COURSE DESCRIPTIONS AND SCHEDULE
OSAKA UNIVERSITY ENGINEERING PROGRAM (SUMMER 2006)
UNIVERSITY OF WASHINGTON
INTERNATIONAL OUTREACH PROGRAMS

The English and Science-Engineering Program for Osaka University Graduate School of Engineering at the University of Washington (UW) is an intensive four-week course designed to introduce international students to graduate engineering study and research at a major American university, to improve their abilities to express their ideas in English, and to provide them with a variety of valuable cultural and professional experiences. To accomplish these goals, the following components have been developed for this program.

1. ***THE NATURE AND ENVIRONMENT IN THE PACIFIC NORTHWEST***
supervised by UW Professor Fumio Ohuchi

This course offers both a comprehensive overview and a project development experience for the application of engineering technology to nature and environmental problems unique to the Pacific Northwest. Four-week intensive program provides the students with the opportunity and challenge of applying the basic concepts, physical and chemical principles, and various approaches to problems related to the nature and environmental concerns. After identifying a problem in the areas of interest, each student will develop an engineering technology solution in a form of "research proposal". Students will learn new skills in how to apply their own research interests and expertise to other fields of study. An example project could be the development of sensors to monitor environmental phenomena. This real-life simulation will help students improve their ability to identify the characteristics of a specific problem, analyze the information, creatively apply their own knowledge to providing a technology solution, and present their solution in a professional manner. To accomplish these objectives, the students will have the guidance and direction of UW Faculty and Graduate Students. The course includes a lecture series, lecture discussion sessions, and project development meetings. Lectures will be given by prominent scientists working in the forefront of research and innovations related to this area. The course also includes a three-day and two-night visit to the University of Washington Friday Harbor Marine and Ocean Research Facilities in the San Juan Islands. All students will have the opportunity to participate in an excursion on the R/V Centennial (Research Vessel) during their stay at Friday Harbor as well as attend lectures, lab visits, excursions, and discussion sessions during this hallmark field trip of the course.

2. ***SCIENCE-ENGINEERING PROJECT PREPARATION SESSIONS***
supervised by UW graduate students

Osaka students will be assigned to labs in the Engineering School and will work with UW Graduate Student Mentors on their Program Projects. Projects will be selected from a list of suggested topics. At the end of the program, the students will provide a short oral presentation describing their work. UW Graduate students will also attend the course lecture series and provide discussion sessions for the Osaka University GSE students following each lecture.

3. ***ENGLISH FOR ENGINEERS***
taught by UW English language instructors

This course will include the following components:

- Analysis and discussion of journal articles related to the course lectures
- Oral presentations skills and strategies for effective participation in and leadership of question and answer sessions
- Conversational fluency practiced in professional and networking contexts
- Basic genre writing formats for engineering and use of a concordance

The instructors will also assist Osaka University Graduate Students with the organization and presentation of their engineering project presentations.

Specific Science-Engineering Programs

Aug 17 (Thursday)

10:30-11:30 Program introduction (Ohuchi-Wood)

A theme of this program: "The Nature and Environment in the Pacific Northwest". This theme was chosen for Osaka students to touch on some of the aspects specific to the Pacific Northwest, such as oceanography, fishery, marine energy, marine biology, forestry, and water, since they might not have been exposed to these subjects, nor they don't even know what they are. We ask Osaka students to discover some common areas of the subjects that their expertise can be utilized. I will first introduce detailed plan of the Science-Engineering activities in this program, and explain the objective and expectation of this program.

11:30 Welcome remark from Associate Dean of COE (Prof Swartz (asking))

1:15-3:15 Self-Introduction (5 min x 22 = 110 min + 10 = 120 min)

We ask each student to prepare a 5 minutes "power point" presentation for self-introduction. This includes: who are you? what are you studying in Osaka University? why do you participate this program? what is your interest?, what is your career goal?, etc. etc. Presentation must be "creative" to show your "personality". Good to know each other with fun!

3:30-4:30 Project preparation discussion (Ohuchi-Wood)

Aug 18 (Friday)

1:15 – 3:15 Program graduate TA self-introduction (15 min presentation x 8 = 120 min)

Our graduate helpers (TAs) will be introduced. They will give a short presentation of their research, interest, experience in the UW-graduate school, other activities, etc. etc.

