that the main topic of SWPM will be presented including explanation of the context and its significance. After completing this lesson, you should be able to:

- Differentiate between general management, PM and SWPM
- Define what a SW project is
- Understand initiation & closing of SW project
- Tackle the intricacies of SW projects
- Effectively lead and manage a SW project

Lesson 2 Software Development Fundamentals (Lecture/ CDF/ Case Study/ Exercise)

Software Development Fundamentals will be discussed from SWPM point of view, but the main focus will be on SW management fundamentals. Several themes and sub themes will be described, for instance: (i) Software evolution; (ii) SW Project phases i.e. core SW phases; (iii) Project execution fundamentals; (iv) Tracking; (v) Software related problems; (vi) Software PM framework; (vii) Software Development Life Cycle; & (viii) Standard SW Process Models.

Lesson 3 Commencing a Software Project (Lecture / CDF/ Case Study/ Exercise)

This lecture will introduce you to key aspects of software project management that are the foundation upon which you can construct the rest of phases of your software project. The following topics will be brought to light:

- Identifying the purpose
- Identifying the stakeholders
- Completing the project feasibility study
- Writing the product description
- Creating a project wish list
- Studying failed projects

Towards the end a case study will be presented and students will be asked to categorize the stakeholders as important to the project, somewhat important, and least important.

Lesson 4 Project Scope Management (Lecture / CDF/ Case Study/ Exercise)

The focus of this lecture will be on project scope management as such, the main topics of this discussion will be:

- Scope Definition Phase
- Work Breakdown Structures (WBS)

The students will be engaged in a mind mapping exercise designed to help students develop the scope of a project.

Lesson 5 Planning the Software Project (Lecture / CDF/ Case Study/ Exercise)

This lecture will introduce the planning process, which determines how the SW project will move forward after the project feasibility, description, and charter are complete. In the course of this discussion the following topics will be highlighted:

- Planning for Communications
- Planning for Software Project Risks
- Planning for Software Quality
- Building the Project Team
- Creating Project Time Estimates
- Building Your Project Budget

Lesson 6 Communication Management in Software Projects (Lecture / CDF/ Case Study/ Exercise)

Communication is the fuel that drives project success. In this lecture, we will review what we mean by project communications, think about why effective communication cannot be taken for granted, and study the key principles and best practices leveraged by effective communicators. As such, students will greatly improve their own personal effectiveness to lead their projects towards a successful outcome. Class Discussion Forums at the end will help students contemplate on issues presented in the lecture.

Lesson 7 Project Risk & Change Management (Lecture / CDF/ Case Study/ Exercise)

Risk management is at the core of project management. Through this lecture, we will review the core principles, key process steps, and best practices that are essential to managing project risks. We explain how project risks can be identified, review the proven strategies that work best in controlling project risks, and highlight the typical risk management problems that can be avoided. 'Classroom Discussion Forums' will be carried out to allow students clarify doubts through healthy interactions.

Lesson 8 Managing the Quality of a Software Project (Lecture / CDF/ Case Study/ Exercise)

Quality is one of the critical success factors for any project and one of the key tenets of modern project management. The lecture highlights the importance of quality and explains what SW project quality means and how it relates to managing project risks, project requirements, and client expectations. We also review the core principles, key tools, and best practices of SW project quality management, including the critical quality techniques that are often overlooked by many project management texts. In addition, we discuss some typical challenges related to managing project quality that can be avoided. At the end, 'Think Pair Share/ Presentation' will be conducted to ensure students' active participation.

Lesson 9 Forming and Leading the Project Team I (Lecture / CDF/ Case Study/ Exercise)

This lecture will show you how to build your project team and later, we address strategies for leading your project team. The discussion will also highlight many of your responsibilities and duties as a software project manager. Taking these roles seriously will help you to find the optimal mix of human resources, so that you can then motivate, align, and direct the team. We will also discuss how to build the project team and walk the fine line between leadership and management. Towards the end, 'Think-Pair-Share' activity will be conducted to help students contemplate on these issues.

Lesson 10 Forming and Leading the Project Team II (Lecture / CDF/ Case Study/ Exercise)

This lecture will show you how to build your project team and later, we address strategies for leading your project team. The discussion will also highlight many of your responsibilities and duties as a software project manager. Taking these roles seriously will help you to find the optimal mix of human resources, so that you can then motivate, align, and direct the team. We will also discuss how to build the project team and walk the fine line between leadership and management.

Towards the end, 'Think-Pair-Share' activity will be conducted to help students contemplate on these issues.

Lesson 11 Project Time Management (Lecture / CDF/ Case Study/ Exercise)

In this lecture, we emphasize the vital importance of the project schedule, steps throughout the process for developing a realistic schedule, and highlight the areas where people often go astray. Q & A session will be carried out to give students an opportunity to reinforce their knowledge & enjoy using this enhanced project management tool.

Lesson 12 Project Cost Management (Lecture / CDF/ Case Study/ Exercise)

In this lesson, we'll highlight the importance of the project budget, review the process and key principles for developing a realistic budget, and highlight the areas where people often go astray. As such, main topics of discussion will be:

- Cost estimating
- Cost budgeting
- Cost control

Homework will be assigned to brush up on the topic.

Lesson 13 Project Management Standards (Lecture / CDF/ Case Study/ Exercise)

PMBOK® Guide is the basic reference for project management professionals, providing a common lexicon within the profession for discussing project management. It is also the principal source material for this course. As such this lecture presents a set of standard terminology and guidelines for project management. Q & A session for the PMBOK® Guide will be conducted to allow students reinforce their knowledge & enjoy using this enhanced project management tool.

Lesson 14 Software Project Processes (Lecture / CDF/ Case Study/ Exercise)

This lesson will introduce the concept of project management processes. We will also describe the requirements of managing a project at micro level and how project processes can be used in a project. The contents of this lecture include:

- Definition of SW Project Processes
- Project Interactions
- Using the Project Processes
- Exercise – Identifying Process Groups

Toward the end of the lecture, exercise worksheet will be distributed among students to identify the project activities. The students will use a mind mapping and brainstorming tool specially designed to help them stay on top of project phases, collaborate on tasks, and stay organized together.

Lesson 15 Project Phases and Life Cycle (Lecture / CDF/ Case Study/ Exercise)

Project phases are collectively known as a project's life cycle. This lecture will focus on:

- Start and end of a project
- Work involved in each phase
- Resources required for each phase

Later, the students will play a simulation game, called 'Tiny Tower', and *experience* in managing *virtual* projects.

Lesson 16 Procurement & Human Resource Management (Lecture / CDF/ Case Study/ Exercise)

This lecture will shed light on:

- Procurement Management Processes
- Human Resource Planning
- Acquire Project Team
- Develop Project Team
- Manage Project Team

Q & A session will be carried out to give students an opportunity to reinforce their knowledge.

Lesson 17 Problems in Software Projects (Lecture / Case Study/ Role-playing)

This lesson will enable students to identify problems and situations that commonly arise in SW projects and be able to deal with them effectively. Most of these problems fall in 4 categories:

- People-related problems
- Process-related problems
- Product-related problems
- Technology-related problems

Lesson 18 Finalizing the Software Project (Lecture / Case Study/ Role-playing)

This lecture will provide you with the knowledge you require to bring your software project to a successful and systematic closure. You'll learn how to polish your project documentation skills, write good historical documents, and draw your lessons. You also find information regarding closing vendor contracts, tips on creating easy product documentation and help files for end users to understand and navigate.

Lesson 19 Software is like Marshmallow (Exercise)

'Marshmallow Problem' will be introduced and students will be challenged to put classroom learning to practice. This will be a small group exercise aiming to help students test their understanding of project management, collaborate quickly and reveal deep lessons about design and collaboration. Furthermore, students will have to update the class of their final project status every week through presentation or classroom discussion forums.

Lesson 20 Project Management Areas of Knowledge (Think-Pair-Share)

This lesson introduces the nine key knowledge areas, including:

- Project integration management
- Project scope management
- Project time management
- Project cost management
- Project quality management
- Project human resource management
- Project communications management
- Project risk management
- Project procurement management

The students will read a case study and identify which of the project management knowledge areas have been applied.

Lesson 21 Why Software Projects Fail? (CDF/ Case Study/ Exercise)

This lecture provides you with valuable information on what you should not do to ensure a successful project. By avoiding the points highlighted in this lecture, you greatly enhance the likelihood of your project being successful and prevent your project turning to chaos and confusion.

Lesson 22 Critical Success Factors in SW Projects (CDF/ Case Study/ Exercise)

After completing this lesson, you should be able to identify factors that increase the likelihood a project will be successful. It should provide students with insight on the comparative values of success factors, and might be helpful to those managers and professionals considering joining the Software project bandwagon.

Lesson 23-24 Software Project Management Experiment 1 (Managing Your Project with Trello)

Fog Creek's Trello provides a project management service based on Kanban boards. As an experience in project-based learning, the students can work with authentic, real-world project management tools to accomplish real work. In this context, Trello is a gentle and powerful introduction to real-world project management software that can help students coordinate and collaborate effectively in future projects and work experiences. Planning a birthday party is no different than doing software project management in real life. In this session the students will exhibit their project management skills by using Trello online tool.

Lesson 25-26 Software Project Management Experiment 2

In this session, you will meet with your project team for the first time and try to determine which project you want to do. You will also figure out who your customer is; what they want; and create a list of weeklong tasks. A work breakdown structure (WBS) is a good tool to visualize everything the project will create. The students will build a WBS of your project.

- Discuss the project scope
- Write a project scope statement
- Build a WBS

Lesson 27-28 Software Project Management Experiment 3

Planning is a core of software project management. You should make an effective and efficient plan of your project to make the project successful. This exercise will focus on planning for communications, building the team and project time estimates.

- Planning for communications
- Building the project team
- Creating the time estimates

Lesson 29 Software Project Management Experiment 4

The students will present the results of the experiments you worked in the previous session. You will prepare the slides for the presentation in this lesson. You will choose a presenter in each team. The presenter will make a presentation in front of the students in the next lesson.

Lesson 30 Conclusion and Term-end Exam (Presentation/ Report)

- Confirmation of understanding and assessment

1. Course Title

Special Programming Exercises

2. Instructor

Markon Sandor

3. Term

Spring 1

4. Outline and Objectives

An important area of programming for both developed and developing countries is using embedded systems, also called dedicated computers, that can help solving a wide range of technical and social issues. Some examples include wireless sensor networks for remote data collection or disaster prevention, RFID for inventory control, human body sensors for remote medicine etc. When compared to common PCs, embedded systems use different hardware and software platforms, and to use them require understanding of special concepts like direct hardware I/O (input-output), interrupts, real-time control, cross-development environments etc.

By finishing this course, the student will be able to recognize opportunities of effectively using embedded systems to solve ICT4D issues, and to propose and initiate projects, based on concrete experience with embedded systems.

5. Goals (Attainment Targets)

(1). Become able to recognize suitable application areas and make proper choices for embedded systems.
(2). Become able to design for reliability, maintainability, safety, and security in developing embedded systems.
(3). Can develop for an embedded platform and use its development environment.
(4). Can develop programs with embedded concepts like hardware control, sensors, actuators, timers, interrupts etc., through hands-on experience.
(5). Find and solve a development problem using embedded systems.

6. Correspondence relationship between Educational goals and Course goals

<table>
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<tr><td colspan="3">Professional ethics</td><td>(2)</td></tr>
</table>

7. Requirements

Computer Programming Exercises (achievement of attainment targets is required)

8. Textbooks

None. This course uses only material freely available on the Internet (links will be provided on Moodle).

9. Reference Books

None.

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	quiz	report	presentation	deliverable	Mid-term exam
1						○
2	○					
3	○					○
4	○					○
5				○	○	
Total	30			20	20	30

11. Notes

Students not comfortable with basic electric circuit concepts (currents and voltages, Ohm's law etc.) are advised to take part in voluntary lab sessions before taking the course.

Course Schedule
(Notice) This schedule is a tentative plan, there might be changes, additions, revisions etc. at the time of delivering the course.

Lesson 1: Orientation and Introduction (lecture and demonstration, 90 min)

Review through examples the basic concepts of embedded systems, from TV remote controls and rice cookers to airplane controls and power plants; the reasons for using them, principles, problems, evolution, and current status. Explain the course plan: discussions, practice, work group forming, projects, evaluation, and further studies. Students are shown some of the devices used in the course.

Lesson 2: Motivation by Examples (lecture and group discussion, 90 min)

Introduce examples of embedded systems in products and services through case studies. Student groups are formed, and based on understanding some typical applications, discuss other uses in fields familiar to them, listing up possible project topics, analyzing their merits and difficulties, their novelty, feasibility, profitability and sustainability.

Student groups start their discussions on their project topic.

Lesson 3: Platforms (a) – Arduino (practice, presentations, 90 min)

Students learn to develop a simple application using the open source / open hardware Arduino platform as an example of working with a simple stand-alone embedded environment. Groups receive sets of Arduino boards, sensor and actuator devices, and after installing the development environment on their PCs, design, program, and test a simple embedded application according to the provided requirement specifications.

Student groups present their project proposals with Tankyu charts and overall plans.

Lesson 4: Platforms (a) - Arduino (continued, 90 min)

Student groups review the possibilities available with the provided hardware and software tools, and compete to design the most surprising embedded application with their resources on Arduino.

Lesson 5: Review of embedded concepts (1) (lecture and group discussion, 90 min)

Starting from their experience with the Arduino board, student groups discuss basic embedded system concepts, reviewing and analyzing the handling of I/O devices, timings, process flow etc. Motivation is given for searching for more advanced capabilities like interrupts, multi-threading, guaranteed real-time response etc.

Lesson 6: Platforms (b) - Raspberry Pi (practice, 90 min)

Student groups receive Raspberry Pi boards and install Linux on them. By connecting them to the network, they learn how to use such a self-development environment on a small embedded platform. Students also discuss common features and differences between the Raspberry Pi and the Arduino environment, and try to find out advantages and limitations through reading the documentation and performing experiments.

Lesson 7: Platforms (b) - Raspberry Pi (continued, 90 min)

Student groups re-build their Raspberry Pi Linux OS from source, and add a new device driver, file system, or other extra capability of their choice that was not present in the original distribution. Discuss the experience from the point of view of open source vs. proprietary systems.

Lesson 8: Review of embedded concepts (2) (lecture and group discussion, 90 min)

Starting from their experience with the Raspberry Pi board, student groups discuss using an operating system like Linux for embedded systems, reviewing the advantages and drawbacks of isolating the hardware from the application, and of providing basic development capabilities on the deployed embedded system itself. Soft- and hard real-time OS concepts will be introduced here.

Lesson 9: Mid-term project review (presentations, mid-term exam, 90 min)

Student groups present the progress of their embedded application projects, reviewing their current status and roadmap. Different groups share their experiences and exchange advices.

Lesson 10: Platforms (c) – SUBOARD II (practice, 90 min)

A “home-made” embedded platform, developed at KIC's partner, Sabanci University, is introduced to students. The student groups review the design concepts, capabilities, environment, and limitations through hands-on experience.

Lesson 11: Platforms (c) – SUBOARD II (continued, 90 min)

Student groups develop an example application with SUBOARD II, using the USB communication framework. Discuss working with the proprietary development environment (MPLAB-X) and libraries provided by Microchip Co.

Lesson 12: Embedded project (practice, 90 min)

Student groups select a development topic, and decide on a platform for realizing it.

Lesson 13: Review of embedded concepts (3) (lecture and group discussion, 90 min)

Student groups discuss the advantages of Linux or Android for embedded systems that require human interfaces, networking capabilities, or other generic PC-like capability. Concepts like reliability, security, use of encryption etc. are introduced here.

Lesson 14: Review of embedded concepts (4) (lecture and group discussion, 90 min)

Students review and compare the platforms that they have explored, and develop their own guidelines for choosing the proper environment for different applications. These will consider not only technical features, but also economic and social factors, IP issues, job creation, long-term local sustainability etc.

Lesson 15: Final project review (presentations, 90 min)

Each group presents its project results, demonstrating the device and system they have built, explaining how it will solve an actual problem of development, how it can be put into practice, and how can its effects be evaluated and verified. Each team member takes part in the presentations in turn.

1. Course Title

Application Development Exercises

2. Instructor

PARACHA Samiullah

3. Term

Spring 1

4. Outline and Objectives

Web-based applications offer numerous advantages, such as instant access, automatic upgrades, and opportunities for collaboration on a massive scale. However, creating a web application requires different approaches than traditional programs and involves the integration of numerous technologies. This course will introduce concepts in programming web application servers. In the process, you will know the modern tools used to program web application servers, and will be able to produce substantial web applications as part of a team. You will deepen your understanding and gain hands-on experience of the content in the classroom, where you can work with your peers and receive immediate feedback.

5. Goals (Attainment Targets)

After the completion of this course, students will be able to:

(1). How the Web works
(2). History of Web and Internet
(3). Principles of Web design
(4). Marking up pages with styles
(5). Scripting dynamic pages
(6). Creating Web graphics
(7). Integrating databases in pages
(8). Principles of Web servers

6. Correspondence relationship between Educational goals and Course goals

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<tr><td colspan="3">Professional ethics</td><td>(1) (2) (3) (8)</td></tr>
</table>

7. Requirements

Computer Programming Exercises (achievement of attainment targets is required)

8. Textbooks

This course does not use a textbook. Students can obtain lecture materials on Moodle.

9. Reference Books

This course has no required textbooks, but you might find the following useful as a reference:
The Definitive Guide to Django: Web Development Done Right, 2nd ed. Holovaty and Kaplan-Moss. Apress, 2009.

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	Quiz	Report	Presentation (Exercises)	deliverable	other
(1)	○					
(2)	○					
(3)	○	○				
(4)	○					
(5)	○			○		
(6)	○			○		
(7)	○			○		
(8)	○					
Total	80	5		15		

11. Notes

None

Course Schedule
(Notice) This schedule is a tentative plan, there might be changes, additions, and revisions at the time of delivering the course.

Lesson 1 Introduction to Web/ Internet (Q & A Session)

The first lesson outlines:

1) Complete course outline
2) Introduction to the internet
3) Web as an internet service
4) Brief history of the web
5) Web basics
6) History of web applications
7) Why Web?
8) The Future

At the end, 'Question & Answer Session' will be carried to allow students clarify their doubts.

Lesson 2 Introduction to XHTML, CSS and HTML (Exercise)

The second lecture will focus on:

1) XHTML
2) CSS
3) HTML
4) Text Editor
5) Web Bowser

Concepts will be illustrated through examples and after that students will test their learning by solving easy to expert level web development exercises.

