

**PEDOMAN AKADEMIK
PROGRAM MAGISTER
PSDL**

**PROGRAM PASCASARJANA
UNIVERSITAS BRAWIJAYA (PPS
UB)
MALANG, 2013**

PENDAHULUAN

Apapun yang akan dinyatakan sebagai tujuan pendidikan, fungsi dasarnya adalah sosialisasi, dalam arti menyiapkan generasi muda untuk menghadapi dan mengatasi masalah-masalah pembangunan masyarakat di kemudian hari. Masyarakat Indonesia tidak terkecuali dari masalah-masalah yang dihadapi oleh masyarakat dunia, dimana pergaulan antar bangsa akan dilandasi oleh mekanisme pasar yang disertai mobilitas barang dan jasa secara global. Untuk menghadapi hal tersebut, telah ditetapkan bahwa salah satu tujuan utama Pendidikan Tinggi untuk menyongsong tonggak waktu tahun 2020 adalah:

Penataan sistem pendidikan tinggi agar lebih sesuai dengan kebutuhan masyarakat dan pembangunan.

Selama ini, kegiatan-kegiatan pembangunan yang diarahkan pada pertumbuhan ekonomi telah mengakibatkan dampak negatif dan menyebabkan penurunan kapabilitas sumberdaya alam dan degradasi kualitas lingkungan hidup. Oleh karena itu, pengelolaan sumberdaya alam dan lingkungan hidup nasional di masa mendatang harus didasarkan pada aspek produktifitas bio-ekonomi dengan memperhatikan aspek-aspek konservasi dan kesehatan lingkungan. Hal ini mengisyaratkan perlunya kajian-kajian yang bersifat interdisiplin, melibatkan berbagai disiplin ilmu secara terintegrasi untuk menjawab permasalahan pembangunan. Misalnya kajian mengenai penyusunan kerangka penghitungan **Pendapatan Daerah R Bersih (PDRB)** hijau di suatu daerah.

Sesuai dengan perkembangan kebutuhan pembangunan yang semakin kompleks serta sejalan dengan semakin berkembangnya kemampuan PPSUB dalam menyelenggarakan program studi pascasarjana, maka program magister kajian sumberdaya alam, lingkungan dan pembangunan mulai direncanakan pembukaannya pada tahun 2006. Pada tahun 2006/2007 Program Pascasarjana UNIBRAW mengusulkan pembukaan Program Studi S2 Teknik Elektro, Program Studi S2 Teknologi Industri Pertanian, Program Studi S2 Pengelolaan Sumberdaya-Lingkungan dan Pembangunan, dan Program Magister Manajemen Rumah Sakit.

Penyelenggaraan program studi S2 Pengelolaan Sumberdaya - Lingkungan dan Pembangunan (PSLP) saat ini pada awalnya berdasarkan Surat ijin Penyelenggaraan Program Studi dari Dirjen DIKTI No. 1504/D/T/2007, tanggal 22 Juni 2007 **yang pada akhirnya**

diperpanjang menjadi XXX 2012 dengan nama baru Pengelolaan Sumberdaya dan Lingkungan (PSDL). Dalam perkembangannya selama ini dan berdasarkan masukan-masukan dari stakeholder, program studi ini dirancang untuk dapat membelajarkan kompetensi-kompetensi yang relevan dengan kebutuhan pembangunan dan bersifat fleksibel.

KETENTUAN UMUM

Kalender Akademik

Perkuliahan dan kegiatan akademik lainnya untuk semester ganjil dimulai bulan September dan berakhir Februari, untuk semester genap dimulai bulan Maret dan berakhir bulan Agustus. Secara umum, kalender akademik mengikuti kalender akademik Universitas Brawijaya yang diberlakukan setiap tahun.