3:30 - 4:00 Question and answer

4:00- xx BBQ! For everyone involved in this program. Salmon BBQ, Pacific NW Beer! Etc

Aug 21 (Monday) **Theme: Oceanography**

1:15-2:15 **Visit: Oceanography Research Vessel Thomas G. Thompson**

Tour conducted by Mr. Dan Schwartz

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2:30-3:30 **Lecture by Prof. Russell McDuff**
(Room #425 Ocean Sciences Building)

Hot Springs on the Ocean Floor

Abstract: The mid-ocean ridge is an undersea global, volcanic mountain chain. As magma cools, solidifies, and contracts, a network of fractures and fissures are formed. Within this network, convective movement of seawater is established. The convecting seawater interacts chemically with the fresh rock, becoming hot (up to ~400 C), acidic (pH 3-4), and enriched in reductants and metals. As the rising limbs of these convection cells exit the seafloor, sulfide minerals are deposited and unusual biological communities are established in which the base of the food chain are chemosynthetic archaebacteria. In this lecture I will set the global geological context for these systems and show work conducted by colleagues and myself on the nearby Endeavour Segment of the Juan de Fuca Ridge (about 500 km west of Seattle). Basic research into these extreme environments have applications in biotechnology, and because archaebacteria are some of the most primitive organisms on Earth, implications for the origin of life.

Keywords: mid-ocean ridge, volcano, convection, sulfide minerals, chemosynthesis, archaebacteria, hydrothermal activity, origin of life

Professor **Russell E. McDuff** became Director of the School of Oceanography in August 2004. He earned a B.S. in chemistry in 1973 from the California Institute of Technology and a Ph.D. in oceanography in 1978 from the Scripps Institution of Oceanography. After a postdoctoral fellowship at the Massachusetts Institute of Technology, he joined the University of Washington faculty in 1981. In 1996 he received the distinguished graduate teaching award from the College of Ocean and Fishery Sciences, of which the School of Oceanography is part. He serves on the Board of Governors of Joint Oceanographic Institutions, a Washington, D.C.-based consortium of U.S. academic institutions that manages large-scale, global research programs in marine sciences.

He studies the exchange of heat and chemicals between the ocean and ocean crust at seafloor hydrothermal vents. Seawater circulates down into crevices and cracks in the sea floor and becomes hot enough to convect and vent back into the ocean, sometimes as forceful jets hotter than 400 C. As the fluids mix with cold ocean water, the minerals solidify, forming mounds, spires and chimney-like structures. Lead scientist on over 40 dives in the deep submersible ALVIN to depths of up to 3800 meters, he now uses autonomous robotic vehicles to study heat and mass transfer from these systems.

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3:30-4:15 Discussion; Questions and Answers

Aug 22 (Tuesday) **Theme: Research Proposal and Presentation**

1:15-2:15 **Lecture by Prof. Fumio Ohuchi**
"Proposal Writing and Presentation" (with English teachers)

In this lecture, I will describe differences in life, education, research, infrastructure, and societal issues between US and Japan. I will then explain how the US graduate students conduct their research (i.e. how they live). I will show several examples. I will then discuss why early education of learning "how to write a proposal and present their ideas", which is particularly important in the US society.

2:30- 4:00 Presentation by MSE graduate students successively competed in the proposal competition
Pat(DOD), Trica(IGERT), Julie( ), Shiho(FORD), Nam(IGERT, NSR), Clif (NSF)

We will ask several outstanding graduate students in our MSE department who obtained graduate scholarship from various organization through competitive proposal writing. Let them describe their experience on proposal preparation and writing, and how they sell themselves for competition.

4:00-4:30 Questions and Answers

Evening **Mariners vs. Yankees Ball Game** at SAFECO stadium

Fun time!

Aug 23(Wed) Travel to Friday Harbor Laboratories

Aug 24(Thursday) **Friday Harbor Laboratories Activity: Theme: Marine Environment and Biology**

Fro FHL, see http://depts.washington.edu/fhl/

http://www.sanjuanislander.com/groups/fh-uw_labs/history.shtml

http://www.fda.gov/Cber/summaries/cent092302pp.htm

Morning **Research Vessel Centennial riding**

See: http://depts.washington.edu/fhl/fac_RVCentennialSpecifics.html

Length over all: 58' Beam: 19'6" Hull: Steel
Working deck: 610 sq. ft. (covered exterior wet lab: 112 sq. ft.)
Interior dry-electronics lab: approximately 200 sq. ft
Cruising speed: 9-10 knots
Sleeps: 6 crew-scientists (multi-day cruises encouraged)
Maximum crew plus passengers: 34 (25 for trawls or dredges)
Fuel capacity: 3600 gal