Lesson 3 HTML and CSS (Exercise)

Outlining the fundamentals, this lesson works through:

1) XML
2) HTML
3) XHTML
4) Cascading Style Sheets
5) Color Scheme
6) Cascading Style Sheets – Block Level

In the exercise session, students will have to type in solutions for programming problems, which will be then tested to see whether the solution is correct.

Lesson 4 Application Development with JavaScript (Exercise)

The first lesson on JavaScript will include:

1) Introduction to JavaScript
2) Processing HTML Forms
3) Conditions and Math Objects
4) With and This
5) Loops and Arrays
6) Return Functions and More Arrays
7) Time Object and Image Roller

Q and A /exercises will be carried out to allow students hone their skills through practice and repetition.

Lesson 5-6 HTML 5 (Exercise)

Topics to be covered in this lecture:

1) Pseudo Classes
2) Flexible Box Model
3) Reversing the Box Order
4) Rounded Corners & Shadows
5) Crazy Transformation
6) Animating with Transitions
7) Awesome Rollover Buttons
8) Playing Video on your website
9) Customizing Video Player
10) The Canvas Element
11) Animation for Games
12) Drag & Drop
13) Retrieving & Displaying Stored Data

Lesson 7 Introduction to Ruby (Exercise)

Ruby is a dynamic, reflective, object-oriented, general-purpose programming language. It was designed and developed in the mid-1990s by Yukihiro "Matz" Matsumoto in Japan. It supports multiple programming paradigms, including functional, object-oriented, and imperative. It also has a dynamic type system and automatic memory management. In this session, we will cover:

1) Installing Ruby
2) Successful Command & Error
3) Math & Variables
4) Creating Classes & Objects
5) Inheritance
6) Methods
7) Arguments
8) String Method
9) Variables
10) Loops

Lesson 8-9-10 Application Development with PHP (Exercise)

This lecture is about what PHP is? Why you'd use it? What are its distinguishing features? Other topics include:

1) Basic Output & Variables
2) Basic Math Functions
3) If Else Statements
4) Switch Statements
5) While Loop
6) Do Loop
7) For Loop
8) Array
9) Functions
10) Forms

Lesson 11-12 MySQL Database 1 (Exercise)

In this course, students will learn basic SQL database creation and manipulation, as well as how to search databases and how to incorporate them into PHP-based programs and applications. As such, the lesson will be centered on creating, searching, and managing SQL tables and entries. Exercises will be carried out to help students learn database concepts through small-scale problem solving, and as a supplement to large-scale programming.

1) Introduction to Databases
2) Getting a MySQL Server
3) Creating a Database
4) SHOW and SELECT
5) Basic Rules for SQL Statements
6) Getting Multiple Columns
7) DISTINCT and LIMIT
8) Sorting Results
9) Sort Direction
10) Basic Data Filtering and WHERE

Lesson 13-14 MySQL Database 2 (Exercise)

This lecture will cover topic, for instance:

1) Advanced Filtering Using AND/ OR
2) IN /NOT IN
3) How Search Engines Work?
4) Regular Expressions
5) Creating Custom Columns
6) Functions
7) Sub queries
8) How to Join Tables?
9) UNION
10) INSERT INTO
11) UPDATE & DELETE
12) CREATE TABLE
13) ALTER / DROP / RENAME TABLE

Lesson 15 Conclusion and Term-end Exam (Presentation/ Report/ Quiz)

Confirmation of Understanding/ Assessment

1. Course Title

Tankyu Practice

2. Instructor

Toshiki Sumitani

3. Term

Fall 1

4. Outline and Objectives

This course will cover the basic concept and process of "Tankyu Practice", which is the basis of the whole ICT innovator program. Students will identify social issues in developing countries, build possible solutions, verify them from three perspectives, and make presentations on the solution ideas in group work settings.

5. Goals (Attainment Targets)

(1). To identify social issues.
(2). To understand your own strengths.
(3). To find a Tankyu theme by combining the above two.
(4). To build a hypothesis to solve the issue.
(5). To verify the value of the hypothesis by conducting interviews.
(6). To verify the originality and competitiveness of the hypothesis by conducting case research.
(7). To verify the budget balance of the hypothesis by conducting financial simulation.
(8). To make presentation, explaining the verified solution ideas.

6. Correspondence relationship between Educational goals and Course goals

<table>
<tr><th colspan="3">Educational goals</th><th>Course goals</th></tr>
<tr><td rowspan="2">High level ICT skill</td><td colspan="2">Basic academic skills</td><td></td></tr>
<tr><td colspan="2">Specialized knowledge and literacy</td><td></td></tr>
<tr><td rowspan="8">Human skill
(Tankyu skill)</td><td colspan="2">Ability to continually improve own strengths</td><td>(2)</td></tr>
<tr><td rowspan="4">Ability to discover and resolve the problem in society</td><td>Problem setting</td><td>(1) (3)</td></tr>
<tr><td>Hypothesis planning</td><td>(4)</td></tr>
<tr><td>Hypothesis testing</td><td>(5)(6)(7)</td></tr>
<tr><td>Practice</td><td>(8)</td></tr>
<tr><td rowspan="3">Fundamental Competencies for Working Persons</td><td>Ability to step forward</td><td>(1)(3)(4)</td></tr>
<tr><td>Ability to think through</td><td>(5)(6)(7)(8)</td></tr>
<tr><td>Ability to work in a team</td><td>(4)(5)(6)(7)(8)</td></tr>
<tr><td colspan="3">Professional ethics</td><td>(1)(3)(4)</td></tr>
</table>

7. Requirements

None

8. Textbooks

None (Materials will be distributed through Moodle)

9. Reference Books

(In Japanese) Toshiki Sumitani “Social Entrepreneurship” JMM Management Center

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	quiz	report	presentation	deliverable	other
(1)			○		○	
(2)			○		○	
(3)			○		○	
(4)			○		○	
(5)			○		○	
(6)			○		○	
(7)			○		○	
(8)				○		
Total			20	30	50	

11. Notes

Some assignments, including interviews should be carried out outside classes.
Materials used in class, assignments and worksheets will be distributed through Moodle.
Assignment outputs should be summarized and delivered with worksheets.
Bring your network-connected PC to the classroom.

Course Schedule

(Notice) This schedule is a tentative plan, there might be changes, additions, and revisions at the time of delivering the course.

Lesson 1 What is "Tankyu Practice"? (lecture, 90 min.)

In this lecture students will understand the basic concept of "Tankyu Practice" and its significance to their research and works in society.

-Introduction to "Tankyu Practice"
-The objective and evaluation of the class
-Real cases of"Tankyu Practice"

Lesson 2 Identifying issues #1: From your own experience (lecture and group work, 90min.)

Students will list up possible issues they are interested in based on their own experience.

-Introduction to "Identifying Issues"
-Making your own "Lifecycle Chart"
-Interviewing each other
-List up possible issues (individual work)
-Assignments for the next class

Lesson 3 Identifying issues#2: Broadening Issue List (lecture and individual work, 90min.)

Students will increase the list of possible issues from other perspectives.

-Identifying issues from social trend and by interviewing people
-Identifying issues by researching case examples utilizing ICT
-Broadening the issue list

Lesson 4 Identifying issues#3: Narrowing down Issue List (lecture and individual work, 90min.)

Students will narrow down the issue list to 2or 3 candidates by evaluating the significance of issues.

-Evaluating the significance of issues
-Narrowing down the issue list
-Assignments for the next class

Lesson 5 Identifying issues#4: Sharing of issues and forming groups (group work, 90min.)

Students will share issues they are interested in and form groups by common interests.

-Sharing of issues interested in
-Forming groups with common interests

Lesson 6 Building solution hypothesis (lecture and group work, 90min.)

Students will build solution hypothesis using "Tankyu Chart"

-Building awareness of issues
-Idea generation
-Summarizing thoughts into "Tankyu Chart"
-Assignments for the next class

Lesson 7 Hypothesis verification #1-1: Customer satisfaction (lecture and group work, 90min.)

Students will understand the importance of customer perspective to the solution

-Presentation of solution hypothesis by each group
-Introduction of Hypothesis verification: Customer satisfaction perspective
-Identifying people relevant to the service

Lesson 8 Hypothesis verification #1-2: Interviewing (lecture and group work, 90min.)

Students will develop interview questions to verify their hypothesis.
-Introduction to interviewing
-Developing questions for interviews
-Interview assignment

Lesson 9 Hypothesis verification #2-1: Originality and Competitiveness (lecture and group work, 90min.)

Students will understand the importance of originality and competitiveness.
-Discussing implications of interview results
-Verification process from "originality and competitiveness" perspective
-A case example

Lesson 10 Hypothesis verification #2-2: Building originality and Competitiveness (group work, 90min.)

Students will develop ideas of originality and competitiveness of their hypothesis.
-Research about relevant case examples
-Developing ideas of originality and competitiveness
-Assignments for the next class: Verification of hypothesis

Lesson11 Hypothesis verification #3-1: Budget balance (lecture and group work, 90min.)

Students will understand the importance of budget balance
-Discussiing the implication of verification of hypothesis
-Verification process from "budget balance" perspective
-Case example of financial simulation

Lesson12 Hypothesis verification #3-2: Financial Simulation (group work, 90min.)

Students will conduct financial simulation to verify budget balance of their hypothesis
-Conducting financial simulation using template spread sheets
-Identifying other points of verification
-Assignments for the next class

Lesson 13 Proposal #1: Developing presentation material (group work, 90min.)

Students will develop presentation material explaining their verified solution hypothesis.
-Discussing the implication of verification from three perspectives
-Developing presentation material
-Assignments for the next class: Preparing for presentation

Lesson 14 Proposal #2: Presentation (group work, 90min.)

Students will deliver the presentation with clarity and impact.
-Presentation by group members
-Feedback from professors

Lesson 15 Reflection (lecture and individual work, 90min.)

Students will reflect on what they have learned in this class
-Reflection session
-Assignments of the reflection report

1. Course Title

Specific Theme Study A

2. Instructor

A member of Faculty

3. Term

Fall 3 - Spring 3

4. Outline and Objectives

(1) Research activities

This subject is taught in research activities. Students will have the opportunity of finding a research subject to pursue. The topic selected during this course will be continued in the 2nd year in “Specific Theme Study B”.

(2) Improvement of basic academic skills and basic IT skills

This course is taught in a participatory style in small groups and with individualized tuition, tailored to individual requirements, to balance the effect of classroom lectures that sometimes tend to be taught in a one-way manner. The objective is to enhance the academic skills and basic IT skills of each student.

(3) Improvement of human skills

In addition to academic skills, various human skills required by the society, like communication, common sense behavior, proper word usage, presentations, writing etc. will be improved.

5. Goals (Attainment Targets)

(1) Identify a theme of research to be explored in the “Specific Theme Study B”.

(2) Acquire the academic skills and the IT skills that are necessary for the research theme.

(3) Improve the human skills that the real world demands.

6. Teaching method

Students enjoy personalized and collaborative learning experiences that includes supervision and support at all stages of the M.Sc. thesis. A range of seminars, workshops, and professional development opportunities will support them during their research journey. However, you should meet with your supervisor at least once a week. The meeting time of the course depends on each laboratory.

7. Correspondence relationship between Educational goals and Course goals

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

8. Requirements

Tankyu Practice

9. Textbooks

None

10. Reference Books

To be announced by your supervisor.

11. Evaluation

Goals	Evaluation method & point					
	term-end exam	quiz	report	presentation	deliverable	stance
(1)				○	○	○
(2)				○	○	○
(3)				○	○	○
Total				40	30	30

12. Notes

This is a mandatory subject, thus all students are required to take it. Students who fail this subject will not be issued “Certificates of Expected Graduation”. Such students also cannot proceed to the 2nd year.

The actual starting date of the course depends on each laboratory. The final presentation will be scheduled during the Spring 2 or Spring 3 term.

13. Assignment of Laboratory

(a) Students will be assigned to a laboratory at the start of the course.
(b) The assignments are determined as follows:
(1) The laboratories are introduced to the students
(2) Each student lists all laboratories in their desired precedence order
(3) The assignments are decided based on these lists, but also taking into account the students' characteristics, their career plans, the suitability of the desired research topics to them etc.

14. Research Outcomes Seminar

Objective
Special Theme Study A offers innovators’ students an opportunity to demonstrate mastery of the strategies and operational procedures involved in formulating, planning, managing and realizing a research investigation through practical work leading to a substantial output. In this seminar students will present their work and the outcome of their investigations in accordance with the Special Theme Study A.

Method.
1) The theme need to be discussion with your supervisor.
2) The presentation shall include contents like follow.
- Topic, background and methodology for the research
- Your activities with the Special Theme Study A.
- Your outcomes, contributions, planning and future works.

3) The presentation file need to be submitted one week before the seminar. Make practice of the presentation.

Date
The seminar will be held in Spring 2

Information
You can find information about this seminar from Moodle.

1. Course Title

Specific Theme Study B

2. Instructor

A member of Faculty

3. Term

Fall 1 - Spring 3

4. Outline and Objectives

Generally, your supervisor for “Specific Theme Study A”will supervise this course.
”

(1) To acquire the Tankyu practice skills

Using the Tankyu practice framework and based on the knowledge & skills learned in “Specific Theme Study B, students continue to work on their research project to complete the design and implement the proposed system. Finally, the result is summarized as masters thesis, and is presented in the Master’s Thesis Seminar.

(2) To acquire the advanced professional skills

This course is taught in a participatory style in small groups and with individualized tuition, tailored to individual requirements, to balance the effect of classroom lectures that sometimes tend to be taught in a one-way manner. The objective is to enhance the advanced professional skills of each student.

(3) Improvement of human skills

Continued from “Specific Theme Study A”, various human skills required by the society, like communication, common sense behavior, proper word usage, presentations, writing etc. will be improved.

5. Goals (Attainment Targets)

(1) Identify a social issue to solve and propose an solution for it utilizing IT.
(2) Acquire advanced professional skills which are necessary to implement the solution.
(3) Improve the human skills that the real world demands.

6. Teaching method

Students enjoy personalized and collaborative learning experiences that includes supervision and support at all stages of the M.Sc. thesis. A range of seminars, workshops, and professional development opportunities will support them during their research journey. However, you should meet with your supervisor at least once a week. The meeting time of the course depends on each laboratory.

7. Correspondence relationship between Educational goals and Course goals

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

8. Requirements

Specific Theme Study A

9. Textbooks

None

10. Reference Books

To be announced by your supervisor.

11. Evaluation

Goals		Evaluation method & point					
	term-end exam	quiz	report	presentation (seminar)	deliverable (master's thesis)	stance	activities outside a curriculum
(1)				○	○	○	
(2)				○	○	○	○
(3)				○	○	○	○
Total				30	30	30	10

12. Notes

Presentations at all seminar (research planning seminar, middle of the research seminar and master's thesis seminar) are required for successful completion of this course. At the completion judging meeting, your evaluation will be determined by all faculty members.

The actual starting date of the course depends on each laboratory. The final presentation will be scheduled during the Spring 2 or Spring 3 term.

13. Master's Thesis Seminar (final presentation)

Objective

In the Special Theme Study B, a social issue is identified and an solution for it utilizing IT is proposed as a master's thesis. In the Master's Thesis seminar students will present their work and the outcome of their master's thesis.

Logistics.

1) The Master's thesis and its summary need to be submitted one week before the seminar. ※The presentation file does not need to be submitted.

2) The presentation shall include contents like follow.

- Background and the topic of the research project.
- The solution of solve the issue using IT.
- The Evaluation (demonstration) and analysis of the Solution.

Date

The seminar will be held in Spring 3.

Information

You can find information about this seminar from Moodle.

1. Course Title

Fundamentals of ICT4D

2. Instructor

Tomonari TAKEUCHI

3. Term

Fall 1

4. Outline and Objectives

The objective of this module is to understand the opportunities and challenges of utilization of Information and Communication Technology (ICT) for achieving sustainable development in the developing countries through recognizing and analyzing what ICT4D projects are like with using relevant conceptual frameworks and/or models.

5. Goals (Attainment Targets)

(1) To be able to explain the overview of ICT4D and the worldwide trend of ICT4D attempts
(2) To acquire skills and knowledge about conceptual frameworks and models to analyze success and failure factors of ICT4D projects from socio-technical point of view.
(3) To understand relevant point of view to plan sustainable ICT4D projects

6. Correspondence relationship between Educational goals and Course goals

<table>
<tr><th colspan="3">Educational goals</th><th>Course goals</th></tr>
<tr><td rowspan="2">High level ICT skill</td><td colspan="2">Basic academic skills</td><td></td></tr>
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<tr><td rowspan="8">Human skill
(Tankyu skill)</td><td colspan="2">Ability to continually improve own strengths</td><td></td></tr>
<tr><td rowspan="4">Ability to discover and resolve the problem in society</td><td>Problem setting</td><td>(2) (3)</td></tr>
<tr><td>Hypothesis planning</td><td>(2) (3)</td></tr>
<tr><td>Hypothesis testing</td><td>(2) (3)</td></tr>
<tr><td>Practice</td><td></td></tr>
<tr><td rowspan="3">Fundamental Competencies for Working Persons</td><td>Ability to step forward</td><td></td></tr>
<tr><td>Ability to think through</td><td></td></tr>
<tr><td>Ability to work in a team</td><td></td></tr>
<tr><td colspan="3">Professional ethics</td><td></td></tr>
</table>

7. Requirements

None

8. Textbooks

None

9. Reference Books

Duncombe, R. (2006) 'Analysing ICT Applications for Poverty Reduction via Micro-enterprise Using the Livelihoods Framework', Development Informatics Working Paper Series, Paper No. 27, IDPM, University of Manchester.

Farrell, G., and Isaacs, S. (eds) (2007) Survey of ICT and Education in Africa: A Summary Report, Based on 53 Country Surveys, infoDev/World Bank, Washington, D.C.

Heeks, R. B. (2008) 'The ICT4D 2.0 Manifesto', Development Informatics Working Paper Series, Paper No. 30, IDPM, University of Manchester

Heeks, R. B. (2006) Implementing and Managing eGovernment: An International Text, Sage, London.

Heeks, R. B. (2003) 'Most eGovernment-for-Development Projects Fail: How Can Risks be Reduced?', iGovernment Working Paper Series, Paper No. 14, IDPM, University of Manchester.