Kalender Akademik Program Magister PSDL Program Pascasarjana di Universitas Brawijaya

I. KEGIATAN SEMESTER GANJIL

1. Pendaftaran Ulang Mahasiswa Baru : 30 Agustus – 4 September
2. Pendaftaran Ulang Mahasiswa Lama : 23 - 28 Agustus
3. Kuliah Semester Ganjil : 8 Sept s/d 31 Desember
4. Batas Akhir Batal Tambah Mata Kuliah : 18 September
5. Batas Akhir Pembatalan Mata Kuliah : 25 September
6. Ujian Tengah Semester Ganjil : 25 - 30 Oktober
7. Pekan Sunyi : 27 Des.– 1 Januari
8. Ujian Akhir Semester Ganjil : 3 – 5 Januari
9. Batas Akhir Penyerahan Nilai Ujian Akhir Semester dari Dosen ke PPSUB: 22 Januari

II. SEMESTER GENAP

1. Pendaftaran Ulang Mahasiswa dan Pengisian KRS : 7 - 12 Februari
2. Kuliah Semester Genap : 14 Februari s/d 25 Juni
3. Batas Akhir Batal Tambah Mata Kuliah : 26 Februari
4. Batas Akhir Pembatalan Mata Kuliah : 5 Maret
5. Ujian Tengah Semester : 11 - 16 April
6. Pekan Sunyi : 13 - 18 Juni

8. Ujian Akhir Semester Genap : 20 Juni
9. Batas Akhir Penyerahan Nilai Ujian
dari dosen ke PPSUB : 9 Juli

PENERIMAAN MAHASISWA BARU

Penerimaan mahasiswa baru Program Magister PSDL mempertimbangkan hal-hal: (1) Persyaratan akademik, (2) Kelengkapan persyaratan administrasi, dan (3) Kapasitas daya tampung setiap semester.

Persyaratan Akademik untuk Program Magister PSDL

- a. Calon mahasiswa harus memiliki Ijasah Sarjana (S1), memiliki Indeks Prestasi Kumulatif $\geq 2,75$ (pada skala 0-4) atau $\geq 6,25$ (pada skala 0-10). Memiliki Sertifikat TPA OTO Bappenas, dan Sertifikat Bahasa Inggris setara TOEFL.
- b. Semua calon mahasiswa yang memenuhi persyaratan akademik dan administratif harus mengikuti seleksi Program Alih Tahun (PAT). Selanjutnya nilai IPK dari PAT ini dijadikan pertimbangan dalam menentukan beban studi pada semester pertama dengan mempertimbangkan latar belakang kesarjanaannya. Latar belakang Pendidikan Sarjana yang dianggap sebidang untuk Program Studi S2 ini a.l., Sarjana ilmu-ilmu sosial, Sarjana ilmu ekonomi, Sarjana MIPA, Sarjana bidang agrokomples, Sarjana Ilmu-ilmu Hayati, Sarjana ilmu-ilmu Teknik, dan bidang lain yang dianggap relevan.

Prosedur Pelamaran Program Magister

- a. Calon mahasiswa mengajukan lamaran tertulis dan mengisi formulir yang telah disediakan, yang ditujukan kepada :

Program Pascasarjana Universitas Brawijaya
Jl. Mayjen Haryono, Malang 65145
Telp. 0341-571260
Fax 0341-0341580801

- b. Permohonan dilampiri masing-masing rangkap tiga, meliputi:
 1. Salinan ijasah yang telah disahkan.
 2. Salinan daftar nilai selama di Perguruan Tinggi yang telah disahkan; bagi yang dari PTS harus menyerahkan nilai ujian negara.