The Centennial was built in 1990 as a commercial trawler and seine fishing vessel and was subsequently modified to also participate in the longline and pot fisheries. The original engineering and design work was done by Jensen Maritime of Seattle, WA. The steel hull and aluminum house were computer lofted and plasma cut, and construction and equipment installation was done by Fred Wahl Marine Construction of Reedsport, Oregon. The conversion to a research vessel was done in 2002 at Hansen Boat Company in Everett, Washington. The vessel has a long history of safe and effective participation in a wide range of fisheries in the Gulf of Alaska.

Afternoon (1) Lecture by **Prof. Pedro Verdugo**

The role of the ocean on global carbon cycling and the challenges represented to engineering sciences

Abstract: The biological, chemical, and physical processes by which bioactive elements are intimately coupled and cycled in the ocean is among the most complex, significant, and still largely unexplored systems on Earth. The understanding of how Carbon is cycled in our planet is critical to the future of humans and other species. At the present time we have an estimated annual global unbalance of ~ 3.5 Gigatons (1 Gt = 10^{15} g) of CO_2 overload. Policies to effectively limit fossil fuel burning have so far proved to have limited reception among industrialized countries and the discharge of CO_2 to the atmosphere continues to increase unabated. The sink that removes atmospheric CO_2 is photosynthesis. About 70% of the surface of our planet is covered by seawater and half of the global recapture of CO_2 takes place in the seas mostly by phytoplankton. The output of this remarkably efficient photosynthetic machinery is released to the seawater in the form of alginate-like polysaccharides contributing to the formation of what the geochemist call Dissolved Organic Carbon pool (DOC). DOC is among the largest stocks of reduced organic Carbon present in our planet, reaching ~700 gigatons. This is equivalent to the mass of carbon in atmospheric CO_2 and only slightly smaller than the amount of carbon found in terrestrial biomass and soil humus. However, the fate of these molecules, that play a central role in carbon cycling, their chemical, physical, and biological interactions and their ultimate destination remain as one of the most exciting and significant challenges in geochemistry and marine biology. Although geochemical studies reveal that DOC is made of a heterogeneous mix of biopolymers—largely polysaccharides—theory and methods of polymer physics and engineering had not been used to study the polymer dynamics of seawater DOM. The first application of the remarkable predictive power of these tools lead to the striking discovery that DOM polymers can spontaneously self assemble forming the matrix of microscopic gels. These findings have fundamentally changed how oceanographers think about processes linking the microbial and biological phenomena taking place in the ocean to the biogeochemical dynamics of the rest of the biosphere and the geosphere. The characteristic features of these self assembled microgels (SAM) forming porous networks, their unique ion exchange and phase transition properties, and their ability to provide a rich substrate and protected environment for marine bacteria makes these gels one the most intriguing and exciting subjects in oceanography.

Key words: carbon cycling, polymer physics, marine biopolymers, polymer gels, topology of polymer networks, macromolecular dynamics, dissolved organic matter.

Pedro Verdugo: Coming from a stock of three generation of engineers, I started my undergraduate education in chemical engineering. Midway my graduate training I changed tracks and switched to medical school. Following the end of my residence and a two year postdoctoral training in Bioengineering at the University of Washington my compass was pointing to what became an enlighten 35-years of teaching and research as a Professor at the UW. A semester postgraduate course on thermodynamics of macromolecules given by Aaron Katchalsky and Ilya Prigogine at MIT in 1969-70 got me at the head of a trail of exploration focusing onto the sociology of large molecules. This is a largely unexplored area of physical chemistry that deals with the rules that govern the association of large molecules and the emerging physics that arise out of the molecular networks they form. Needles to say, this frontier of knowledge has enormous significance for understanding the foundations of biological systems ranging from marine to human organisms. My work at FHL is funded by a 3.5 M$ dollar grant from the National Science Foundation and focus on issues ranging from the dynamics of biopolymer networks inside the cell to the physical chemistry of marine biopolymer networks, their rules of association, their interaction with metal ions and bacteria,

and ultimately their role in global carbon cycling in our planet. A parallel effort in our trade is the education of new scientists. I had the privilege of being among the founding faculty at the start of a new field in engineering sciences and to contribute to the creation of a new academic unit that remains among the top three Bioengineering programs in the US. I have been blessed and feel proud of my students and postdoctoral fellows who are now occupying faculty positions at academic institutions around the country and in several foreign universities. They and their students embody the future and are the most important long lasting legacy we leave behind.