Heeks, R. B. (2002) 'Failure, Success and Improvisation of Information Systems Projects in Developing Countries', Development Informatics Working Paper Series, Paper No. 11, IDPM, University of Manchester

Kenny, C. (2006) Overselling the Web?: development and the Internet, Lynne Rienner, Boulder

Krishna, S. and Madon, S. (2003) The Digital Challenge: Information Technology in the Development Context, S. Krishna and S, Madon (eds),Ashgate, Aldershot

Takeuchi, T (2008) ICTs for Development in Ethiopia - A Case of the SchoolNet Project - , A dissertation submitted to the University of Manchester for the degree of MSc in ICT for Development

Takeuchi, T (2012) 'FOSS as a driver: Perspectives from the ICT development agenda'in Free and Open Source Software Technology for Sustainable Development edited by Sulayman K. Sowe, Govindan Parayil and Atsushi Sunami, United Nations University Press

Unwin, T (2009) ICT4D: Information and Communication Technology for Development, Cambridge University Press

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	quiz	report	presentation	deliverable	other
(1)	○			○		
(2)	○			○		
(3)	○			○		
Total	70			30		

■Assignment1：Presentation（30%）

Group presentation will be conducted in the session 9 on 21st October. In advance, several groups will be made according to individual interest in the development field (theme) such as education, health, agriculture, poverty reduction, industrial development, etc. Each group will choose a specific kind of ICT4D attempt such as telecenter, m-banking, e-health (m-health), e-leaning (m-learning), e-government (m-government), impact sourcing, FOOS4D(Free Open Source Software for Development) application, etc. Each group will research on the selected ICT4D attempt by the session 9 and prepare for the presentation and make a relevant handout. In the session 9, each group will make 15-20 minutes presentation including Q &A with the relevant handout. The presentation should include;

1. The overview of a selected ICT4D attempt
2. The opportunity (expected impacts) of the selected ICT4D attempt
3. The challenges of the selected ICT4D attempt
4. The solutions and/or recommendation to overcome the challenges

※ At least one conceptual framework and/or model introduced in this module should be used to analyze challenges and solutions in the presentation though it is also welcome to use a framework which you find out from reliable sources even if it is not introduced in this module.

※ Presentation is evaluated by the following points;
- Contents
- Presentation
- Time management of the presentation
- Handout

■Assignment2 (Term-end exam)：4000-5000 words Essay（70%）

Write an essay (4000-5000 words) on the theme which you do not choose for the assinment1 (Group presentation). The essay should include;

1. The general description of the selected field
2. The overview of a specific ICT4D project selected as a case study in the selected field in specific country or region.
3. The decision and reasons about whether the selected ICT4D project is success or failure.
4. The analysis on success or failure factors
5. The lessons from and/or solutions for the selected ICT4D project and/or other future ICT4D projects in the same field.

※ At least one conceptual framework and/or model introduced in this module should be used to analyze challenges and solutions in the presentation though it is also welcome to use a framework which you find out from reliable sources even if it is not introduced in this module.

※ The essay is evaluated by the following points;
- Does it contain enough information for discussion?
- How logical is the discussion?
- Does anything you learned from this module is properly used for the discussion?
- Is there your own originality?
- Is the formatting style properly used as an academic paper?

11. Notes

1. In this module, there is no textbook. Handouts relevant to each theme will be distributed.
2. The contents of this module are relatively abstract because what this module mainly introduces are frameworks and models. In other words, you are required to think by yourself to relate the conceptual frameworks and practical projects as well as your own experience.

Course Schedule
(Notice) This schedule is a tentative plan, there might be changes, additions, revisions etc. at the time of delivering the course.

Lesson 1 Overview of ICT4D (Lecture 90 min)

In this session, various kinds of ICT4D projects in different fields are introduced to grasp what ICT4D is in the current world. The overview, impact, opportunities and challenges are explained and discussed. It is expected that each you will introduce experience working for and/or researching on ICT4D projects, if any. The overview and one of the important notions in ICT4D that "ICT is not a SILVER BULLET, but a powerful toot for development" are roughly understood at the end of the session.

1. Contents of this module (objective, each session contents, reading list, assignment, evaluation)
2. Introduction of ICT4D projects
3. The role of ICT "whether ICT is solution or not?"
4. Challenges of ICT4D

Lesson 2 Success and Failure Factors of ICT4D Project (Lecture 40 min, Exercise 50 min)

In this session, the reason of success and failure of ICT4D projects are discussed through analyzing IC4D project case study as exercise. There are several factors affecting success and failure. To understand such factors, frameworks and methods are established by some scholars. Before introducing such frameworks in this module, it is important to think about a way to analyze by yourselves.

1. What is success and failure of ICT4D projects?
2. What are factors to affect success and failure of ICT4D project?
3. Exercise using case study to analyze success and failure factors

Lesson 3 Information Provision and Development Impact 1 (Lecture 40 min, Exercise 50 min)

There are many ICT4D projects aiming to provide information for people who have few opportunities to receive valuable information. The projects, such as projects to distribute market information for rural farmers and projects for distance education, contribute to reducing the gap called digital divide. In this session, what kinds of information are really valuable for beneficiaries is discussed. This session also includes discussion on what is required to achieve expected impacts of the ICT4D projects in order for beneficiaries to utilize provided information.

1. Definition and difference of Data, Information and Knowledge
2. Condition for information receivers for useful application of information
3. Introduction of conceptual frameworks and models (CIPSODA model, DIK model, Information Chain model)
4. Exercise using case study to apply conceptual frameworks and models to analyze IC4D projects

Lesson 4 Information Provision and Development Impact 2 (Lecture 40 min, Exercise 50 min)

Can ICT4D projects aiming to reduce digital divide necessarily contribute to minimize the information gap between city and rural areas? Or such projects reinforce the digital divide and new gap? It depends on many factors such as educational level, economic power, social status, etc. whether ICT4D projects can contribute to minimizing the digital divide between city and rural areas. This session focuses on this point of view through reviewing relevant theories and practices.

1. Drawback of participatory approach
2. How does ICT affect the have and the have-not?
3. What is required to achieve development impact by ICT4D project?
4. Introduction of conceptual frameworks and models (ICT4D Value Chain model)
5. Exercise using case study to apply conceptual frameworks and models to analyze IC4D projects

Lesson 5 ICT4D Project and Design-Reality Gap (Lecture 40 min, Exercise 50 min)

In many cases, ICT4D project failure is caused by a gap between project design and reality which is named "Design – Reality Gap" by Heeks (Director of ICT4D master course in University of Manchester). In this session, factors which cause Design Reality Gap will be understood through case study.

1. What is Design-Reality Gap
2. Important factors for ICT4D projects (Introduction of Onion Ring model)
3. Exercise using case study to apply conceptual frameworks and models to analyze IC4D projects

Lesson 6 Approach for ICT4D Project (Lecture 50 min, Exercise 40 min)

There is a problem of project planning approach behind the Design-Reality Gap in ICT4D projects. In this session, such a problem will be explained. To analyze ICT4D project success and failure from the difference of approaches, characteristics of several approaches in both information system development and national development are introduced.

1. What is an appropriate approach to design ICT4D project?
2. Different between Supply-Driven and Demand-Driven approaches.
3. Different between Hard and Soft approaches.
4. User-Oriented approach in information system development and participatory approaches in national development.
5. Exercise using case study to apply conceptual frameworks and models to analyze IC4D projects

Lesson 7 MDGs and ICT4D (Lecture 40 min, Exercise/Discussion 50 min)

In this session, relation between Millennium Development Goals（MDGs）and ICT is discussed. In each development themes, what kinds of attempts are implemented and how such attempts contribute to achieving MDSs are explained. The class will be divided into two teams (like ICT4D optimist and ICT4D pessimist) and the debate on "Whether or not national budget should allocate for ICT4D?" is conducted. .

1. What is MDGs?
2. Relation between MDGs and ICT4D
3. Debate on "Whether or not national budget should allocate for ICT4D?"

Lesson 8 Project Design for ICT4D Project (Lecture 40 min, Exercise 50 min)

In this session, a check list is introduced to minimize the Design-Reality Gap to design ICT4D projects. Exercise using case studies to use the check list will be conducted and how to minimize the Design- Reality Gap is also discussed.

1. Introduction check lists to minimize the Design-Reality Gap (ITPOSMO and OPTIMIZM check lists)
2. What are drawbacks of factor approaches?
3. Introduction of the other frameworks and models.
4. Exercise using case study to apply conceptual frameworks and models to analyze IC4D projects

Lesson 9【Assignment 1】Group Presentation (Exam 90min)

In this session, as the assignment 1, Group Presentation is conducted. Each group makes a 15-20 minutes presentation and shares the research output with other groups.

Lesson 10 Evaluation of ICT4D Project (Lecture 40 min, Exercise 50 min)

In this session, methods of evaluation for ICT4D projects are introduced. How to evaluate ICT4D projects is somewhat emerging field and not firmly established. Issues on the evaluation methods are discussed from not information system development but national development.

1. Evaluation methods for ICT4D project
2. Issues on evaluation of ICT4D project
3. Introduction of several evaluation index and methods for national development
4. Exercise using case study to apply evaluation methods to analyze IC4D projects

Lesson 11 Practice to Analyze ICT4D Projects 1 (Lecture 40 min, Exercise 50 min)

In this session, students will be required to utilize the frameworks and models introduced in this module to analyze ICT4D project in educational sector. The practitioner of ICT for Education project will introduce the ICT4E project as a case. Then, students will analyze the ICT4E project from the points of failure and success factors, lesson learned, and potential solutions.

1. Introduction of ICT4E Project by Japanese NGO (e-Education)
2. Practice to Analyze ICT4E Project and Presentation

Lesson 12 Practice to Analyze ICT4D Projects 2 (Lecture 40 min, Exercise 50 min)

In this session, students will be required to utilize the frameworks and models introduced in this module to analyze ICT4D project. ICT4D project (Mobile-banking or Telecentre) will be introduced as a case. Then, students will analyze the ICT4D project from the points of failure and success factors, lesson learned, and potential solutions.

1. Introduction of ICT4D Project (Mobile-banking or Telecentre)
2. Practice to Analyze ICT4D Project and Presentation

Lesson 13 Trend of ICT4D and Approach for Research (Essay Writing) (Lecture 90)

In this session, there are two topics. The one is "Trend of ICT4D". In international society, ICT4D became a very important agenda along with technology evolution especially at the Kyushu-Okinawa Summit in 2000. Then, this agenda was discussed at the World Summit on the Information Society in 2003 and 2005. In this session, such a trend of ICT4D agenda in international society is explained. To grasp the big picture of the ICT4D trend enables you to plan appropriate ICT4D projects.

1. International society and ICT4D
2. Trend of ICT4D (from ICT4D 1.0 to ICT4D 2.0)
3. Reverse Innovation
4. Future trend of ICT4D (Internet➡Social Media➡Social Lab)

The other part is "Approach for Research (Essay Writing)". To support students to write an essay (Assignment2) with sufficient contents, important viewpoints and pitfalls for ICT4D research are introduced.

Lesson 14 JICA"s ICT4D Projects (Lecture 50 min, Discussion 40 min)

In this session, a wide range of ICT4D projects by Japan International Cooperation Agency (JICA) are introduced. In addition to a lecture, it is planned to conduct TV conference with a few project sites such as Lao and Bangladesh. You can ask questions on ICT4D for project practitioners in this occasion. Knowledge on Japanese ODA and situation of JICA's ICT4D projects will helps you work for ICT4D field in future.

1. Introduction of ICT4D projects implemented by JICA
2. Lecture by and exchange opinion with Project practitioners of JICA's ICT4D projects (JICA experts and/or Japan Overseas Cooperation Volunteers)
3. TV conference with project sites (probably, Indonesia and/or Bangladesh)

Lesson 15 ICT Industry and ICT4D 2 (Lecture 30 min, Discussion 60 min)

In this session, some guests from Japanese private companies will be invited to exchange opinions about ICT4D. Presentations by student groups will be made to encourage Japanese companies to invent and/or collaborate with developing countries. It is expected that it is good opportunity for you to have a relationship with Japanese companies for potential ICT4D projects in future. Finally, the summary of this module is reviewed as the last session.

1. Presentation by student groups to encourage Japanese companies to invent and/or collaborate with developing countries.
2. Exchanging opinions with the guests from Japanese companies
3. Summary of this module

1. Course Title

Fundamentals of Social Development

2. Instructor

Ryuji MATSUNAGA
Sub Instructors: Ikuo SUGIYAMA, Koichiro FUJII, Liyang FAN

3. Term

Fall 1

4. Outline and Objectives

The main objectives of this course are to understand how to make the Study of social development.

In developing countries, there are many social issues that are not resolved such as poverty, education, health care, environmental problem.

The course is to review contemporary theory, research, and methods relevant to understanding social development. The course focuses on both normative and atypical development because an understanding of one enriches understanding the other. Individual differences, sociocultural diversity, and a historical perspective on the study of all these themes, will be emphasized throughout the basic of policy making, city planning and GIS.

5. Goals (Attainment Targets)

(1) To cultivate the basic knowledge of social development study.
(2) To get basic knowledge of policy making, city planning and GIS.
(3) To utilize the knowledge of policy making, city planning and GIS.
(4) To make the plan of social development study.

6. Correspondence relationship between Educational goals and Course goals

<table>
<tr><th colspan="3">Educational goals</th><th>Course goals</th></tr>
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<tr><td>Hypothesis testing</td><td></td></tr>
<tr><td>Practice</td><td>(4)</td></tr>
<tr><td rowspan="3">Fundamental Competencies for Working Persons</td><td>Ability to step forward</td><td></td></tr>
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<tr><td colspan="3">Professional ethics</td><td></td></tr>
</table>

7. Requirements

None

8. Textbooks

None

9. Reference Books

JICA Net Library
05PRDM016 IRODORI Rural community empowerment through exploring local resorces
08PRDM003 History of Japanese local government system
06PRDM013 City Planning System in Japan,
07JTIC003 Remote Sensing and GIS Course,

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	quiz	report	presentation	deliverable	other
(1)		○	○	○		
(2)		○		○		
(3)			○	○		
(4)			○	○		
Total		10	35	55		

11. Notes

None

Course Schedule
(Notice) This schedule is a tentative plan, there might be changes, additions, revisions etc. at the time of delivering the course.

Lesson 1 Introduction: Meanings of Social Development study **(Lecture: 30 min/ Exercise: 60 min)**

Introduction and orientation: How we make the development study?

Introduction the video, "IRODORI-Rural community empowerment through the exploration of local resources," is a work that enables the viewer to perceive and understand the course that Irodori - a company in Tokushima Prefecture's Kamikatsu, a depopulated rural municipality at the foot of mountains in regional Japan - followed from inception to success.

Lesson 2 Case study Q&A **(Lecture: 30 min/ Exercise: 60 min)**

In "Q&A," examples of resources developed in other regions, an outline of the marketing methods used at Irodori, the primary factors responsible for Irodori's success, and other matters are presented .

Lesson 3 GIS(1) **(Lecture: 30 min/ Exercise: 60 min)**

The concept and basic knowledge, characteristic of GIS and its application in different areas

- To introduce the concept of GIS system
- The characteristic of GIS system
- The application example of GIS in different field

Lesson 4 GIS(2) **(Lecture: 30 min/ Exercise: 60 min)**

Remote sensing and nature environment analysis with GIS

- The general introduction of remote sensing
- The application used for remote sensing in GIS
- The nature environment problems and the analysis with remote sensing

Lesson 5 GIS(3) **(Lecture: 30 min/ Exercise: 60 min)**

Urban structure analysis with GIS

- The general introduction of the urban structure with GIS
- The database of city plan in GIS
- The research example

Lesson 6 GIS(4) **(Lecture: 30 min/ Exercise: 60 min)**

Urban energy system design and GIS analysis

- The introduction of the urban energy system and its database
- The urban energy problems and analysis with GIS
- The urban system optimization design with GIS

Lesson 7-10 City Planning(1)-(4) **(Lecture: 30 min/ Exercise: 60 min)**

The title of this lecture is “Can cities save the earth?”.
Back to 20th century, developed countries have experienced uncontrolled urban growth. People could live anywhere in suburban areas with cheaper land price after the moralization. It is causing serious global warming as explained in IPCC Fourth Assessment Report. The increment of world Co2 emission in this century will be mainly caused by moralization including private cars in emergent countries.
This lecture refers difficulties to control urban sprawl in developed countries. It suggests for emergent countries that urban sprawl should be restricted socially, economically and environmentally.

Lesson 11 Policy Planning**(1)** **(Lecture: 30 min/ Exercise: 60 min)**

Japanese economy has achieved amazing growth after the war. In the 1970's and 1980's, Japan became recognized as the world's competitive nation. Conventional wisdom attributes the lion's share of Japan's postwar competitive success to the actions of its government. What role did the government play for Japan's competitive success? Did its policies make the difference indeed? This lesson will clarify determinants of national competitive advantage based on analysis of Japanese competitive and uncompetitive industries.

Lesson 12 Policy Planning**(2)** **(Lecture: 30 min/ Exercise: 60 min)**

Based on the determinants of national competitive advantage, what were the real factors for Japanese economic success? What should be the role of government? This lesson will analyze stages of competitive development and consider the government policy to move the next stage.

Lesson 13 Policy Planning(3) **(Lecture: 30 min/ Exercise: 60 min)**

No matter how great the policy is, it is no use unless the policy is fulfilled as a formal governmental policy. This lesson will introduce the Japanese political system and the actor's behavior in the system.

Lesson 14 Policy Planning(4) **(Lecture: 30 min/ Exercise: 60 min)**

To fulfill the policy, a policy planner has to play a political game. And the rule differs by category and origin of the policy. This lesson will consider the principles of action for a policy planner in policymaking process.

Lesson 15 Summary of the course **(Presentation:80min Lecture:10min)**

Summary of the course.
Presentation : The idea of social development by each student.

1. Course Title

Fundamentals of International Cooperation

2. Instructor

Ryuji Matsunaga

Sub Instructors :YAMADA, TAKEUCHI, FUKUBAYASHI

3. Term

Fall 2

4. Outline and Objectives

This course aims to understand the current situation of international cooperation, to learn theories and concepts of development studies, as well as to become familiar with practical activities and projects of international development organizations such as JICA (Japan International Cooperation Agency) and UN agencies.

Students will understand the important issues with regard to Japan's and UN's development experience, and consider the applicability of this experience to other countries.