3. Surat rekomendasi dari dua orang yang dapat dianggap mampu memberikan kelayakan akademik pelamar.
 4. Karya ilmiah setelah lulus keserjanaannya (bagi yang dipersyaratkan)
 5. Riwayat hidup.
 6. Surat keterangan kesehatan, termasuk Bebas Narkoba.
 7. Surat tugas/ijin dari atasan (jika pelamar telah bekerja) bahwa yang bersangkutan dibebaskan dari tugas-tugas instansi.
 8. Pas-foto terbaru ukuran 4 x 6 (4 lembar).
 9. Surat keterangan tentang sumber dana dan/atau penanggung jawab dana studi.
 10. Fotocopy sertifikat TPA OTO-BAPPENAS & Sertifikat TOEFL/setara TOEFL
 11. Fotocopy KTP (Kartu Tanda Penduduk) yang masih berlaku.
- c. Waktu pelamaran: Pelamaran semester ganjil dimulai bulan Maret sampai dengan Juni. Pelamaran semester genap dimulai pada awal bulan Nopember sampai dengan bulan Januari.
- d. Seleksi Pelamar / Kriteria Penerimaan:

Seleksi awal terhadap pelamar (calon mahasiswa) dilaksanakan dengan melibatkan "peer group", yang terdiri dari Ketua Program Studi, dan pakar senior yang dianggap relevan. **Peer Group ini dibentuk oleh Direktur PPSUB**

Seleksi awal dilakukan paling lambat **pada minggu ke tiga setiap bulan sebelum tanggal pengisian KRS** (untuk mengikuti program PAT) dan keputusan penerimaan mahasiswa diputuskan oleh SK Rektor atas usul Penyelenggara Program Pascasarjana (setelah evaluasi program PAT). Penerimaan dan penolakan menjadi mahasiswa akan diberitahukan secara tertulis oleh Direktur Program Pascasarjana Universitas Brawijaya ke alamat calon mahasiswa.

KETENTUAN UMUM AKADEMIK

Mahasiswa dan Pendaftaran Mahasiswa

Mahasiswa Program Magister PSDL Universitas Brawijaya adalah mereka yang terdaftar menjadi mahasiswa pada Program Studi Pascasarjana pada semester yang sedang berjalan; dan bagi yang tidak mendaftar ulang dinyatakan telah mengundurkan diri sebagai mahasiswa. Mahasiswa lama diwajibkan mendaftar ulang setiap semester sesuai dengan jadwal yang telah ditetapkan. Pendaftaran mahasiswa dilakukan di Bagian Pengajaran PPSUB atau ruang yang telah ditentukan.

Mahasiswa yang melaksanakan pendaftaran, diharapkan datang sendiri, untuk:

- a. mengisi formulir pendaftaran dan mengisi Kartu Rencana Studi (KRS)
- b. menunjukkan bukti pembayaran SPP.
- c. menyerahkan pas foto ukuran 3 x 3 sebanyak empat lembar.
- d. memenuhi persyaratan lain yang ditetapkan oleh Program Studi.

Bagi mahasiswa lama harus menyertakan kopi Kartu Hasil Studi (KHS).

Tenaga Akademik

Tenaga akademik meliputi dosen pengampu mata kuliah, dosen pembimbing, dan dosen penguji. Dosen pengampu mata kuliah adalah tenaga dosen dengan jabatan akademik Guru Besar, sekurang-kurangnya Lektor dan bergelar doktor (lulusan S-3). Tenaga dosen pengampu mata kuliah di luar ketentuan ini ditetapkan oleh Direktur Program Pascasarjana, dengan mempertimbangkan kondisi obyektif.

Komisi Pembimbing

Komisi Pembimbing adalah tenaga akademik yang bertanggungjawab membimbing tesis. Setiap mahasiswa dibimbing oleh paling banyak tiga tenaga akademik, salah satu diantaranya berstatus sebagai Ketua Komisi Pembimbing dan dua orang lainnya sebagai Anggota Komisi Pembimbing. Ketua Komisi Pembimbing adalah dosen dengan jabatan akademik Guru Besar, sekurang-kurangnya lektor dan bergelar Doktor (lulusan S3). Penyimpangan dari ketentuan ini ditetapkan oleh Direktur PPSUB dengan mempertimbangkan kondisi obyektif

Tugas Komisi Pembimbing

Tugas komisi pembimbing adalah (a) mengarahkan pemilihan mata kuliah yang diambil mahasiswa, (b) membimbing perencanaan,

pelaksanaan penelitian, penulisan artikel jurnal dan naskah tesis, dan (c) memberikan penilaian pada usulan penelitian (ujian usulan penelitian), pelaksanaan penelitian, seminar hasil penelitian, penulisan dan ujian tesis, (d) menghadiri ujian usulan penelitian, seminar hasil penelitian, dan ujian tesis mahasiswa yang dibimbing.