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(2) Lecture by by **Prof. Emily Carrington**

Ecomechanics of mussel attachment on wave-swept shores

Abstract: On temperate rocky coasts, mussels often form dense beds in the mid-intertidal zone that dominate primary space and provide secondary habitat for other organisms. The frequency and severity of disturbance to mussel beds therefore plays an important role in structuring intertidal communities. One common form of disturbance to mussel beds is dislodgment by storm waves, which can generate hydrodynamic forces that exceed mussel attachment strength. Can we predict when and where these disturbances happen? Our research on mussels in New England shows byssal attachment strength varies twofold seasonally and mussels are consequently prone to strong dislodgment events (up to 40%) during hurricane season (Sep-Nov), a period when large waves coincide with relatively weak mussel attachment. At FHL, we are continuing laboratory and field studies to elucidate the proximal causes of variable attachment strength. Specifically, we are evaluating the influence of environment and physiological condition on the mechanical performance of mussel byssus. These studies not only provide insight into the ecology and evolution of marine mussels, but may also inspire the design of novel biomimetic tensile materials.

Keywords: biomechanics, mussels, intertidal, byssus, drag, wave action, functional morphology, bioadhesion, dislodgement

Emily Carrington completed her undergraduate degree in Biological Sciences at Cornell University in 1985. She received her Ph.D. in 1992 from Stanford University, where she studied the biomechanics and ecophysiology of wave-swept organisms with Mark Denny. She was a Killam Postdoctoral Fellow at the University of British Columbia, working with John Gosline on the biomechanics of mussel attachment. In 1996, she became an assistant professor in the Department of Biological Sciences at the University of Rhode Island and was promoted to the rank of associate professor in 2003. She moved west in 2005 to join the Department of Biology and the Friday Harbor Laboratories at the University of Washington. A common theme in her research is the functional design of organisms that inhabit physically demanding environments, such as wave-swept rocky shores, where thermal, osmotic, and hydrodynamic conditions can be extreme. Her research involves both marine plants and animals and spans many levels of biological organization, from the mechanics of biological materials, to the persistence of populations, to the characterization of the physical environment and how it influences biological processes. In her free time, she enjoys swimming, skiing, and kayaking with her family.

(3) Meet with Dr. Shigeko Ooishi at FHL

Aug 25(Friday) Travel back from Friday Harbor Laboratories

Aug 28(Monday) **Theme: Fishery in Pacific Northwest**

1:15-2:00 Visit: **Fishery collection** (Katherine Pearson Maslenikov)

2:15-3:15 Lecture by **Prof. Vincent Gallucci** (Shark Research Lab)

Research with Large and Small Sharks in the Eastern Pacific Ocean

Abstract: This talk demonstrates the relationship between the study of the population dynamics of sharks and the use of mathematical and statistical methodology. For example, we model the predator prey relationship with a dynamical systems relationship between the salmon shark and the steller sea lion, both in incompetition for the the same fish prey. Interesting mathematical or parameter estimation problems arise that must be solved by the researchers.

Key words: sharks, sea lion, differential equations, statistical estimation, population dynamics, fishery management, mathematical modeling.

Professor Vincent Gallucci is the Wakefield Professor of Ocean and Fishery Sciences, in the College of Ocean and Fishery Sciences, at the University of Washington. He is also the director of the Center for Quantitative Science, which specializes in teaching of mathematics and statistics to undergraduate students in the biological sciences. His current research specialization is the population dynamics of shark and other upper trophic layer (predators) in the oceans. His 'Shark Research Laboratory' at the University of Washington is unique because of the focus on the use of mathematical and statistical methods in the study of these predatory species. He currently has 8 graduate students and two undergraduate students in his laboratory working on different shark species. All of the graduate students are doing the research for their theses or dissertations. He also specializes in the management of tropical, developing country, artisinal fisheries. In this area he has had research projects on all continents where developing countries occur in the world. He has worked with such international agencies as FAO, UNESCO, USAID, JICA, etc. Dr. Gallucci came to the University of Washington with a B.Sc. in physics, a M.Sc. in biophysics, and a Ph.D. in a department of statistics. He did a postdoctoral year at the University of Washington in the School of Aquatic and Fishery Sciences studying the methods of stock assessment and the management of fisheries. His research is frequently is published in journals and books concerned with investigating the biological and environmental properties of individual and groups of species that interact with each other. In this case, humans are just another species that often is a predator on other species. Therefore, he often investigates the relationships between society, conservation, and the harvest of marine species for food, or other products