5. Goals (Attainment Targets)

(1). To understand overall framework of International Development and Cooperation.
(2). To understand essential ideas of International Development and Cooperation.
(3). To understand the fundamentals of PCM method

6. Correspondence relationship between Educational goals and Course goals

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7. Requirements

Fundamentals of Social Development (achievement of attainment targets is required)
Fundamentals of ICT4D (achievement of attainment targets is required)

8. Textbooks

JICA-Net Library
"The ABCs of PCM"

9. Reference Books

JICA-Net Library
JICA's Approaches to Development Issues
P009 History of Japan's Educational Development
P007 History of Public Health and Medical Systems in Japan
05PRDM001 Japan's Experience in Promoting 3R'S
07PRDM011 Technical Expertise of Japan in Solid Waste Management
Road Repairing by Do-nou

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	quiz	report	presentation	deliverable	other
(1)			○			
(2)			○			
(3)				○		
Total			50	50		

11. Notes

None

Course Schedule

(Notice) This schedule is a tentative plan, there might be changes, additions, revisions etc. at the time of delivering the course.

Lesson 1 Introduction (Lecture: 30 min/ Exercise: 60 min)

Learn and Practice:

Introduction of ODA and International Cooperation.

1. What is ODA?
2. Characteristics of ODA.
3. Overview of ODA.

Lesson2 Grasping the present situation in KIC (PCM) (Lecture: 30 min/ Group work: 60 min)

Learn and Practice:

(PCM method: Field Study at KIC)

4. What is PCM Method?
5. Characteristics of PCM method
6. Overview of the Process.

Grasping the Present Situation at KIC (2week Home work)

Basic Information about KIC

1. About KIC (Place, Number of students, staff, Community, foreigner)
2. What is the problem in KIC?

Lesson 3,4 Stakeholder Analysis (Lecture: 30 min/ Exercise :60 min/ Group work:90 min)

Learn and Practice:

.Who and how are involved in the project?

Stakeholder Analysis is a process to provide a comprehensive picture of all interest groups, individuals, institutions, and organizations(stakeholders)involved project.

Lesson 5 Problem Analysis (Lecture: 30 min/ Group work: 60min)

Learn and Practice**:**

What are the problems?

Problem Analysis is a method for graphically displaying the problem environment to which a set of project objectives is responding.

Lesson 6 Objective Analysis (Lecture: 30 min/ Group work: 60 min)

Learn and Practice

What is the desirable situation? What is the optimal alternative?

Objective Analysis illustrated the future situation that would be achieved by solving the problems.

Lesson 7 Cooperation by Community Participation(1) (Lecture: 30 min/ Exercise: 60 min)

Learn and Practice:

JICA project

JICA's strategy for Cooperation by Community Participation

Lesson8 Cooperation by Community Participation(2) (Lecture: 30 min/ Exercise: 60 min)

Learn and Practice:

JICA project

Cooperation by Community Participation

Understanding of the Cooperation by Community Participation based on JICA's experience

Explanation of the Cooperation by Community Participation

Explanation of JICA's Strategy for managing the Cooperation by Community Participation

Lesson9 Project for "Disaster Prevention"(1) (Lecture: 30 min/ Exercise: 60 min)

Learn and Practice

"Disaster Prevention"

JICA's strategy for disaster risk management

Lesson 10 Project for "Disaster Prevention"(2) (Lecture: 30 min/ Exercise: 60 min)

Learn and Practice

Understanding of Natural Disaster based on JICA's experience

Explanation of Disaster Risk Formula

Explanation of JICA's Strategy for managing disaster risk

Explanation of Disaster Management Cycle

Lesson 11 Alternative Analysis (Lecture: 30 min/ Group work: 60 min)

Learn and Practice

What is the desirable situation? What is the optimal alternative?

Objective Analysis illustrated the future situation that would be achieved by solving the problems.

Alternative Analysis is a process to identify possible alternative options, assess the feasibility of these, and agree upon project strategies.

Lesson 12 Logical Framework(Logframe) PDM (Lecture: 30 min/ Group work: 60 min)

Learn and Practice:

Logical Framework is a one-page summary of the project design.

Lesson 13,14Do-nou" TRAINING SUCCESS STORY (Lecture: 90min/ Exercise: 90 min)

Abstract

In this lecture some applications of "Do-nou" to the maintenances of rural roads are reported, such as spot improvement, backfill to the culverts and bridge abutment. Not only by the farmers but also by the road authorities and local contractors the "Do-nou" has been accepted as an effective method for the road maintenance based labor. To develop the cost estimate standard for spot improvement using "Do-nou" technology, the cost of the pilot project conducted in Tanzania is recorded and shown in this lecture. A potential for the Base Of Pyramid business(BOP business) on unpaved road maintenance by community people in Kenya is shown in detail.

Lesson 15 Presentation, Summary of the course (Presentation:80min Lecture:10min)

Summary of the course.

Grope Presentation for the project.

1. Course Title

Fundamentals of Intercultural Communication

2. Instructor

Jeremiah Mock

3. Term

Fall 2

4. Outline and Objectives

The focus of this course is to understand how your culture shapes your personal communication style. The course also focuses on understanding how cultural differences with Japanese and others can cause communication problems and create opportunities.
In this course, you will learn to:
(1) Identify your own communication patterns and preferences.
(2) See how your culture influences they ways you communicate with others.
(3) Develop your skills to communicate more effectively with people from other cultures especially Japanese, and within your own culture.

5. Goals (Attainment Targets)

By the end of this course, participants should be able to:
(1) analyze and understand factors that influence intercultural communication
(2) have a general set of skills that they can use to communicate effectively

6. Correspondence relationship between Educational goals and Course goals

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</table>

7. Requirements

None

8. Textbooks

Bramble P.S., (2012) Culture Shock! Japan: A Survival Guide to Customs and Etiquette (Culture Shock! Guides) available on Amazon Japan in English

Elwood K., (2001) Getting Along with the Japanese (Getting Closer to Japan) (ASK Co. Ltd.) available on Amazon Japan in English

9. Reference Books

Samovar, LA, Porter, RE, McDaniel, ER (2012) Intercultural Communication: A Reader, Wadsworth, Boston

Elwood K., (2007) Oops and Goofs―Lessons Learned through Daily Life in Japan

10. Evaluation

Goals	Evaluation method & point					
	term-end paper	quiz	Weekly reports	presentation	deliverable	participation
(1)	○		○	○		○
(2)	○		○	○		○
Total	30		30	20		20

11. Notes

Participants should attend all course meetings unless they have a legitimate reason to be absent. Participants must notify the instructor before class if they will not attend.

Course Schedule
(Notice) This schedule is a tentative plan, there might be changes, additions, revisions etc. at the time of delivering the course.

Lesson 1 Course overview and self-introductions (lecture and discussion 90 mins.)

Learning objective: Participants' analysis of self and others, and reflection of self.
Activities: Participant presentation of self and interaction with one another.
How do we introduce ourselves to others?
What does our approach tell others about our culture and personal style?

Lesson 2 Understanding culture and identity (lecture and discussion 90 mins.)

Learning objective: To understand how culture and identity are interrelated
Activities: Dialogue-based seminar about culture supplemented with lecture and review of readings. Game activity sorting cultural material.
What is culture? Why should we think about it or care about it? How is culture part of identity?

Lesson 3 Basic communication theory (lecture and discussion 90 mins.)

Learning objective: To understand the fundamental concepts in communication theory.
Activities: Critical dialogue about concepts in material.
What is communication?
What do humans share in common when we communicate?
Is communication the same everywhere?
What is nonverbal communication?

Lesson 4 Intercultural communication settings (lecture and discussion 90 mins.)

Learning objectives: To understand the effect of setting on communication.
Activities: Analysis of intercultural communication in different development and ICT settings.
In what kind of social development and ICT settings to we find intercultural communication?

Lesson 5 Effective communication practices (lecture and discussion 90 mins.)

Learning objectives: To understand important features of effective communication.
Activities: Discuss readings critically and analyze video clips.
What makes intercultural communication work?
How do we create information?
What are different cultural systems in the world?

Lesson 6 Intercultural communication in social development (lecture and discussion 90 mins.)

Learning objectives: To identify the influence of culture in communication patterns
Activities: Examine case studies of social development projects.
How are development projects and businesses influenced by cultural assumptions and different communication patterns?

Lesson 7 Intercultural communication in ICT organizations (lecture and discussion 90 mins.)

Learning objectives: To understand how cultural differences creates the need to manage intercultural communication in ICT organizations.
Activities: Lecture on management strategies and practices for intercultural communication in ITC projects.
How is communication in management and negotiation influenced by culture?

Lesson 8 Adaptation (lecture and discussion 90 mins.)

Learning objectives: Examining the process of adaptation to new cultural conditions.
Activities: Reflection and interactive activity to show how participants' adaptation takes place.
How do people adapt to different cultural communication patterns?
How can you adapt to living and communicating in Japan?

Lesson 9 Adjustment (lecture and discussion 90 mins.)

Learning objective: Understand the organizational barriers and best practices for ensuring inclusion.
Activities: Lecture describing barriers and best practices in case studies.
How can organizations make adjustments for cultural outsiders?

Lesson 10 Case study in development (lecture and discussion 90 mins.)

Learning objectives: Identify effective approaches.
Activities: Examine case studies of development projects.
What are good examples of effective approaches to intercultural communication in social development projects?

Lesson 11 Case study in ICT (lecture and discussion 90 mins.)

Learning objectives: Indentify effective approaches in ICT.
Activities: Examine case studies in development projects.
What are good examples of effective approaches to intercultural communication in ICT projects?

Lesson 12 Course participant presentations (discussion 90 mins.)

Two presentations per session. Participant presentation (20-25 minutes) followed by questions, feedback on ideas and discussion for 15-20 minutes.

Lesson 13 Course participant presentations (discussion 90 mins.)

Two presentations per session. Participant presentation (20-25 minutes) followed by questions, feedback on ideas and discussion for 15-20 minutes.

Lesson 14 Course participant presentations (discussion 90 mins.)

Two presentations per session. Participant presentation (20-25 minutes) followed by questions, feedback on ideas and discussion for 15-20 minutes.

Lesson 15 Reflection (discussion 90 mins.)

Learning objectives: Reflect on personal growth and new knowledge.
Activities: Repeat game sorting cultural materials. Reflect. Discuss awareness of new strategies.
What have you learned about yourself?
What new skills do you have?

1. Course Title

Leadership Development Exercises

2. Instructor

Toshiyuki Yamanaka

3. Term

Fall 2

4. Outline and Objectives

In order to achieve organizational goals, leadership is crucially important. In this lecture, we learn the importance of leadership and how to achieve goals by leadership skills. There are many practices such as group discussions & role plays. All the lectures are very interactive.

5. Goals (Attainment Targets)

(1). Can explain the importance of leadership
(2). Can answer questions for globally changing business cases on leadership
(3). Can demonstrate having learnt & acquired basic leadership skills

6. Correspondence relationship between Educational goals and Course goals

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</table>

7. Requirements

None

8. Textbooks

None

9. Reference Books

To be noticed

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	quiz	report	presentation	deliverable	other
(1)			○	○		
(2)			○	○		
(3)			○	○		
Total			60	40		

11. Notes

None

Course Schedule
(Notice) This schedule is a tentative plan, there might be changes, additions, revisions etc. at the time of delivering the course.

Lesson 1 : Orientation (lecture, 90 min.)

Understand the importance of leadership for ICT project
・Orientation
・Typical failures in ICT projects
・How important leadership is

Lesson 2 : Basic Understanding (lecture, 90 min.)

Understand the meaning of Leadership
・Vision
・Influence for others
・Strategic Thinking
・<360 degree assessment 1>
(continued)

Lesson 3 : Basic Understanding (lecture, 90 min.)

Understand the meaning of Leadership
・Vision
・Influence for others
・Strategic Thinking
・<360 degree assessment 1>

Lesson 4: Leadership & Management (lecture, 90 min.)

Understand the difference between leadership and management
・What is management
・possible failures in ICT projects
・Typical performance management system
・<Role play> between boss and subordinate staff members
・Talent Management
(continued)

Lesson 5: Leadership & Management (lecture, 90 min.)

Understand the difference between leadership and management
・What is management
・possible failures in ICT projects
・Typical performance management system
・<Role play> between boss and subordinate staff members
・Talent Management

Lesson 6 : Facilitation (lecture, 90 min.)

Understand the importance of facilitation and learn the skills
・The importance of facilitation
・How to involve others
・The tips in meeting
・<Role Play> Meeting in ICT project
(continued)

Lesson 7 : Action Learning (lecture 90 min.)

Practice Action Learning Leadership Method
・What is Action Learning Leadership
・How to apply this method for ICT projects
・<Practice> Action Learning Leadership “Question Meeting”
(continued)

Lesson 8 : Action Learning (lecture 90 min.)

Practice Action Learning Leadership Method
・What is Action Learning Leadership
・How to apply this method for ICT projects
・<Practice> Action Learning Leadership “Question Meeting”
(continued)

Lesson 9 : Action Learning (lecture 90 min.)

Practice Action Learning Leadership Method
・What is Action Learning Leadership
・How to apply this method for ICT projects
・<Practice> Action Learning Leadership “Question Meeting”

Lesson 10 : Presentation (lecture. 90 min.)

Learn presentation skills and implement it
・The importance of presentation skills as a leader
・Skills and tips of presentation
・<Practice> Presentation & feedback
(continued)

Lesson 11 : Influence (lecture,. 90 min.)

Learn presentation skills and implement it
・The importance of Influence skills as a leader
・Skills and tips of presentation
・<Practice> Presentation & feedback

Lesson 12 : Global Leadership (lecture. 90 min.)

Understand the importance of global leadership and practice some skills for it.
・Understand the importance of diversity
・How to facilitate the people from various backgrounds
・How to apply this skills for ICT projects
・<Role play> what happens in diversity
(continued)

Lesson 13 : Global Leadership (lecture. 90 min.)

Understand the importance of global leadership and practice some skills for it.
・Understand the importance of diversity
・How to facilitate the people from various backgrounds
・How to apply this skills for ICT projects
・<Role play> what happens in diversity

Lesson 14 : Ethical Leadership (lecture. 90 min.)

Understand the importance of ethics
・Learn from Platon & Kukai
・Inamori's philosophy
・Why we exist as leader
・<Discussion> What we should do as ethical leaders in the future
・<360 degree assessment 2>

Lesson 15 : Your Vision as Leader (lecture. 90 min.)

Exress your vision
・<Discussion> What are your visions.
・<360 degree assessment 2>

1. Course Title

Practice of Creativity Development

2. Instructor

Toshiki Sumitani

3. Term

Fall 3

4. Outline and Objectives

It is critical to come up with creative solutions to social/business issues. In this course students will learn and practice various methods to encourage creative thinking with real cases and group works.
Topics will include:
-The Innovator's DNA: 5 skills to be innovative
-Various creative methodologies
-Service Design Thinking

5. Goals (Attainment Targets)

(1) To understand and practice various creative methodologies, and become able to apply them in real situations.
(2) To understand the characteristics of innovators and become able to practice some of them to be more creative.

6. Correspondence relationship between Educational goals and Course goals

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<tr><td colspan="3">Professional ethics</td><td></td></tr>
</table>

7. Requirements

None

8. Textbooks

The Innovator's DNA: Mastering the Five Skills of Disruptive Innovators
Jeff Dyer , Hal Gregersen , Clayton M. Christensen
Harvard Business School Pr

9. Reference Books

This is Service Design Thinking: Basics, Tools, Cases
Mark Sickdorn,Jakob Schneider
Wiley;

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	quiz	report	presentation	deliverable	other
(1)			○	○	○	
(2)			○		○	
Total			20	30	50	

11. Notes

Some assignments should be carried out outside classes.
Materials used in class and assignments will be distributed through Moodle.
Assignment outputs should be delivered through Moodle.
Bring your network-connected PC's to the classroom.

Service design workshop (Lectures #7-10) will be conducted mainly by
Hiroshi Tamura, an exective fellow at Tokyo University "i.school" (innovation school)
and a co-founder of "Republic inc."

Course Schedule
(Notice) This schedule is a tentative plan, there might be changes, additions, revisions etc. at the time of delivering the course.

Lesson 1 Introduction to Creativity development (lecture, 90min.)

In this lecture, students will understand the critical elements of developing creativity to come up with innovative solutions to social/business issues.
-Creative thinking mini-case
-Degrees of freedom
-Introduction to Innovator's DNA,

Lesson 2 Innovator's skills #1: Associating/Observing (lecture and group work, 90min.)

Students will understand and practice 2 of 5 innovators' discovery skills, associating and observing
-What is associating?
-Case Practice: Forced association
-Case Practice: SCAMPER
-Observing customers with 10 questions
-Assignment: observing customers

Lesson 3 Innovator's skills #2 Observing: (lecture and group work, 90min.)

Students will understand and practice one of 5 innovators' discovery skills, observing.
-Sharing findings of observing customers
-Discussing implications of observing.

Lesson 4 Innovator's skills #3 Questioning (lecture and group work, 90min.)

Students will understand and practice one of 5 innovators' discovery skills, questioning.
-What is questioning?
-Case Practice: Question storming & cultivating question thinking

Lesson 5 Innovator's skills #3 Networking:/Experimenting (lecture and group work, 90min.)

Students will understand and practice 2 of 5 innovators' discovery skills, networking and experimenting.
- What is networking?
-Practice: expanding diversity of your network
-What is experimenting?
-Practice: developing experimenting skills

Lesson 6 Innovation Case (lecture and group work, 90min.)

An innovation case of the Japanese mobile phone industry: NTT DoCoMo i-mode case will be presented. Students will discuss the role of leaders in making innovation happen.
- NTT DoCoMo i-mode Case
- Discussing role of leaders.
-Assignment: research for the service design part

Lesson 7-10 Service Design: Creating a novel service ecosystem (Special Workshop, 90min x 4.)

In this one day workshop, students will practice "service design", a set of process/tools to come up with innovative service to issues. The focus of this workshop will be "Boundary object," a tool to come up with innovative service design.
-Introduction to service design
-What is boundary? What is a boundary object?
-Designing a boundary object
-Stakeholder Analysis
-Scenario Planning
-Sharing of ideas

Lesson 11 Final Case #1 Defining innovation themes (lecture and group work, 90min)

Through lessons #11-#15, students will apply what they learned in this course to a practical case.
-Introduction to the Final Case
-Forming groups
-Defining innovation themes

Lesson 12 Final Case #2 Analysis and Hypothesis building (lecture and group work, 90min)

-Analysis of the current situation. What is the problem to be solved and what are causes?
-Building hypothesis of possible solutions
-Identifying innovation tools to use

Lesson 13 Final Case #3 Designing solutions (lecture and group work, 90min)

-Designing innovative solutions, by applying tools learned

Lesson 14 Final Case #4 Developing presentation materials (group work, 90min)

-Preparing for presentation

Lesson 15 Final Case #5: Presentation (group work, 90min.)

-Presentation by group members
-Feedback from professors

Lesson 16 Reflection (lecture and individual work, 90min.)