Prosedur Penyusunan Komisi Pembimbing

Pada akhir semester pertama komisi pembimbing harus sudah terbentuk, dengan tata cara sebagai berikut:

- a. Pada pertengahan semester pertama KPS menginformasikan daftar calon dosen pembimbing yang memenuhi syarat untuk dipilih mahasiswa.
- b. Mahasiswa (melalui KPS) mengusulkan 2-3 orang tenaga akademik sebagai calon Komisi Pembimbing kepada Direktur PPSUB. Satu orang sebagai Ketua Komisi Pembimbing, dan dua orang lainnya sebagai anggota komisi pembimbing. Pengusulan nama-nama calon pembimbing ini dapat dilakukan pada akhir semester pertama.
- c. Berdasarkan data pada butir (b), Ketua Program Studi Pascasarjana menyelenggarakan komunikasi dengan unit-unit akademik yang terkait. Atas pertimbangan obyektif tertentu, hasil keputusan rapat konsultasi dan koordinasi mengenai komisi pembimbing ini dapat berbeda dengan yang diusulkan mahasiswa.
- d. Hasil-hasil konsultasi dan komunikasi tersebut pada butir (c) dikirim kembali ke Direktur PPSUB oleh KPS.
- e. Direktur PPSUB membuat SK penetapan susunan Komisi Pembimbing sesuai dengan hasil keputusan rapat konsultasi dan koordinasi.

Perubahan Dosen Pembimbing

Jika karena sesuatu hal perlu diadakan perubahan komisi pembimbing untuk memperlancar proses pembelajaran, mahasiswa yang bersangkutan harus mengusulkan komisi pembimbing yang baru dengan mengisi formulir usulan perubahan komisi pembimbing kepada Ketua Program Studi untuk dipertimbangkan. Ketua Program Studi mengkonsultasikannya ke Direktur PPSUB untuk mendapat persetujuan. Alasan perubahan komisi pembimbing a.l. (1) Perubahan topik/judul tesis, (2) kesesuaian substansi penelitian dengan pembimbing, (3) mahasiswa dan dosen pembimbing sulit berkomunikasi untuk konsultasi, (4) batas waktu studi, (5) Kode etik / moral / susila/ intimidasi, (6) Pembimbing mendapat jabatan baru sehingga tidak memungkinkan proses pembimbingan dilaksanakan secara efektif.

Penyelenggaraan Sistem Kredit Semester (SKS)

Penyelenggaraan pendidikan dilaksanakan dengan Sistem Kredit Semester dalam bentuk kuliah dan/atau praktikum dan/atau kerja lapangan.

Perkuliahan: satu satuan kredit semester (sks) terdiri dari kegiatan-kegiatan tatap muka 50 menit, kegiatan terstruktur 60 menit dan kegiatan mandiri 60 menit setiap minggu.

Praktikum: nilai satuan dalam satu sks untuk praktikum di laboratorium adalah beban tugas sebanyak dua jam praktikum di laboratorium diiringi oleh sekitar 1-2 jam kegiatan terstruktur dan sekitar 1-2 jam kegiatan mandiri setiap minggu selama satu semester kerja (setara 18 minggu).

Kerja lapangan: nilai satu sks untuk kerja lapangan adalah beban tugas di lapangan sebanyak 4 jam kerja lapangan diiringi oleh sekitar 1-2 jam kegiatan terstruktur dan sekitar 1-2 jam kegiatan mandiri setiap minggu selama satu semester (setara 18 minggu).