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3:30-4:00 (discussion)

Aug 29 (Tuesday) **Theme: Marine Energy and Environment**

1:15-2:30 Lecture by **Prof. Fumio Ohuchi (Materials Science and Engineering)**

Ocean-Marine Energy and Environment: What can materials scientists do?

Abstract: Current global events have placed the cost and security of energy high on the agenda of most countries. Reliance on an imported energy supply further exacerbates the economic vulnerability for us in the developing world. This energy situation

further underscores the need for a renewable energy supply that is ubiquitous in nature. Much research is ongoing into finding a replacement for oil and other fossil fuels, as not only are they expensive to non-producers but because of their contribution to climate change and pollution. Significant strides are currently being made in solar, geothermal, wind, hydro and nuclear energy, but could the oceans, one of our most abundant resources, be a solution to our energy problems? From the beginning of time, "seas and oceans" have always been important to us, providing us with food, a means of recreation and transportation. Could there be an additional use that has remained hidden through the years? If so, materials play major roles in the development of Ocean/Marine Energy Devices. There are not many studies though, it has been just begun.

Key words: Wave, tidal, shore, stream, barrage, thermal, salinity gradinet, heavy water, light water, methan hydrade, marine biomass

Fumio Ohuchi is a Professor of Materials Science and Engineering, and Adjunct Professor of Physics at the University of Washington. He received his PhD in Materials Science and Engineering from University of Florida in 1981. His PhD dissertation research was to study the effects of electron beam interactions with glass surfaces. His B.S. and M.S. degrees were in Physics from Sophia University, Tokyo, Japan, in 1972 and 1974, respectively. Dr. Ohuchi worked for the Central Research and Development Department at E. I. DuPont de Nemours and Company in Wilmington, DE, from 1981 to 1991, during which he developed large research programs to investigate metal-ceramic and metal-polymer interfacial reactions by applying various surface spectroscopy techniques. Dr. Ohuchi joined as an associate professor to the Department of Materials Science and Engineering at the University of Washington in 1992, then promoted to a full professor in 1996. Understanding physical and chemical processes at the material's surfaces and dissimilar interfaces is an overall theme of Dr. Ohuchi's research over the past two decades. His primary research is focused on (i) Physical and chemical processes involved in epitaxial growth dissimilar materials, and (ii) Synthesis, characterization and transport properties of the energy related materials. Beside research and teaching activities, Dr. Ohuchi plays harpsichord and cello. His playing, however, has never been improved lately, so he switched to "more" listening someone to play the music, and record their playing in "live-recording". He owns a audio-video recording studio, specializing both sound and video tracking utilizing state-of-the-art digital technology.

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2:45-4:45 **Group discussion with graduate TAs**

Aug 30 (Wed) Theme: Forest in Pacific Northwest

Field trip Toured and lectured by Prof. Thomas Hinckley

Forests of the Pacific Northwest: Why are trees so big and so old?

Trees found in the forest of the Pacific Northwest are some of the tallest, oldest, and largest in the world. Why? We will explore features of the biology, climatology, geochemistry and hydrology of the region that enable trees to become so big (over 95 meters tall) and so old (over 1000 years old). We will visit three forest types - a riparian or river side forest, an old-growth Douglas-fir forest and a high elevation Pacific silver fir forest.