Students will reflect on what they have learned in this course.
-Reflection session
-Assignments of the reflection report

1. Course Title

E-Learning

2. Instructor

Samiullah PARACHA

3. Term

Fall 3

4. Outline and Objectives

The e-Education module presents an expansion of the ICT4D programme that sets out learning objectives associated with the ICT in Education or e-Learning module. The course introduces key concepts in relation to starting to use ICT for teaching, learning and assessment, including the advantages of using ICT and how it can be used to support teaching, learning and assessment. Through lectures, classroom discussion forums, fieldtrips, group assignment and case studies, this course provides additional information to the students, allowing them to give appropriate breadth and depth to the ICT4D syllabi items taught.

5. Goals (Attainment Targets)

The e-Learning module aims to provide students with the knowledge and skills to start engaging in the use of ICT for teaching, learning and assessment in a classroom environment. Successful candidates will be able to:

(1). Understand the key concepts and benefits of e-Learning.
(2). Outline considerations for planning an ICT-enhanced lesson.
(3). Understand safety, security and well-being considerations when applying ICT in education.
(4). Outline ICT resources for teaching, learning and assessment.
(5). Understand how to source and evaluate ICT resources for teaching, learning and assessment.
(6). Outline the key features of technologies used in the classroom.
(7). Recognize how to use the key features of a virtual learning environment.

6. Correspondence relationship between Educational goals and Course goals

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</table>

7. Requirements

None

8. Textbooks

This course does not use a textbook. Students can obtain lecture materials on Moodle.

9. Reference Books

Research on e-Learning and ICT in Education, Jimoyiannis, Athanassios (Ed.), 2012, XXII, 316 p. 77.

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	quiz	Report	presentation	Deliverable	Other (Classroom Discussion Forums)
(1)	○	○				
(2)	○		○			
(3)	○					○
(4)	○	○				
(5)	○					
(6)	○					
(7)	○					
Total	70	10	10			10

11. Notes

None

Course Schedule
(Notice) This schedule is a tentative course plan subject to changes in delivery.

Lesson 1 Course Outline/ Key Concepts (Concept Review Quiz/ CDF)

This lecture introduces the contents of e-Learning module, and presents key concepts in relation to starting to use ICT for teaching, learning and assessment including the benefits of applying ICT and how it can be used to support teaching, learning and assessment. The interactive discussion and 'Concept Review Quiz' will help students grasp the definition of terms used in e-Learning.

Lesson 2 The Uses of ICT in Education: Issues & Challenges (CDF/ Report)

This lecture is about what we know and what we do not about the uses of ICTs in education. It is also about what we know and what we do not about using ICTs effectively in education and how might this be relevant for us. In addition, the discussion also uncovers some issues and major challenges that must be addressed when considering the overall impact of the use of ICTs in education. At the end, *Class Discussion Forums* and *Homework Assignments* on these adequately challenging but interesting issues will help students think critically to understand abstract ideas.

Lesson 3 e-Learning, m-Learning and Lifelong Learning (Concept Review Quiz)

This lecture elaborates e-Learning, m-Learning and Lifelong Learning terminologies and emphasizes how they have emerged as one of the solutions to the challenges faced by education, particularly in the developing world. The focus will be on how these concepts will be put into practice. At the end, 'Think Pair Share/ Presentation' will be conducted to ensure students' active participation.

Lesson 4 Planning an ICT-Enhanced Lesson (Think Pair Share Activity)

This lecture introduces the key issues in relation to planning an ICT-enhanced lesson, ensuring that the selection of ICT will achieve the learning outcomes and is appropriate for the student and the teaching, learning, and assessment strategies. It also outlines practical and accessibility considerations as well as safety, security and well-being considerations. At the end, '*Think Pair Share*' activity will be carried out allowing students to plan an online lesson via online tools.

Lesson 5 Crafting ICT Policy in Education (Q & A Session)

The lecture goes on to consider the implications of global technological, social, and economic trends for educational transformation and the use of ICT to support these changes. Building on earlier discussions, the lecture presents a framework that provides future educational decision-makers with a way of thinking about policies that integrate ICT plans and programs with other components of the educational system (such as curriculum, pedagogy, teacher training, assessment, and school organization) and with national policies, in a way that addresses the broader social and economic goals of the country and moves toward an information economy and knowledge society. Finally, the lecture reviews the policy development process and provides future decision-makers with recommendations and suggestions for how they can coordinate ICT with the broader development goals and education reform agenda.

Lesson 6 Safety, Security and Well-Being (Case Study)

This lecture outlines the acceptable terms of behavior when using computers and the Internet. It can cover a wide range of ICT issues from Internet safety, to data security, to data protection, to accessibility, to health and safety. It also outlines some potential risks for students using ICTs such as cyber bullying, spams, junk-mails, accessing illegal materials, hackers etc. At the end, students will suggest some ways to minimize these risks of using ICTs.

Lesson 7 Selecting ICT Resources for Teaching (Roleplaying)

This lecture provides an introduction to the selection of ICT resources for teaching, learning and assessment. It also outlines how to source and evaluate appropriate and effective ICT resources for a given lesson. ICT resources can include applications/tools and digital content designed specifically for educational purposes, generic resources that can be used to enhance or support teaching, learning and assessment, and resources that can be used for continuous professional development. At the end, roleplaying will allow students to experience the challenges of identifying types of digital contents that support teaching and learning.

Lesson 8 Selecting ICT Resources for Assessment (CDF)

This lecture is about identifying on-screen assessment tools and outlining their key features. It can also be used for formative assessment to determine a student's progress at a point in time. It can also be used for summative assessment to determine if learning outcomes have been achieved. The CDFs will provide students an opportunity to identify tools that can be used to support the management and administration of assessment.

Lesson 9 Sourcing, Evaluating ICT Resources (Think Pair Share Activity)

It's important for students to evaluate ICT resources using a systematic approach in order to ensure that they select ICT resources that are appropriate and effective. This lecture will help them understand the importance of evaluating ICT resources using a systematic approach such as an evaluation matrix.

Lesson 10 Managing the Learning Environment (Report)

This lecture outlines technologies that can be used to manage the learning environment including the classroom environment and virtual learning environments. At the end, the students will create a course in a VLE: set the category, name, start date, number of weeks/topics and delete a course.

Lesson 11 Visiting Japanese Schools (Fieldtrip)

The students will visit a Japanese school to see how ICT is applied in the day to day class activities. The interaction with school management, teachers and children will help students gain a very rich and practical insight into the work of a Japanese school.

Lesson 12 Traditional Learning vs. eLearning (Presentations/ CDF)

The students will be divided into teams to compare and present their arguments on the two learning models: traditional vs digital. The group presentations will allow students to plan and manage their work and gain a better appreciation of the skills being developed and how to work effectively as a group.

Lesson 13 STAR (Situation-Task-Action-Result)

It is a universally recognized learning technique designed to enable students to provide a meaningful and complete solution to educational problems. At the same time, it has the advantage of being simple enough to be applied easily. The information will be given to them in a structured manner and, as a result, they will become more receptive to the messages being communicated.

Lesson 14 Final-term Revision (Review)

Students will have an opportunity to clarify their doubts and revise to perform well in the final exam. It includes:

1. A review of the previous lectures
2. An opportunity for having questions
3. An opportunity for demanding an additional lecture

- Q & A Session

Lesson 15 Term-end: Presentation + Report Exam

- Confirmation of Understanding/ Assessment

1. Course Title

(S) Urban planning

2. Instructor

Ikuo Sugiyama

3. Term

Fall 3

4. Outline and Objectives

This course covers both urban planning theories and advanced ICT in addition to the urban planning history in 20th century.
The former part, the history and changes in planning methodologies are introduced to students for deeper understanding. The latter part, it is focused on why and how recent ICT advancement have changed traditional urban planning. Finally, two guest lecturers give us a fresh air and diversified view.
The guests consist of a professional researcher in infrastructure planning and an experienced planner in practical GIS (Geographic Information System) utilizations.
The contents of this course is able to be applied to ICT4D Special experiment 3 in Spring 1.

5. Goals (Attainment Targets)

This goals are to
(1) have a literacy to the urban planning history and the latest planning theories.
(2) understand how to make an urban and spatial development plans.
(3) get an ability to evaluate plans taking global and local environmental issues into consideration.

6. Correspondence relationship between Educational goals and Course goals

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</table>

7 Requirements

Fundamentals of Social Development (achievement of attainment targets is required)

8. Textbooks

Technologies for Urban and Spatial Planning: Virtual Cities and Territories:
Nuno Norte Pinto, Jos Ant nio Tened rio, Ant nio Pais Antunes, Josep Roca Cladera:
Information Science Reference:
ISBN-10: 1466643498 .

9. Reference Books

None

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	quiz	report	presentation	deliverable	other
(1)	○	○	○			
(2)	○	○	○			
(3)	○	○	○			
Total	30	30	40			

11. Notes

None

Course Schedule

(Notice) This schedule is a tentative plan, there might be changes, additions, revisions etc. at the time of delivering the course.

Lesson 1-2 Overview (Lecture 30min/Short report 60min)

Goal to be achieved and lecture schedule
Scoring and the methods
Historical change and the latest theory in urban planning
Short report (1) to measure students' current knowledge level

Lesson 3-4 ICT in Urban planning (Lecture 60 min/Group discussion30 min)

Effective link between real and virtual cities
The latest and future ICT in urban planning
Issues to adopt ICT in emergent countries

Lesson 5-6 Multi-agent systems (Lecture 60min/Quiz 30min)

The use of multi-agent systems (MAS) for modeling
Interactions in terms of both the social and physical environment of cities
Quiz (1) to measure students' understanding level after the lecture

Lesson 7-8 Big data (Lecture 60min/Quiz 30min)

Discussing a range of examples that make use of big data
The mapping of digital social network data
Data collection with the aspects of ethical considerations
Quiz (2) to measure students' understanding level after the lecture

Lesson 9-10 3D city (Lecture 60min/Quiz 30min)

The 3D city model as interface
The energy consumption and energy production of the city
Quiz (3) to measure students' understanding level after the lecture

Lesson 11-12 Guest lecture on urban planning and transit (Lecture 60min/report 30min)

Researcher's view on ICT in urban and regional planning
Short report (2) to measure students' understanding level after the lecture

Lesson 13-14 Guest lecture on GIS (Lecture 60min/report 30min)

Practitioner's view on GIS utilizations
Short report (3) to measure students' understanding level after the lecture

Lesson 15 Conclusion and exam.

Conclusive summary
Term end exam.

1. Course Title

(S) Environment engineering

2. Instructor

Ryutaro Yatsu
Sub Instructors: Kenji KAMIGAWARA, Hiroshi TSUJIHARA, Mitsuru YAMAMURA

3. Term

Fall 1

4. Outline and Objectives

In this course the student gains an understanding of the concept of sustainable development and major domestic and global environmental issues as well as a series of environmental technologies as a key solution to cope with these issues highlighting the use of latest ICT.
Site visits will be organized to understand the application of the technologies.

5. Goals (Attainment Targets)

(1) As for conceptual framework, to be able to explain structure sustainable development concept and common approach to achieve it.
(2) As for environmental technologies, to be able to explain the appropriate matching of technologies and environmental issues to be addressed.
(3) To get a set of basic knowledge to be an expert of sustainable development.

6. Correspondence relationship between Educational goals and Course goals

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</table>

7. Requirements

Fundamentals of Social Development (achievement of attainment targets is required)

8. Textbooks

None

9. Reference Books

To be informed in the lessons

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	quiz	report	presentation	deliverable	other
(1)			○			
(2)			○			
(3)			○			
Total			100			

11. Notes

This course does not use a textbook, but course materials will be provided.
A team of 4 teachers will give lectures based to their expertise.

Course Schedule

(Notice) This schedule is a tentative plan, there might be changes, additions, revisions etc. at the time of delivering the course.

Lesson 1 (lecture, 90 minutes)

This lesson introduces concept of sustainable development and historical back ground of international response to the environmental issues

1. Orientation (learning objectives, performance evaluation, etc.)
2. Brief history of international movement on environment
3. Concept of sustainable development: WCED and UNCED

Lesson 2 Japan's experience to address environmental problems (lecture, 90 minutes)

This lesson introduces Japan's experience to address environmental problems. The lessons to be learned from Japan are described.

1. Rapid economic growth and environmental degradation
2. Policy response to the environmental pollution, i.e. legislations, institutional development, Science and Technology, and public awareness raising
3. Lessons to be learned: prevention is much cheaper than cure

Lesson 3 Trend of the waste management policy in Japan (lecture, 90 minutes)

This lesson introduces trend of the waste management policy in Japan started from environmental sanitation, then prevention of environmental pollution, and today resource efficiency improvement.

1. History of waste management policy
2. Agenda and policy response in respective decade.
3. Statistics and data
4. Strategic planning
5. ICT in waste management

Lesson 4 Selected technologies for waste management and recycling (lecture, 90 minutes)

This lesson introduces selected technologies for waste management and recycling

1. Municipal wastes: waste to energy
2. Industrial and hazardous wastes.
3. Recycling materials

Lesson 5The basic concept of environmental policy on water pollution (lecture, 90 minutes)

This lesson introduces the basic concept of environmental policy on water pollution

1. History of water conservation
2. Environmental standard and effluent standard
3. Regulation of water pollution
4. Regulation and control of persistent, bioaccumulative and toxic chemicals

Lesson 6 Environmental policy on soil contamination (lecture, 90 minutes)

This lesson introduces the basic concept of environmental policy on soil contamination

1. History of soil contamination
2. Pollution of underground water by hazardous chlorinated organic solvents
3. Environmental standard on soil contamination and countermeasures

Lesson 7 Policy measures of biological diversity (lecture, 90 minutes)

This lesson introduces basic concepts, related legal frameworks and policy measures of biological diversity.

1. History
2. Convention on biodiversity and its protocols
3. Domestic legislation in Japan
4. National strategy on biodiversity
5. National research and information system of Japan

Lesson 8 Damages caused by mammals and invasive alien species (lecture, 90 minutes)

This lesson introduces two major challenges; damages caused by mammals and invasive alien species.

1. current situations
2. major courses,
3. policy responses

Lesson 9 Global environmental conventions and their change (lecture, 90 minutes)

This lesson introduces global environmental conventions and their change.

1. Basic nature of multilateral conventions
2. History
3. 5 major conventions; Ramsar, CITES, Basel, Ozone, Climate Change
4. Major cause of change in the convention based institutions.

Lesson 10 The implementation of the global environmental conventions (lecture, 90 minutes)

This lesson introduces the international and domestic implementation of the global environmental conventions.

1. International implementation
   1) Periodical report by the Parties, review by the Conference of the Parties
   2) Scientific and technical assessment
   3) Assistance to the developing Party's implementation
2. Domestic implementation
   1) The obligation-compliance model
   2) The policy-leaning-transfer model

Lesson 11 Climate change science for policy making (lecture, 90 minutes)

This lesson introduces climate change science for policy making, current trend of domestic and international climate change policy.

1. The latest knowledge of climate change science from IPCC AR5
2. International climate change policy
3. Climate change policy in Japan, mitigation and adaptation.

Lesson 12 Situation of air pollution (lecture, 90 minutes)

This lesson introduces situation of air pollution and its countermeasure in Japan and trans-boundary air pollution problem.

1. Trend of air quality.
2. Air pollution countermeasure in Japan

Trans-boundary air pollution problem, its situation and international cooperatio

Lesson 13-14 (Site visit, 3 hours)

A site visit to water purification plant of Kobe City is organized.

1. History and current situation of water supply in Kobe
2. Latest technologies of water treatment, distribution system, disaster prevention
3. ICT in water supply

Lesson 15-16 (Site visit, 3 hours)

A site visit to incineration plant of municipal waste of Kobe City is organized.

1. History and current situation of waste management in Kobe
2. Latest technologies of waste to energy and 3R
3. ICT in waste management

1. Course Title

(S) ICT Policy

2. Instructor

Koichiro FUJII

3. Term

Fall 2

4. Outline and Objectives

Japan had shown high-rate growth from the devastated condition after the World War II. It is said that one of the key factors for the success was industrial policies by the government. However, not all the industries could have the global competitiveness. In the first half of this course, we deal with the determinants of national competitive advantage and the role of government through an analysis of Japan's industrial policies.

No matter how great the policy is, it is no use unless the policy is fulfilled as a formal governmental policy. In the second half of this course, we deal with actors' behavior in a policy making process and the principles of action for a policy planners.

5. Goals (Attainment Targets)

(1) To be able to explain the conditions to gain the national competitive advantage
(2) To be able to apply the conditions to a national situation
(3) To be able to presume the political actors' behavior in a policy making process
(4) To be able to apply the actors' behavior to a political situation

6. Correspondence relationship between Educational goals and Course goals

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</table>

* Depends on the number of students.

7. Requirements

Fundamentals of Social Development (achievement of attainment targets is required)

8. Textbooks

None

9. Reference Books

- Michael E. Porter. *Can Japan Compete?*
- Michael E. Porter. *The Competitive Advantage of Nations.*
- Leonard J. Schoppa. *Education Reform in Japan*

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	quiz	report	presentation	deliverable	other
(1)	-	-	-	○	-	-
(2)	-	-	○	○	-	-
(3)	-	-	-	○	-	-
(4)	-	-	○	○	-	-
Total	-	-	40	60	-	-

11. Notes

None

Course Schedule
(Notice) This schedule is a tentative plan, there might be changes, additions, revisions etc. at the time of delivering the course.

Lesson 1 : What did Japanese government do? How about the results? (Lecture. 90min)

- Japanese government model
- Competitive and uncompetitive industries in Japan
- Japanese Management model and the competitive strategy

Lesson 2 : What determines the industrial competitiveness? (Lecture. 90min)

- Patterns of national growth
- Determinants of national competitive advantages

Assignment for the next lesson : What are the differences of determinants between the successful industries and failed industries in Japan
Materials : Features of industries in Japan

Lesson 3 : Analysis of industrial competitiveness (Discussion. 90min)

- What are the differences of determinants between the successful industries and failed industries in Japan

Lesson 4 : Why did some Japanese industries compete and others didn't? (Lecture. 90min)

- Analysis of the factors of Japan's competitiveness

Assignment for the next lesson : What are the competitive factors of robot industry in Japan
Materials : History of robot industry in Japan

Lesson 5 : Case study : Robot industry (Discussion.. 90min)

- Analysis of robot industry's competitiveness in Japan

Lesson 6 : Do's & don'ts for government (Lecture. 90min)

- The role of government for strengthening the national competitiveness

Assignment for the next lesson: Analyze the recent Japan's industrial policy
Materials : *Japan revitalization strategy 2013*

Lesson 7 : Can Abenomics make a difference? (Discussion. 90min)

- Analysis of Japan Revitalization Strategy 2013

Lesson 8 : The role of government in developing nations (Lecture. 90min)

- Stages of competitive development
- Government policy to move to the next stage

Lesson 9 : Making your policy (Discussion.. 90min)

- National agenda of competitiveness in your nation
- Improvement on the government policy of your nation

Lesson 10 : Why did the educational reform in 1980's fail? (Lecture. 90min)

- Policy making process
- Japan's political system
- Actors' behavior(1) - Case study : Education Reform in 1980's-

Lesson 11 : Political system and actors' behavior (Discussion. 90min)

- Political system and actors' behavior in your nation

Lesson 12 : Why did JNR reform succeed? (Lecture. 90min)

- Actors' behavior (2) - Case study : Reform of Japan National Railway (JNR)

Lesson 13 : What are the success factors in a policy making process (Lecture. 90min)

- Comparative analysis of Education reform in 1980's and JNR reform

Lesson 14 : How do the actors behave in your nation? (Lecture. 90min)

- Obstacles in the policymaking process in your nation if you try to fulfill your industrial policy.