Ketentuan Beban Studi

Jumlah sks yang harus dikumpulkan oleh mahasiswa untuk menyelesaikan Program Magister PSLP adalah:

Bagi peserta yang berpendidikan sarjana (S1) beban studinya setara dengan 36-50 sks, terdiri dari kuliah dan praktikum sejumlah 24-38 sks dan tesis 12.

Beban studi mahasiswa adalah kegiatan wajib mahasiswa yang terdiri dari perkuliahan, praktikum, tugas-tugas terstruktur, seminar dan tesis yang dibatasi dengan jumlah sks tertentu per semester. Mata kuliah (MK) terdiri dari mata kuliah wajib program studi, MK wajib minat dan MK pilihan. Mata kuliah pilihan yang diambil mahasiswa dari program studi tertentu dapat diambil dari mata kuliah yang diselenggarakan oleh program studi lain atas persetujuan Ketua Komisi pembimbing.

Masa Studi

Masa studi bagi peserta yang berpendidikan sarjana dijadwalkan 4 (empat) semester dan dapat ditempuh kurang dari empat semester dengan lama studi selama-lamanya 8 semester. **Persyaratan mukim bagi mahasiswa adalah 2 smester.**

Jumlah sks setiap Semester

(1) Jumlah sks yang diambil pada semester pertama ditetapkan dengan sistem paket (15-21 sks) dengan memperhatikan hasil program PAT, yaitu:

IPK-PAT > 3,5	:	> 18 sks
IPK-PAT \geq 3,0 - 3,5	:	15 - 18 sks
IPK-PAT 2,75 - <3,0	:	12 – 15 sks
IPK-PAT < 2.75	:	9 - 12 sks

(2). Jumlah sks yang boleh diambil mahasiswa pada semester ke dua dan seterusnya didasarkan pada IPK yang diperoleh pada semester sebelumnya, dengan ketentuan (sesuai pengaturan masing-masing Program Studi):

IPK > 3,5	:	18 sks
IPK \geq 3,0 - 3,5	:	15 sks
IPK \geq 2,75- <3,0	:	12 sks
IPK < 2,75	:	9 sks.

(3). Penetapan beban studi mahasiswa pada setiap semester dapat ditetapkan dengan sistem paket, kalau kondisi tidak memungkinkan bagi kelancaran proses pembelajaran.

Evaluasi Keberhasilan Studi

a. Cara Penilaian

Untuk menilai prestasi mahasiswa dalam kegiatan akademik, digunakan ketentuan sebagai berikut :

1. Penilaian hasil ujian suatu mata kuliah dilakukan oleh masing-masing dosen (atau tim dosen) dengan menggunakan Huruf Mutu (HM) dan Angka Mutu (AM) seperti berikut.

Nilai Angka	Huruf Mutu	Angka Mutu	Golongan Kemampuan
>80 - 100	A	4	Sangat Baik
>75 – 80	B+	3.5	Antara Sangat Baik dan Baik
> 69 – 75	B	3	Baik
> 60 – 69	C+	2.5	Antara Baik dan Cukup
> 55 – 60	C	2	Cukup
> 50 – 55	D+	1.5	Antara Cukup dan Kurang
> 44 – 50	D	1	Kurang
0 - 44	E	0	Gagal

2. Nilai akhir bagi mata kuliah yang diampu oleh lebih dari satu dosen merupakan nilai gabungan dari semua dosen yang digabungkan oleh dosen koordinatornya.
3. Nilai akhir mata kuliah merupakan gabungan dari nilai: tugas terstruktur kelompok dan/atau mandiri, nilai ujian tengah semester dan nilai ujian akhir, nilai praktikum dan tugas-tugas lain (kalau ada). Selanjutnya nilai akhir ditentukan dengan kriteria pada butir (1).