Key words: Tree, Height, Hydraulic Lift, Tension, Strength, Resilience, Legacy, Forest, Water,

Carbon

Thomas Hinckley is a Professor of Forest Resources, College of Forest Resources, UW Seattle. He has taught at the University of Missouri – Columbia (8 years), the Agricultural University of Vienna, Austria (two years) and the University of Washington (25 years). He has been an acting dean, a department chair person and a director of the Center for Urban Horticulture. His research interest is in the water and carbon physiology of trees and woody shrubs. His research and teaching have taken him to Austria, Canada, China, Finland, Germany, Italy, Japan, South Korea, Turkey, and Venezuela. Most recently, he has worked on the water relations of short rotation, hybrid cottonwood trees, on 65 m tall, old-growth Douglas-fir trees and on young to very old Pacific silver fir trees. He is currently a PI on the College's second NSF-IGERT – Multinational Collaborations on Challenges to the Environment. In 1998, he was awarded an honorary doctorate degree from the Agricultural University of Vienna. He has been a USDA Competitive Grants' Program Manager and he has served on research panels for NSF (three different programs), USDA (two different programs), EPA, DOE and the Canadian Foundation for Innovation. He has been an Associate Editor and on the Editorial Advisory Board of three major scientific journals, including Annals of Forest Science, Tree Physiology, and Trees.

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Sept 1 (Thur) **Theme: Water and Environment**

1:15-2:30 Lectured by **Prof. Raj Bordia** (Materials Science and Engineering)

Clean drinking water: Challenges and Opportunities

Abstract: Many of the dramatic changes in the quality of life achieved during the 20th century, in the developed countries, have been attributed to the availability of safe drinking water. It has been estimated that improvements of its bacteriological and chemical quality have been the primary cause of a 10 to 15-year increase of the average life expectancy in North America, Japan and in Western Europe. However, in many developing countries, notably those in Sub-Saharan Africa, safe drinking water is largely absent. This exacts a tremendous toll on their populations, both in terms of infant mortality, wide occurrence of largely preventable waterborne diseases and, last not least, social strains and inequality caused by the burden to physically "fetch the water" that male-dominated societies have placed on women, in addition to their responsibility to raise children and feed their families.

In this presentation, after a brief overview of the status of the drinking water supply, the engineering opportunities provided by the challenge of making high quality drinking water available to all will be presented. Examples will be provided from both developed countries and developing countries. For developed countries the focus will be on low levels of chemicals in the water supply (e.g. components of pharmaceutical and personal care products) and for the developing countries, the focus will be on biological contaminants (e.g. bacteria). Both scientific and engineering challenges will be presented.

Key Words: Drinking water, photocatalysis, activated carbon, endocrine disruptor compound, water supply, titanium dioxide, semiconducting oxides

Raj Bordia is a Professor in the Department of Materials Science and Engineering at the University of Washington. He received his B. Tech. in Mechanical Engineering from the Indian Institute of Technology, Kanpur, India in 1979 and his Ph.D. in Materials Science and Engineering from Cornell University in 1986. He was a Research Scientist in the Central Research and Development Department of DuPont Co. from 1986 to 1991 where he worked on processing and mechanical properties of ceramics and composites. In 1991, he became a faculty

member at the University of Washington. From 1998 to 2005, he served as the Chair of the Department. Prof. Bordia's research is at the interface between mechanics and materials. The students and research associates currently working with him are working on developing materials and systems with applications in the area of energy, environment and health. In 2002, he was elected as a Fellow of the American Ceramic Society. He is an Associate Editor of the Journal of the American Ceramic Society and editor of the Journal of Ceramic Processing Research.

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2:45-4:45 **Group discussion with graduate TAs**

Sept 5 (Tuesday) Panel discussion with MSE graduate students

1:15- 2:15 **Panel discussion on job, career, and life**

(1) Difference in the requirement for job in Japan and USA.
(2) PhD versus MS.
(3) What kind of job do you want? What are the decisive factors?
(4) About job search. Japan versus US.
(5) What is your career goal?

We will select 4 US born graduate students and 2 international students to conduct panel discussion of the agenda described above. Osaka students listen "real voice" from them.

2:30- 3:30 **Panel discussion on international study**

(1) Are you interested in joining UW as a PhD graduate student?
(2) Why? What for?
(3) How about language barrier?
(4) What do you do after getting PhD degree?

We will select 6 international students from various countries including Japan to conduct panel discussion of the agenda described above. Again, Osaka students listen "real voice" from them.

Sept 6 (Wed) Afternoon **Proposal writing/presentation preparation**

This is very important session for Osaka students to prepare written documents and presentation materials. Our experienced graduate TAs will provide help for editing their writings and making dry run of presentation materials. Assign one TA for three Osaka students as a group.

Sept 7 (Wed) Afternoon **Proposal writing/presentation preparation**

Same as Sept 6.

Sept 11 (Mon) Whole day **Presentation**

This is the day of Osaka students.