Lesson 15 : What should you do to fulfill your industrial policy? (Discussion. 90min)

- Tactics to fulfill your industrial policy in your nation

1. Course Title

(S) Geological Information System

2. Instructor

Liyang FAN

3. Term

Fall 2

4. Outline and Objectives

In this course, the student gains a fundamental understanding of GIS system, which is considered as a new data solution under the IT society. Furthermore, the students also study on the application of GIS in different research areas. The aim of this course is let the students understand GIS and adopt it in their research.

5. Goals (Attainment Targets)

(1) To understand the concept and basic use of GIS, including mapping, spatial analysis and other function
(2) To understand the application of GIS in city related field, like city environmental problems, city plan problems and city lifeline
(3) To analysis and find the problems in the city field by GIS, develop the research focus and give out some proposals.

6. Correspondence relationship between Educational goals and Course goals

<table>
<tr><th colspan="3">Educational goals</th><th>Course goals</th></tr>
<tr><td rowspan="2">High level ICT skill</td><td colspan="2">Basic academic skills</td><td>(1)</td></tr>
<tr><td colspan="2">Specialized knowledge and literacy</td><td></td></tr>
<tr><td rowspan="8">Human skill
(Tankyu skill)</td><td colspan="2">Ability to continually improve own strengths</td><td></td></tr>
<tr><td rowspan="4">Ability to discover and resolve the problem in society</td><td>Problem setting</td><td>(2)</td></tr>
<tr><td>Hypothesis planning</td><td></td></tr>
<tr><td>Hypothesis testing</td><td></td></tr>
<tr><td>Practice</td><td>(3)</td></tr>
<tr><td rowspan="3">Fundamental Competencies for Working Persons</td><td>Ability to step forward</td><td></td></tr>
<tr><td>Ability to think through</td><td></td></tr>
<tr><td>Ability to work in a team</td><td></td></tr>
<tr><td colspan="3">Professional ethics</td><td></td></tr>
</table>

7. Requirements

Fundamentals of Social Development (achievement of attainment targets is required)

8. Textbooks

This course does not use a textbook. Students can obtain lecture materials

9. Reference Books

Modeling Our World: The ESRI Guide to Geodatabase Concepts
Esri Pr, ISBN-10: 1589482786 ISBN-13: 978-1589482784

Modeling Our World: The Esri Guide to Geodatabase Design
Esri Pr, ISBN-10: 1879102625 ISBN-13: 978-1879102620

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	quiz	report	presentation	deliverable	other
(1)			○			
(2)			○	○	○	
(3)			○	○	○	
Total			30	40	30	

11. Notes

None

Course Schedule
(Notice) This schedule is a tentative plan, there might be changes, additions, revisions etc. at the time of delivering the course.

Lesson 1 Course Outline and introduction of GIS

Introduction about GIS

- What is GIS
- The concept of GIS
- What is GIS used for
- How to use GIS
- The application example of GIS

Lesson 2 How to get the information in GIS with ArcView (Lecture: 45 min/ Homework Report: 45 min)

How to get the information in GIS

- The construction of map in GIS
- The tool used for check information in map with ArcView
- The variety of data and data construction in GIS

Lesson 3 How to make map in GIS (Lecture: 45 min/ Homework Report: 45 min)

- What is the standard for map in GIS
- How to input the map from other file (CAD, SIMA)
- How to make the map from paper data

Lesson 4 Spatial analysis in GIS (Lecture: 45 min/ Homework Report: 45 min)

Geo processing

- Space search with attribute table
- Make a new map by merge
- The new application spatial tool in GIS
- Spatial calculation in GIS

Lesson 5 Project exercises 1 (Lecture: 45 min/ Group Discussion: 45 min)

The students will be divided into several groups. Every group will choose one subject by analyzing the existing condition, analyze with GIS and give out proposals.

- Analyze the condition and select a subject
- Make further spatial analysis with GIS
- Give out some proposals with GIS

Lesson 6 Project exercises 1-- Class discussion Forum (45 min)and Group work(45 min)

- Presentation for the existing condition analysis and subject
- Group work for the proposal and analysis

Lesson 7 Project exercises 1--Group presentation

Every group should give a presentation by all the group members, including analysis and proposals.

- Give out some proposals with GIS

Lesson 8 Remote sensing basic (Lecture: 45 min/ Homework Report: 45 min)

- The tool for remote sensing in GIS
- The remote sensing used in city plan and environmental plan

Lesson 9 Project exercises 2 (Lecture: 45 min/ Group work: 45 min)

The students will be divided into several groups. Every group will chose a subject that related to remote sensing, no matter city plan or environmental plan.

- Analyze the condition and select a subject
- Make further spatial analysis with Remote sensing
- Give out some proposals
-

Lesson 10 Project exercises 2-- Class discussion Forum (45 min) and Group work(45 min)

- Presentation for the existing condition analysis and subject
- Group work for the proposal and analysis

Lesson 11 Project exercises 2--Group presentation

Every group should give a presentation by all the group members, including analysis and proposals.

- Give out some proposals with Remote sensing

Lesson 12 The GIS database of city lifeline (Lecture: 45 min/ Homework Report: 45 min)

- The basic concept of GIS data of urban infrastructure.
- GIS data and energy

Lesson 13 Project exercises 3 (Lecture: 45 min/ Group work: 45 min)

The students will be divided into several groups. Every group will chose a subject that related to renewable energy use or city infrastructure design

- Analyze the condition and select a subject
- Make further spatial analysis with GIS
- Give out some proposals

Lesson 14 Project exercises 3-- Class discussion Forum (45 min) and Group work(45 min)

- Presentation for the existing condition analysis and subject
- Group work for the proposal and analysis

Lesson 15 Project exercises 3—Final presentation

Every group should give a presentation by all the group members, including analysis and proposals.

- Give out some proposals with energy use in urban

1. Course Title

ICT4D Exercises (Program Management)

2. Instructor

Ryuji　MATSUNAGA

3. Term

Fall 3

4. Outline and Objectives

The objective of this course is to practice t of the P2M Project & Program Management that use the PCM(Project Cycle Management)Method for Education, Health, Disaster management, Private Sector Development in the field.
And to understands how to create the project by PCM method for the field.

5. Goals (Attainment Targets)

Goals consist of the following two sections:
(1) To become able to set up and operate a project in the field.
(2) To become able to create the project for various field.

6. Correspondence relationship between Educational goals and Course goals

<table>
<tr><th colspan="3">Educational goals</th><th>Course goals</th></tr>
<tr><td rowspan="2">High level ICT skill</td><td colspan="2">Basic academic skills</td><td></td></tr>
<tr><td colspan="2">Specialized knowledge and literacy</td><td></td></tr>
<tr><td rowspan="8">Human skill
（Tankyu skill）</td><td colspan="2">Ability to continually improve own strengths</td><td>(1) (2)</td></tr>
<tr><td rowspan="4">Ability to discover and resolve the problem in society</td><td>Problem setting</td><td>(1) (2)</td></tr>
<tr><td>Hypothesis planning</td><td>(1) (2)</td></tr>
<tr><td>Hypothesis testing</td><td>(1) (2)</td></tr>
<tr><td>Practice</td><td>(1) (2)</td></tr>
<tr><td rowspan="3">Fundamental Competencies for Working Persons</td><td>Ability to step forward</td><td>(1) (2)</td></tr>
<tr><td>Ability to think through</td><td>(1) (2)</td></tr>
<tr><td>Ability to work in a team</td><td>(1) (2)</td></tr>
<tr><td colspan="3">Professional ethics</td><td>(1) (2)</td></tr>
</table>

7. Requirements

Fundamentals of Social Development (achievement of attainment targets is required)

8. Textbooks

JICA-Net Library “The ABCs of PCM”
P2M Project & Program Management GuideBook1 & 2

9. Reference Books

JICA-Net Library

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	quiz	report	presentation	deliverable	other
(1)				○		
(2)				○		
Total				100		

11. Notes

Home Works

Course Schedule
(Notice) This schedule is a tentative plan, there might be changes, additions, revisions etc. at the time of delivering the course.

Lesson 1: Overview of P2M and PCM Method (Lecture: 30 min/ Exercise: 60 min)

In this session, various kinds of projects in different fields are introduced to grasp what is the P2M and how to use the PCM method in your country. It is expected that each students should demonstrate project-related research experience in their countries. You will chose a major problem in your country and solve it through PCM method.

1. Contents of this module (objective, each session contents, group work, assignment and evaluation)
2. Introduction of PCM method projects
3. Project Exercise

Lesson 2: Determination of Theme and group work (Lecture: 30 min/ Group work: 60 min)

In this session, the theme of ICT4D project will be presented as case study. This exercise will be carried out in a teamwork setting. Target Area is KIC or KITANO-CHO.

Lesson3: Stakeholders analysis 1 (Lecture: 30 min/ Group work: 60 min)

Stakeholder analysis will be carried out in group work.

Lesson 4: Stakeholders Analysis 2 (Presentation: 40 min/ Q & A Session: 50 min)

Group presentation will be carried out and the outcome of the research will be shared with the class. After presentations on stakeholder analysis Question & Answer Session will be conducted.

Lesson 5: Problems analysis 1 (Lecture : 30 min/ Exercise :60 min)

Problem analysis will be carried in teamwork setting.

Lesson6: Problems analysis 2 (Presentation: 40 min/ Q & A: 50 min)

Team Presentations will be carried for your problem analysis followed by a Q & A session.

Lesson7: Objectives analysis 1 (Lecture: 30 min/ Exercise: 60 min)

Problem analysis will be carried out in groups.

Lesson 8: Objectives analysis 2 (Presentation: 40 min / Q & A: 50 min)

1. Group presentations will be carried out and research outcome will be shared with the class.
2. Presentations on your problem analysis
3. Question & Answer

Lesson 9: Determination of objectives (Group work: 90 min)

Determination of objectives in your county is important to tackle problem at this time in a teamwork environment.

Lesson 10: Project Design Matrix (Presentation: 40 min/ Q & A: 50 min)

- In this session, we will try to formulate Project Design Matrix (PDM).
- Group Presentations will be carried out and the research outcome will be shared in the class.
- Question & Answer Session

Lesson 11: Work Breakdown Structure (WBS) (Lecture: 30 min/ Exercise: 60 min)

In this session, lecture Work Breakdown Structure(WBS)

- The purpose of the WBS is to subdivide the scope of work into manageable work packages that can be estimated, planned and assigned to a responsible person or department for completion.

Lesson 12: Scheduling (Lecture: 30 min/ Exercise: 60 min)

- Review and document preconditions for scheduling, i.e. the project purpose, outputs, activities*, resources, etc.
- Estimate the duration required to complete each activity.
- Establish a logical relationship between the activities using a network diagram.
- Find the critical path.

Lesson 13: Draw a schedule bar chart (Lecture: 30 min/ Exercise: 60 min)

In this session, the lecture will focus on the draw a schedule bar chart for a project. Furthermore, we will revise the scale of the assignment which is important for the success of any project.

Lesson 14: Procurement Planning (Lecture: 30 min/ Exercise: 60 min)

This session will focus on the procurement planning .

Procurement planning is the process of identifying which project needs can be best met by procuring products or services outside the project organization and should be accomplished during the scope definition effort."

Lesson15: Final Presentation (Presentation: 60 min/ Q & A Session: 30 min)

- Final Presentation
- Q & A Session

1. Course Title

ICT4D Special Experiment 1(e-Learning/e-Health/e-Social Work)

2. Instructor

PARACHA Samiullah

3. Term

Fall 2

4. Outline and Objectives

The development of appropriate Information and Communication Technologies (ICT) can play a substantial role in addressing many of the pressing problems especially in education, healthcare & social welfare sectors in developing countries. As such the premise of this course is to review some of the ongoing efforts in this space and discuss the challenges in education, healthcare & social welfare sectors. Students will also learn to incorporate the 'Tankyu Practice' in this course which aims to foster 'ICT Innovators' capable to apply their ICT, humanistic and Tankyu skills to tackle social, educational, and health related issues in the communities thereby, ushering into an era of Sustainable Development. The Course will run via lectures, interactive group discussion, and group assignment development. Real project case study will be used throughout the course and also for assignment exercises.

5. Goals (Attainment Targets)

This course aims to ignite the fire of transformational change in students through empowerment, education and motivation thereby, creating 'Agents of Change' endowed with:

(1). Advanced knowledge and understanding of the principal theories, principles and concepts in the field of ICT4D *vis-à-vis* education, healthcare and social welfare.
(2). An ability to offer their own analyses of cases of ICT4D using these theories principles and concepts.
(3). A clear understanding of the challenges of the Information Society in the underdeveloped and developed nations.
(4). Awareness of the interdisciplinary nature of ICT4D projects.
(5). Knowledge of main theoretical debates on the way technology can create/remove socio-economic inequalities.

6. Correspondence relationship between Educational goals and Course goals:

Educational goals			**Course goals**
High level ICT skill	Basic academic skills		(1) (2) (3) (4) (5)
	Specialized knowledge and literacy		(4) (5)
Human skill (Tankyu skill)	Ability to continually improve own strengths		(1) (2) (3) (4) (5)
	Ability to discover and resolve the problem in society	Problem setting	(3) (5)
		Hypothesis planning	(2)(3)
		Hypothesis testing	(3)
		Practice	(1) (2) (3) (4) (5)
	Fundamental Competencies for Working Persons	Ability to step forward	(2)
		Ability to think through	(3)
		Ability to work in a team	(4)
Professional ethics			(1) (2) (3) (4) (5)

7. Requirements

E-Learning (achievement of attainment targets is required)
ICT4D Exercises (Program Management) (achievement of attainment targets is required)

8. Textbooks

This course does not use a textbook. Students can obtain lecture materials on Moodle.

9. Reference Books

This course has no required textbooks, but you might find the following useful as referen-ces:

- ICT in Education by Victoria L. Tinio
- Bates, A.W. 2000. Managing Technological Change: Strategies for University and College Leaders. San Francisco: Jossey Bass.
- Brown, J.S., and P. Duguid.2000. The Social Life of Information. Boston MA: Harvard Business School Press.
- Carlson, S. and C. T. Gadio. 2002. “Teacher Professional Development in the Use of Technology”, in Haddad, W. and A. Drexler (eds). Technologies for Education: Potentials, Parameters, and Prospects. Washington DC: Academy for Educational Development and Paris: UNESCO.
- Cuban, L. 2002. Oversold and Underused: Computers in the Classroom. Cambridge MA: Harvard University Press.
- Haddad, W. 1994. The Dynamics of Education Policymaking: Case Studies of Burkina Faso, Jordan, Peru, and Thailand. EDI Development Policy Case Series, Analytical Case Studies No. 10.Washington DC: The World Bank.
- Steffe, L. P. and J. Gale.1995. Constructivism in Education. Hillsdale, NJ: Lawrence Erlbaum.

10. Evaluation

Goals	Evaluation method & point					
	Term-end exam	Quiz	Report	Presentation	Deliverable	Other (Classroom Discussion Forums)
(1)		○	○	○		
(2)			○	○		
(3)			○	○		
(4)			○	○	○	
(5)			○	○		○
Total		10	35	35	10	10

11. Notes

None

Course Schedule

(Notice) This schedule is a tentative plan, there might be changes, additions, and revisions at the time of delivering the course.

Lesson 1 Course Outline/ Notable ICT Interventions in Education (Think Pair Share)

This lecture outlines the complete course, and introduces the topic of ICT4D with the concept of Tankyu Practice Cycle. It explains its context and importance, and provides some background to support understanding. The discussion will also highlight some notable Japanese contributions in the ICT4D domain through Tankyu practice.

1. Course outline
2. Pre-course evaluation
3. Introduction to the topic of ICT4D, Tankyu Practice Cycle – why are we doing it and why is it important
4. Japanese Innovative ICT Solutions through Tankyu Practice (Case Studies)

At the end, 'Think Pair Share' activity will be carried to help students learn innovative ways to deal with social and educational challenges in their societies/ countries.

Lesson 2 Interview a Classmate (Synchronous/Asynchronous Icebreakers)

The purpose of icebreakers is to get to know each other in order to build a sense of community. At the very onset of ICT4D SPE1 class, it is a good idea to include an icebreaker activity. This also motivates students to participate in future class activities with interest. Interview a Classmate: this could be done either synchronously (via text/audio chat between participants in 'breakout' rooms) or asynchronously (e-mailing the partner ahead of time with the interview questions). The introductions would be best synchronously so that everyone could get to know each other at one time because after the interview, the students would introduce each other to the class.

Lesson 3-4 Creating an Educational Game (Synchronous Activity/Report)

Many students learn best by doing, so playing games is not only fun, but also a hands-on way to learn. These games allow learners to engage with the content in a fun way, while reinforcing the learning objectives through play. Gaming strategies can include matching, bonus rounds, drag-and-drops, sequencing and more! In addition, of course, there are sites that let learners create games with an overt learning purpose e.g., Class Tools, Philologus, educaplay, Zondle, QuizBreak! etc. Students have to write instructions on how to play the game for players to read. They can then play each other's games, and then write comments about what they liked about it.

Lesson 5-6 Inviting a Guest Speaker Online (Q & A/ CDF/ Report)

This is a whole class activity in which an outside guest and/or an e-Learning expert is invited to teach and lecture about an ICT in education topic, or for participants to interview about an e-Learning topic. This can be done via teleconferencing or through another synchronous chat program. A web cam would be helpful for students to get a visual picture of the speaker. Participants summarize and discuss what they learned about the topic presented.

Lesson 7-8 STAR (Situation, Task, Action and Result)

The STAR (Situation, Task, Action, Result) format is an effective learning technique for analyzing challenging situations within e-Learning context. The STAR method begins with a description of a *Situation*, then describes the *Tasks* that are necessary for the situation, the *Actions* that you took to address that situation, and the *Result*. The ensuing discussion highlights some good points and resultantly students gain a better understanding of the concept or topic from different angles.

Lesson 9 Using Skype as an Academic Tool (Exercise/ Group Presentation)

Computer Mediated Communication (CMC) in e-Learning refers to the ability to interact with other learners in order to achieve academic goals. There are numerous Web 2.0 tools available for instructors. Skype has been considered to be a worthwhile, academic software tool. In this session, the student will have the opportunity to think and plan how Skype could be used to improve literacy level of the society.

Lesson 10 Fine-tuning the Moodle Experience (Exercise/ Group Presentation)

Moodle is a free software e-learning platform, also known as a Learning Management System, or Virtual Learning Environment (VLE) to help educators create online courses with a focus on interaction and collaborative construction of content, and is in continual evolution. This exercise will help students to deduce usability issues aiming to optimize Moodle's user interface. Not only students' navigation paths & visual preferences will be recorded, but also redundant as well as inefficient areas would also be detected. Furthermore, useful recommendations will be given to Moodle service providers and developers how to implement and optimize their Moodle platforms or extensions from visual point of view.

Lesson 11 Enhancing the Effectiveness of Evaluation Instruments (Group Presentation/ CDF)

This session will allow students to evaluate the effectiveness of various KIC's evaluation instruments on teaching effectiveness. The class will be divided in teams and each team has to identify the shortcomings and strength of the evaluation instruments by offering recommendations to the faculty for possible modification or effectiveness.

Lesson 12 Asynchronous Learning (Report)

The purpose of this session is to investigate the role of wiki in supporting the collaborative learning activities, and to assess how wiki influences student engagement with the activities. The students will assess wiki's role as a central repository to support collaborative activities among students and lead to enhanced learning opportunities. In short, the exercises has two aims: (i) to help educators facilitate speedy induction and participation of the students in the collaborative activities; (ii) to ensure the wiki is used effectively by students to increase their collaborative learning opportunities.

Lesson 13 Scenarios & Case Studies (Structured Controversies/ Debates)

Factual or hypothetical situations where students read or listen to a topic of interest. Students can debate the opposing sides via audio or text chat. Depending on the size of the class, breakout groups could be formed to allow for easier participation or deeper discussions in smaller groups.

Lesson 14 Online Study Groups/ Peer Evaluation (Synchronous/Asynchronous Activity)

This activity aims to increase Students' sense of investment in communicating and collaborating effectively within e-Learning context. It could occur when classmates give feedback on papers, projects, or other assignments through track changes in Microsoft word, email, blogs, or discussion boards depending on the assignment and the purpose.

Lesson 15: Technology for Personalized Learning (Case Study)

Today, teachers around the globe have access to more online learning resources than ever before, and more products are in the pipeline as entry costs decline and public access to high-speed bandwidth devices increases. This activity aims to generate information for school systems, school leaders, and teachers on how Khan Academy, and by implication other similar digital learning tools and resources, could be used to support personalized learning.

Lesson 16 Online Surveys (Synchronous/Asynchronous Activity)

Online surveys can be a huge help for teachers and school administrators in understanding what other stakeholders think and how successful the programs are, and good tools can be a big part of that. Online survey tools can be a very cost-effective way for delivering surveys and collecting and analyzing results through one central system. The ICT4D students will develop an online survey, using available digital tools, for gathering informal data from other KIC students aiming to further KIC library into a full-fledged e-library.

Lesson 17 Evaluating Online Resources (Team Activity)

Students need to learn to evaluate the quality of information they find on the web as well as other information resources such as books, magazines, CD-ROM, and television. This lesson provides a list of criteria to help students evaluate e-learning resources as they conduct research. At the end, students will apply this criterion to determine the quality of their favorite online learning resources.

Lesson 18 Evolution of ICT-Enhanced Healthcare (Report)

This lecture introduces the concept of telemedicine, including definitions and requirements of telemedical systems. The evolution of contemporary telemedical systems and challenges faced by future technologies are also shown. Additionally, this discussion reviews speciality-specific applications, including formal and legal aspects of telemedicine as well as its acceptance among users. An important item is the cost/benefit analysis of telemedical services. At the end, ‘Question & Answer Session’ will be carried to allow students clarify their doubts..

Lesson 19 ICT Interventions in Healthcare (STAR)

This lecture will focus on:

- Telemedical systems
- Internet Technologies in Medical Systems
- Wireless Systems in e-Health

ICTs interventions to enhance healthcare and the challenges faced by future technologies will also be discussed. Additionally, the discussion will highlight some specialty-specific applications, including formal and legal aspects of telemedicine as well as its acceptance among users. As a case study, the TELEDICOM system for collaborative teleradiology is presented. At the end, ‘Question & Answer Session’ will be carried to provide an opportunity to students to clarify their doubts.

Lesson 20 Knowledge-based Expert Systems Supporting Physicians (Report)

This lecture describes the progress in constructing a common set of data structures contained in medical records and reports on the main standardization efforts in this area. It covers knowledge-based and expert systems that support physicians in making medical decisions by providing interactive tools. In this lecture, Image-guided surgery is presented as an evolving technology used to carry out minimally invasive procedures.

1. Electronic Health Records
2. Decision Support Systems in Medicine
3. Image-guided surgery

Students have to submit a 2-pages report on matters that will emerge as a result of this discussion.

Lesson 21 Enhancing Medical Education through Telelearning (Think Pair Share)

This lecture specifies telelearning standards and requirements for medical telelearning platforms. The discussion contains an overview of existing telelearning platforms and multimedia material. The process of preparing educational materials for medical e-learning is described, as are the technical aspects of handling multimedia in e-learning medical systems. As a case study, the Medical Digital Video Library and the Virtual Video File System are presented. At the end, 'Think Pair Share/ Presentation' will be conducted to ensure students' active participation.

Lesson 22 ICT and Social Welfare Practice (Q & A Session)

In this lecture, the focus is on introducing the key issues and applications of ICT to the social welfare professional and practitioner. The essential context for the delivery of – and citizen experience of – social welfare services will be provided in a broad outline of major concepts of social policy and an introduction to their relationship with ICT.

- The Potential of ICT to Resolve Social Problems
- Social Welfare Practice and Emerging Technology

At the end, 'Question & Answer Session' will be carried to allow students clarify their doubts.

Lesson 23 ICT & Social Welfare Implications of the Digital Divide (CDF)

This lecture will introduce key themes of the 'digital divide', in terms of information exclusion from access to, and the benefits of, the Internet, relating to income, geography, gender, age, disability, race and ethnicity. As such, the following key themes will be the focus:

1. ICT and Governance
2. Social Welfare Implications of the Digital Divide

At the end, CDF will be carried out to give students opportunity to discuss critically and frame plausible solutions.

Lesson 24 Robotics for Social Welfare (Case Study)

Supported by developments in the field of social robotics, virtual worlds and ICT tools it is possible to build new solutions in health and welfare. Two projects are described in this lecture:

1. The ESTIMULO project improves emotional and cognitive status of people with dementia using a reactive pet-robot.
2. The ELDERTOY project modifies the classical concept from the toy industry to develop a new solution for the aged people.

Students will watch a video documentary and submit a 2-pages report.

Lesson 25 Social Media and Social Welfare (CDF)

This lecture will focus on the following debates:

- Is social media the panacea for social service, social change and philanthropy organizations?
- Can it really bring people together for the greater good?
- Is it just a lot of smoke and mirrors which promises too much and delivers too little?

At the end, 'Think Pair Share/ Presentation' will be conducted to ensure students' active involvement in the learning process.

Lesson 26 ICT4Peace (Video Documentary/ Report/ CDF)

This discussion aims to raise awareness on the concept of ICT for Peace (ICT4Peace). ICT4Peace intends to utilize ICT in promoting lasting peace in areas that involve armed conflict including: management and prevention of conflict; peace operations; humanitirian relief and disaster assistance; and post-conflict peace building and reconstruction. The discussion provides analysis of ICT4Peace issues and current initiatives including specific examples from all over the world and recommendations for future actions.

Lesson 27 The Future of ICT (CDF)

Technology is changing fast as such the expectations of the contribution that it can make to public services are growing. What will be the shape of the future ICT function? How can we resource it? What plans do we need to make in order to manage the transition from 'as is' into 'to be'?. These are some important questions that would be debated in this session

Lesson 28 Myths about Technology & Development (Think Pair Share)

In this lecture, we will discuss a number of myths that surround the field of ICT4D that could confuse our thinking about the proper role for technology in addressing development problems. It also identifies potential pitfalls and challenges with respect to the adoption of ICTs, with recommendations for advancing their use in practice, education, and research. At the end, Think Pair Share activity will help students critically analyze myths about ICT.

Lesson 29 Reviewing past lessons (Q & A Session)

In this lesson, students have an opportunity to clarify their doubts and revise to perform well in the final exam. It includes:

- A review of the previous lectures
- An opportunity for having questions
- An opportunity for demanding an additional lecture

Lesson 30 Term-end: Presentation + Report

Students will be assigned a visionary initiative to take ICT and development closer to the marginalized communities focusing on improvements in education, healthcare and social welfare. They will be divided in teams and each team has to submit their proposal. The teams will also appoint their own project leaders for the final presentation. Highest marks will be given to the team exhibiting solid methodological framework, comprehensive project design including workflow, stakeholders, risk mitigation, limitations and impact.

1. Course Title

ICT4D Special Experiment 2(E-Government)

2. Instructor

Atsushi Yamanaka

3. Term

Fall 3rd Semester (9)
Spring 1st Semester (9)
Spring 2nd Semester (12)

4. Outline and Objectives

Objective of the course is to gain professional abilities to create, implement, monitor, and evaluate viable and appropriate e-Governance project/programme through familiarizing real life cases of e-Governance projects/programme in the developing countries. The course will be “hands-on” and will be conducted as a “practicum” rather then series of lectures. The practicum participants are expected to fully participate in the discussions and other interactions which are expected during the course of the practicum.

5. Goals (Attainment Targets)

At the end of the course, it is expected that students will gain expertise in:

(1). Understand fundamental concept of programme/project
(2). Understand key characteristics of best and worst examples in the e-Governance/e-Government implementations
(3). Identify real problems of public administration and public service delivery and give possible solutions /remedies through using ICT tools
(4). Familiarize with creation of realistic project document to initiate a project/initiative in e-Governance
(5). Understand real life challenges to implementing e-Governance/Government Programme/Projects

6. Correspondence relationship between Educational goals and Course goals

<table>
<tr><th colspan="3">Educational goals</th><th>Course goals</th></tr>
<tr><td rowspan="2">High level ICT skill</td><td colspan="2">Basic academic skills</td><td></td></tr>
<tr><td colspan="2">Specialized knowledge and literacy</td><td>(2)</td></tr>
<tr><td rowspan="9">Human skill
(Tankyu skill)</td><td colspan="2">Ability to continually improve own strengths</td><td>(3),(4),(5)</td></tr>
<tr><td rowspan="4">Ability to discover and resolve the problem in society</td><td>Problem setting</td><td>(1),(2),(3),(4),(5)</td></tr>
<tr><td>Hypothesis planning</td><td>(1),(2),(3),(4),(5)</td></tr>
<tr><td>Hypothesis testing</td><td>(1),(2),(3),(4),(5)</td></tr>
<tr><td>Practice</td><td>(1),(2),(3),(4),(5)</td></tr>
<tr><td rowspan="3">Fundamental Competencies for Working Persons</td><td>Ability to step forward</td><td>(1),(2),(3),(4),(5)</td></tr>
<tr><td>Ability to think through</td><td>(1),(2),(3),(4),(5)</td></tr>
<tr><td>Ability to work in a team</td><td>(1),(2),(3),(4),(5)</td></tr>
<tr><td colspan="3">Professional ethics</td><td>(5)</td></tr>
</table>

7. Requirements

ICT4D Exercises (Program Management) (achievement of attainment targets is required)

8. Textbooks

Course does not require specific text books at this time. However, suitable text books may be added prior to the commencement of the course.

9. Reference Books

Since the ICT4D special experiment is a practical course, no specific text book is assigned at the composition of this Syllabus. However, a separate list of references/recommended readings will be provided to the students prior to the commencement of the course.

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	quiz	report	presentation	Deliverable (Assignments and Project Documents)	Other
(1)				○	○	
(2)				○	○	
(3)				○	○	
(4)				○	○	
(5)				○	○	
Total				50	50	

11. Notes

The practicum course is designed to have intensive in-person lectures/discussions during the first and last weeks of the school semesters (Fall-3rd and Spring 1st semesters). The in-person sessions are supplemented by weekly on-line sessions which will be conducted either from the U.S. or from other developing countries where the course instructor has assignments in. While the on-line portion of the course is expected to use video conferencing facility, the practicum participants need to anticipate that the on-online portions of the course may not have good video capability which may force the lecturer to conduct voice only sessions. In addition, the practicum participants are forewarned that the on-line portion of the practicum may need to be rescheduled due to the course lecturer's other engagements. In such instances, the lecturer will make maximum efforts to propose a new schedule with the practicum participants at least one week prior to the originally scheduled course.

The practicum participants are expected to complete assignments/tasks every week and progress must be reported to the lecturer. Timely completions of assignments are critical for completing the final project document.

The lecturer will avail himself to the questions/concerns from the practicum participants through e-mail and other ICT tools throughout the course. Furthermore, during the "in-person" sessions, the practicum participants are encouraged to maximize the time and contact and co-mingle with the lecturer

Course Schedule
(Notice) This schedule is a tentative plan, there might be changes, additions, revisions etc. at the time of delivering the course.

Lesson 1 – Introduction to the e-Governance/e-Government Practicum. (Lecture/Discussion)

- Expectation for the course and explanation of practicum structure
- General Introduction among group

Lesson 2 – Definition of e-Governance and e-Government (Lecture/Discussion)

- Historical perspective of difference between e-Governance and e-Government
- Open discussion of e-Governance and e-Government definition

Lesson 3 – m-Governance and m-Government (Lecture/Discussion)

- Discussion about emerging trend of utilizing mobile for development (Government and Governance)
- Open discussion of m-Government and its impact to both developed and developing world

Lesson 4 – Keys to effective e-Governance and e-Government Solutions (Lecture/Discussion)

- Open discussion of key for effective e-Governance and e-Government solutions
- Importance of Leadership (organization, government, etc.)

Lesson 5 – Keys to effective e-Governance and e-Government Solutions – cont'd (Lecture/Discussion)

- Open discussion of key for effective e-Governance and e-Government solutions (continued)
- Appropriate Technology vs Disruptive Technology (what would be the most effective ways of implementing e-Governance/e-Government projects/solutions?)

Lesson 6 – Identification of e-Governance/e-Government Programme/Projects (Lecture/Discussion)

Identification of e-Government/e-Governance projects
- Creation of sample Tankyu charts for potential problem and solutions.
- Review of sample e-Governance projects
- Difference between Programme and Projects
- Discussion

Assignment: Compile Tankyu Charts for potential e-Governance/e-Government Project(s)

Lesson 7 – Identification of e-Governance/e-Government Programme/Projects (Lecture/Discussion) - cont'd

Identification of e-Government/e-Governance projects cont'd
- Presentation of Problem Analysis by Tankyu Practice (presentation of assignment)
- Review of compiled Tankyu project statement and situational analysis
- Discussion

Lesson 8 – Introduction of Project Document (Lecture/Discussion)

Review different outlines/components of Project Document(s)
- Explanation of effective project documents (components and attributes)
- Presentation of sample e-Governance/e-Government project documents from major donors.
- Discussion of Outputs and Outcomes and respective indicators
- Discussion

Assignment: Research different e-Governance/Government projects for presentation

Lesson 9 – Introduction to the Project Document (Online) – Pt.2

Review different outlines/components of Project Document(s)
- Presentation of sample e-Governance/Government project documents from major donors (by students)
- Discussion of Outputs and Outcomes and respective indicators
- Presentation of sample project document templates from different donors
- Discussion

Assignment: Come up with analysis of different project documents form different agencies

Lesson 10 – Introduction to the Project Document (Online) – Pt.3

Review different outlines/components of Project Document(s)
- Presentation of project document templates from major donors (by students)
- Discussion of Outputs and Activities and respective indicators
- Discussion

Lesson 11 - Creation of situational Analysis and other environmental variable (Online) – Pt.1

Creation of situational Analysis and other environmental variables
- Explanation of critical component for situational analysis and other environmental variables in project documents.
- Discussion of effective and concise situational analysis and other environmental variables in project document

Assignment: Compile situational analysis of potential/prospective projects for next lesson.

Lesson 12 - Creation of situational Analysis and other environmental variable (Online) – Pt.2

Creation of situational Analysis and other environmental variables
- Presentation of situational analysis (compiled as an assignment to Lesson 9)
- Discussion (Critique)

Lesson 13 - Creation of Programme/Project Logframe (Online) – Pt.1

Creation of Programme/Project activities
- Identification and compilation of programme/project Impact/Outcomes for the project
- Clarifying and differentiating Impact and Outcomes and respective indicators
- Discussion

Assignment: Compile realistic and feasible programme/project Outcomes/Impact for the next session

Lesson 14 - Creation of Programme/Project Logframe (Online) – Pt.2

Creation of Programme/Project activities
- Presentation of compiled programme/project Outcomes/Impact for the project
- Discussion (Critique)
- Identification and compilation of programme/project Outputs/Activities for the project
- Clarifying and differentiating Outputs/Activities and respective indicators

Assignment: Compile realistic and feasible programme/project Outputs/Activities for the next session

Lesson 15 - Creation of Programme/Project Logframe (Online) – Pt.3

Creation of Programme/Project activities
- Presentation of compiled programme/project activities for the project
- Discussion (Critique)

Assignment: Compile realistic and feasible programme/project Outputs/Activities for the next session

Lesson 16 - Creation of Programme/Project Logframe (Online) – Pt.4

Creation of Programme/Project Log Frame
- Presentation of compiled programme/project activities for the project
- Discussion (Critique)
- Compilation of Log Frame from Impacts/Outcomes/Outputs/Activities

Assignment: Compile completed Log Frame for the next session

Lesson 17 - Creation of Programme/Project Logframe (Online) – Pt.5

Creation of Programme/Project Log Frame
- Presentation of completed Log Frame for the project
- Discussion (Critique)

Assignment: Further refine Log Frame for the prospective project

Lesson 18 – Budgeting Programme/Projects (Online)

Budgeting Programme/Project
- Sample criteria for budget.
- Discussion of overhead and other line items
- Realistic costing based on sample proposed activities
- Discussion

Assignment: Compile budget based on the activities for the prospective projects

Lesson 19 – Risk Analysis (Online)

Risk Analysis and Mitigation
- Sample risks from different projects
- Discussion of potential risks in e-Government/Governance projects
- Mitigation Methodology
- Discussion

Assignment: Compile Risk Analysis and mitigation for the prospective projects

Lesson 20 – Project Management (Practice /in person) Part.1

Project Management Tool
- Explanation of different project management tools
- Potential pitfalls for project delay and stagnation
- Compilation of time bound activity chart (Gaunt chart and others)
- Discussion

Lesson 21 – Project Management (Practice /in person) – Part.2

Project Management Tool
- Explanation of different project management tools
- Potential pitfalls for project delay and stagnation
- Compilation of time bound activity chart (Gaunt chart and others)
- Discussion

Assignment: Compile gaunt chart or other management tool for the activities of prospective projects

Lesson 22 – Funding Programme/Projects (Practice /in person) - Part.1

Funding Programme/Project
- How best to fund project/programme?
- Identification for donors/supporters for specific projects
- Discussion

Lesson 23 – Funding Programme/Projects (Practice /in person) – Part.2

Funding Programme/Project
- Current Trends of major ICTD donors
- Discussion about creative ways to funding projects (new emerging tools)

Assignment 1: Research and compile donor matrix for target countries
Assignment 2: Compile funding mechanism/strategy for the compiling projects/programme

Lesson 24 – Funding Programme/Projects (Practice /in person) – Part.3

Funding Programme/Project
- Presentation of donor matrix of targeted countries
- Discussion

Lesson 25 – Funding Programme/Projects (Practice /in person) – Part.4

Funding Programme/Project
- Presentation of funding mechanism/strategy for compiling projects/programme
- Discussion (Critique)

Lesson 26 – Project Presentation –Preparation (Practice /in person)

Project Presentation – Lecture on effective presentation
- Techniques for better presentation
- Discussion (Critiques) of sample presentations

Assignment: Finalize presentation for the compiled programme/projects for lessons 27 ~ 29

Lesson 27 – Project Presentation – Elevator Talk (Practice /in person)

Presentation for projects (elevator talk)
- Selling compiled projects in one minutes.
- Peer Review

Lesson 28 – Project Presentation – Full Presentation (Practice /in person) Pt.1

Presentation for projects (full presentation)
- Presentation for compiled projects and Peer Review
- Discussion (Critique)

Lesson 29 - Project Presentation – Full Presentation (Practice /in person) – Pt.2

Presentation for projects (full presentation - continued)
- Presentation for compiled projects and peer review
- Discussion (Critique)

Lesson 30 – Way forward – realizing programme/projects (Practice /in person)

Way forward – Toward realization of programme/projects
- Discussion of how to move ahead with the compiled programme/projects

1. Course Title

ICT4D Special Experiment 3 (ICT Policy, GIS/Urban Planning)

2. Instructor

Ikuo SUGIYAMA
Sub instructors: Koichiro FUJII, Ryuji MATSUNAGA, Liyang FAN

3. Term

Spring1

4. Outline and Objectives

This experimental course consists of urban and infrastructure planning practice utilizing advanced ICT.
At the initial step, students select plural study areas/cities both in emerging countries and in Japan. It is to compare various urban conditions mainly in between emerging countries and developed ones. They are recognized by indexes such as population and its density, energy consumption, level of income, living space, and commuting methods and others including their future changes.
At the second step, students belong to one study group out of few groups classified by its study area. Then each group chooses its main theme among 1) Urban vision, 2) Urban design and 3) ICT. In addition, hands on practice is scheduled to master BIM (Building Information Modeling) and GIS (Geographic Information System).
The third step is to visit some advanced cities in Japan such as Toyama and Kitakyushu City. Toyama City is realizing a vison of TOD (transit oriented development) by means of compact city and LRT (Light Rail Transit) networks. Kitakyushu City is managing eco-city to realize 3R (Reduce, Reuse, Recycle) in energy/material flow both in urban and industrial areas. In addition, students are planned to visit a Japanese consultant in charge of urban planning for emergent countries.
After these 3 steps, the issues, the solutions and the process to solutions in a study area are shared by each group through comprehensive and diversified discussions among the groups. Then each group starts making an intermediate report including how to utilize BIM and GIS efficiently and effectively.
At the final step, students make final presentations on a study area. It is also focused on in the presentation that how advanced technologies are easily applied to urban and infrastructure projects in emergent countries.

5. Goals (Attainment Targets)

Goals are
(1) to experience how to make an urban plan utilizing ICT in emergent countries.
(2) to master how to make visual presentation, its methodologies and tools.
(3) to visit cities and consultants utilizing ICT to grasp practical issues.

6. Correspondence relationship between Educational goals and Course goals

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<tr><td>Hypothesis testing</td><td>(1)</td></tr>
<tr><td>Practice</td><td>(1) (3)</td></tr>
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<tr><td colspan="3">Professional ethics</td><td></td></tr>
</table>

7. Requirements

ICT4D Exercises (Program Management) (achievement of attainment targets is required)

8. Textbooks

The GIS Book Paperback – August 30, 2000
by George Korte
ISBN-10: 0766828204
ISBN-13: 978-0766828209
Edition: 5th

BIM and Integrated Design: Strategies for Architectural Practice Hardcover – September 13, 2011
by Randy Deutsch
ISBN-10: 0470572515
ISBN-13: 978-0470572511
Edition: 1st

9. Reference Books

None

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	quiz	Report	presentation	deliverable	other
(1)		○	○			
(2)				○		
(3)			○			
Total		25	25	50		

11. Notes

None

Course Schedule

(Notice) This schedule is a tentative plan, there might be changes, additions, revisions etc. at the time of delivering the course.

Lesson 1-2 Step-1:Orientation (Lecture 60min/Simple Quiz 30min)

Outlines of the goal and experimental process
Selection of study areas in emergent countries and Japan
Simple quiz (1) to measure students' level of urban and infrastructure knowledge

Lesson 3-4 Step-1 :Review of the latest urban planning (Lecture 60min/Simple Quiz 30min)

Review of the latest urban projects
Movies of urban and infrastructure planning
Simple quiz (2) to measure students' level of recent urban and infrastructure technology

Lesson 5-6 Step-2: Study areas and necessary ICT tools (Lecture 60min/Simple Quiz 30min)

Introduction of indexes to compare selected plural study areas
Introduction of necessary ICT and GIS tools
Simple quiz (3) to measure students' knowledge level of ICT

Lesson 7-8 Step-2: Study groups and hands on study of GIS (Lecture 30min/Hands on30min/Simple Quiz 30min)

Forming study groups and determine main themes
Determine the study areas and approximate scenario to the solutions
Hands on practice on GIS referring the text book
Simple quiz (4) to measure students' level of GIS

Lesson 9-10 Step-2: Relationship between BIM and GIS and hands on study of BIM (Lecture 30min/Hands on30min/Simple Quiz 30min)

Relationship between BIM and GIS
Hands on practice on BIM referring the text book
Simple quiz (5) to measure students' level of BIM

Lesson 11-12 Step-3: Site visit (1)

Site visit to Toyama city
Hearing from municipal government

Lesson 13-14 Step-3: Site visit (2)

Site visit to Kitakyushu city
Hearing from municipal government

Lesson 15-16 Step-3: Site visit (3)

Site visit to urban planning consultant
Hearing from planners in charge

Lesson 16-17 Step-4: Sharing issues to be solved (Lecture 60min/Discussion 30min)

Summary of the comparative study and site visits
Methodology utilizing ICT for planning, design, construction and maintenance
Discussion to the issues for intermediate report

Lesson 18-19, 20- 21 Step-4 :Intermediate report (Confirmation 60min/Presentation 30min)

Confirmation of all the contents included in the Intermediate report
Presentation of the intermediate reports for starting the practices

Lesson 22-23, 24-25, 26-27 Step-4 :Urban planning practice of BIM on GIS database (Practice90min)

Urban planning practices for more accurate communications by ICT utilizations

Lesson 28-29 Step-4: Preparation for the final presentation (Lecture30 min/Preparation 60min)

Introduction of visual presentation methodologies for convincing stakeholders.

Lesson 30: Presentation (Presentation 45min/Lecture 45min)

Presentations of the practice results utilizing ICT
Conclusive summary of this course

1. Course Title

(S) ICT4D Special Experiment 4 (Comprehensive National Development Plan)

2. Instructor

Tsuyoshi HASHIMOTO, Chief Executive Director, RECS International Inc.
To be partly supported by a few other staff members of RECS International Inc. as sub-instructors:
Takashi Kimijima in charge of agriculture,
Takashi Koyama in charge of urban development,
Masashi Tokura in charge of land use planning with GIS, and
Masayuki Kawabata in charge of disaster prevention.

3. Term

Spring 1

4. Outline and Objectives

This course is to learn, based on knowledge gained from basic ICT4D courses and related subjects, practical works of development consultancy in developing countries in the fields of agriculture and industrial development, urban development, disaster prevention, environmental management and others through case studies, to practice formulation of development plans and projects, and to expand views and vision for ICT application in various fields.

5. Goals (Attainment Targets)

(1) Basics of development planning are learned, including concepts, approach and methods;
(2) Practical skills to prepare development plans for selected strategic regions are gained; and
(3) Practical skills to formulate development projects are acquired, including preparation of project profiles.

6. Correspondence relationship between Educational goals and Course goals

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</table>

7. Requirements

ICT4D Exercises (Program Management) (achievement of attainment targets is required)
(S) Urban Planning (achievement of attainment targets is required)
(S) Environment engineering (achievement of attainment targets is required)
(S) ICT policy (achievement of attainment targets is required)
(S) Geological Information System (achievement of attainment targets is required)

8. Textbooks

Original materials are prepared and offered

9. Reference Books

None

10. Evaluation

Goals	Evaluation method & point					
	term-end exam	quiz	report	presentation	deliverable	participation in discussion
(1)			○	○		○
(2)			○	○	○	
(3)			○	○	○	
Total			35	30	25	10

11. Notes

None

Course Schedule

Following "Introduction" in Lesson 1, the course consists of I. Regional development planning: basics, II. Development consultancy works by sector, and III. Regional development: specifics. This structure will be maintained for the course, but contents of each lesson may be modified subject to the course progress and change of sub-instructors.

Lessons of the course proceed with two main Practices as follows and several exercises to complement and support the Practices:

Practice 1: Preparation of outline development plans for strategic regions to be selected by students, and
Practice 2: Preparation of profiles for priority projects to be formulated and selected by students.

Lesson 1: Introduction

Overview of the course is given to motivate students to participate, and evaluation methods are explained. Of the two practices to be undertaken in the course, selection of a strategic region for development planning is assigned for Practice 1.

1. Course outline-objectives, overall contents, expected attainment level, evaluation methods etc.
2. Introduction of instructors and their division of responsibilities
3. Introduction of students
4. Explanation of **Practice 1**

I. Regional Development Planning: Basics

Lesson 2: Basics of regional development planning

Regional development approach, and methods and procedure of development planning are explained, and **Exercise 1** is assigned for group discussion.

1. Approach and concepts of regional development and development planning
2. Procedure of regional development planning
3. Group discussion-**Exercise 1**: Poverty and development

Lesson 3: Problem structure analysis for regional development planning

The method of problem structure analysis is explained with case studies, and **Exercise 2** is assigned for its application to the strategic region selected in Lesson 1.

1. Method of problem structure analysis
2. Group discussion-Application of problem structure analysis to a case
3. Workshop-**Exercise 2**: Problem structure analysis for strategic regions

Lesson 4: Objectives and basic strategy for regional development

Results of the workshop in Lesson 3 are presented, and based on them establishment of development objectives and basic strategy is explained

1. Presentation of problem structures for strategic regions
2. Establishment of development objectives and basic strategy
3. Group discussion-Development objectives and basic strategy for strategic regions

Lesson 5: Formulation of regional development vision and scinario

Methods to formulate regional development vision and scenario are explained with case studies, and **Exercise 3** is assigned for regional development vision and scenario for strategic regions.

1. Method to formulate regional development vision and scenario
2. Workshop-**Exercise 3**: Development vision and scenario for strategic regions

Lesson 6: Formulation of development projects

Methods of project formulation and project profile preparation are explained with case studies, and **Exercise 4** is assigned for project formulation as the first step of **Practice 2**.

1. Methods of project formulation
2. Preparation of project profiles
3. Workshop-**Exercise 4**: Formulation of priority projects for strategic regions

Lesson 7: Preparation of project profiles

Results of the workshop in Lesson 6 are presented, and based on them priority projects are selected and **Exercise 5** is assigned to prepare their profiles.

1. Presentation of projects in strategic regions
2. Selection of priority projects
3. Workshop-**Exercise 5**: Examination of profiles for priority projects

II. Development Consultancy Works by Sector

Lesson 8: Introduction to agriculture development

Works of development consultancy in agricultural sector are outlined and discussed.

1. Issues for agriculture development in development countries
2. Formulation of agriculture projects
3. Policy and institutional development for agriculture

Lesson 9: CARD initiative by Japanese Government for agriculture in Africa

The initiative by the Japanese Government for agriculture in Africa is explained for discussion.

1. Food problems in Africa
2. Objectives and targets of CARD
3. Practice of CARD and issues

Lesson 10: ICT application to agriculture development

Possible applications of ICT to various aspects of agricultural development are suggested for discussion, and idea of "nutrient manager" is explained.

1. Possible applications of ICT to agriculture
2. ICT application for "nutrient manager"
3. Group discussions-ICT application to agriculture

Lesson 11: Environmental and social considerations in development planning

Environmental and social considerations in development planning are explained, and **Exercise 6** is assigned for SEA applied to strategic regions.

1. Overview of environmental and social considerations-IEE and EIA
2. Strategic environmental assessment (SEA)
3. Workshop-**Exercise 6**: SEA for strategic regions

Lesson 12: Environmental and social considerations for development projects

IEE and EIA are explained with case studies, and **Exercise 7** is assigned for EIA of priority projects.

1. Scope and procedure of IEE and EIA
2. Scoping for EIA
3. Workshop-**Exercise 7**: EIA scoping for priority projects

Lesson 13: ICT application to environmental management

Possible applications of ICT to various aspects of environmental management are suggested for discussion.

Possible applications of ICT to environment

2. ICT application to resources management and monitoring
3. Group discussions-ICT application to environment

Lesson 14: Urban development

Works of development consultancy in urban development are outlined and discussed, and **Exercise 8** is assigned for urban hierarchy in strategic regions.

1. Issues of urban development in developing countries
2. Urban hierarchy in regional development
3. Workshop-**Exercise 8**: Urban hierarchy analysis for strategic regions

Lesson 15: Urban development models

Various models of urban development are introduced, and **Exercise 9** is assigned for ICT application to urban development.

1. Urban morphology and models
2. New urban development models
3. Workshop-**Exercise 9**: ICT application to urban development

Lesson 16: Urban planning and management

Methods to control/guide urban development are explained with comparative analysis on urban institutions.

1. Methods of urban planning and management
2. Urban planning and control systems in developing and developed countries

Lesson 17: Land use and spatial planning

Works of development consultancy in land use and spatial planning are outlined and discussed, and **Exercise 10** is assigned for spatial development framework for strategic regions

1. Analysis on existing land use and spatial development
2. Land use and spatial planning
3. Workshop-**Exercise 10**: Spatial development framework for strategic regions

Lesson 18: ICT application to land use and spatial planning

Possible applications of ICT to various aspects of land use and spatial planning are suggested, and **Exercise 11** is assigned for ICT application to land use and spatial planning.

1. RS and GIS for land use planning
2. Other possible applications of ICT for land use and spatial planning
3. Workshop- **Exercise 11**: ICT application to land use and spatial planning

Lesson 19: Disaster prevention: flood control

Works of development consultancy in disaster prevention are outlined and discussed.

1. Issues for disaster prevention in development countries
2. Structural and non-structural measures for flood control
3. Flood forecasting and warning system

Lesson 20: Urban disaster management

Works of development consultancy in urban disaster management are outlined and discussed.

1. Urban morphology and disaster prevention
2. Urban planning and control for disaster management

Lesson 21: Case studies of disaster prevention

Case studies of disaster prevention in Japan and developing countries are presented, and **Exercise 12** is assigned for strategic regions.

1. Case studies in Japan
2. Case studies in developing countries
3. Workshop-**Exercise 12**: Disaster management for strategic regions

Lesson 22: Development administration

Institutions for development administration are explained with case studies, and **Exercise 13** is assigned for proper development administration for strategic regions.

1. Alternative forms of development administration
2. Localization of development administration
3. Workshop-**Exercise 13**: Development administration for strategic regions

Lesson 23: Project management

Methods and institutions for management of development projects are explained, and **Exercise 14** is assigned for implementing arrangements of priority projects.

1. Methods and institutions of management of development projects
2. Project management database
3. Workshop-**Exercise 14**: implementing arrangements for priority projects

III. Regional Development: Specifics

Lesson 24: Development plans for strategic regions (1)

Outline development plans for strategic regions prepared by **Practice 1** are presented and discussed for improvement.

1. Presentation of outline development plans for strategic regions
2. Comments and discussions on presentations

Lesson 25: Development plans for strategic regions (2)

Outline development plans for strategic regions prepared by **Practice 1** are presented and discussed for improvement.

1. Presentation of outline development plans for strategic regions
2. Comments and discussions on presentations

Lesson 26: Priority project profiles (1)

Profiles of priority projects prepared by **Practice 2** are presented and discussed for improvement.
1. Presentation of profiles for priority projects.
2. Comments and discussions on presentations

Lesson 27: Priority project profiles (2)

Profiles of priority projects prepared by **Practice 2** are presented and discussed for improvement.
1. Presentation of profiles for priority projects.
2. Comments and discussions on presentations

Lesson 28: Alternative socio-economy

As a new approach to regional development, alternative socio-economy is explained and discussed.
1. Ideas and conditions of alternative socio-economy
2. Activities of alternative socio-economy

Lesson 29: Economic development and technology innovation

As a new approach to regional development, technology innovation for economic development in developing countries is explained and discussed
1. Joint technology development between developing and developed countries
2. Technical cooperation and roles of development consultants

Lesson 30: Industrial clusters development

As a new approach to regional development, industrial clusters development is explained and discussed.
1. Industrial clusters for regional development
2. Case studies of industrial clusters in developing countries