b. Evaluasi Keberhasilan

1. Mahasiswa yang pada akhir semester pertama belum dapat mencapai $IPK=2,75$ untuk delapan sks terbaik akan diberi peringatan, agar berusaha lebih giat studinya untuk memperbaiki prestasi pada semester berikutnya.
2. Mahasiswa yang pada akhir semester ke dua belum dapat mencapai $IPK 2,75$ untuk 16 sks terbaik maka mahasiswa yang bersangkutan dinyatakan gagal dan tidak diperkenankan melanjutkan studinya di Program Pascasarjana di Universitas Brawijaya.
3. Mata kuliah yang memperoleh nilai D wajib diulang dan nilai C atau C+ dapat diulang untuk memperbaiki nilai akhir matakuliah. Pengulangan perkuliahan untuk mata kuliah tertentu hanya dapat dilakukan satu kali, nilai akhir diambil yang terbaik.
4. Bagi mahasiswa yang telah menempuh minimum 24 sks dengan

IPK minimum 2,75 tanpa nilai D, maka yang bersangkutan secara formal dapat mengajukan usulan penelitian tesis.

5. Usulan penelitian tesis harus disetujui oleh Komisi Pembimbing dan dipertahankan serta lulus di depan Tim Penilai Usulan Penelitian (yaitu Komisi Pembimbing ditambah dua penguji yang telah ditetapkan Direktur PPSUB berdasarkan usulan Ketua Program Studi).
6. Mahasiswa yang telah lulus ujian usulan penelitian dan semua perbaikannya telah dilaksanakan dan telah ditujui oleh Komisi Pembimbing, dapat segera melaksanakan penelitian tesis.

Pelaksanaan Tesis

Tesis merupakan tugas akhir mahasiswa program magister, berupa karya tulis yang disusun berdasarkan atas hasil-hasil penelitian. Tesis disusun dengan cara dan format sesuai dengan peraturan yang berlaku, dan penyusunannya dibimbing oleh Komisi Pembimbing. Bobot tesis adalah 12 sks.

Kegiatan akademik "Tesis" terdiri dari beberapa tahapan, yaitu :
 (a) Pembuatan usulan penelitian atau proposal yang diseminarkan (b) Ujian usulan penelitian, (c) Pelaksanaan penelitian (d) Penulisan artikel jurnal dan penulisan naskah tesis (e) Seminar hasil penelitian (makalah yang seminar berupa artikel jurnal) (f) Memasukkan artikel jurnal tersebut pada Tim Review Jurnal PM PSDL PPSUB dan (g) Ujian tesis.

Pembuatan Usulan Penelitian (Proposal)

Usulan penelitian merupakan karya tulis mahasiswa yang berisi tentang rencana kegiatan penelitian sebagai tugas akhir mengikuti Program Magister. Usulan penelitian ditulis sesuai dengan pedoman penulisan usulan penelitian tesis yang berlaku, antara lain berisi :

- (a) Pendahuluan, yang menguraikan tentang latar belakang pentingnya masalah penelitian, adanya penomena-penomena tertentu yang perlu dicermati, kerangka pemikiran atau formulasi permasalahan yang diteliti, maksud dan tujuan penelitian ;
- (b) Tinjauan Pustaka, menyajikan data dan/atau informasi ilmiah (berasal dari jurnal, kumpulan artikel penelitian, laporan kemajuan penelitian dari lembaga dan sebagainya) yang menjadi pendukung maupun kontra terhadap permasalahan penelitian yang diajukan, termasuk pendapat yang masih meragukan tentang permasalahan yang akan diteliti;

mahasiswa melakukan analisis terhadap permasalahan tersebut sehingga dapat diajukan konsep baru yang perlu untuk dilakukan penelitian ;

- (c) Metode Penelitian, menyajikan tentang metode yang digunakan oleh peneliti untuk mendekati permasalahan, penetapan contoh, macam variabel yang digunakan, cara mengukurnya, metoda analisisnya serta cara uji yang ditetapkan, alat dan program yang digunakan serta cara penyajian hasilnya. Pada bab ini juga disajikan informasi tentang tempat dan waktu penelitian dan informasi lain yang dianggap relevan dengan pelaksanaan kegiatan penelitian. Riset disain dapat dirumuskan dalam bentuk matriks yang menyajikan keterkaitan antara rumusan masalah, tujuan penelitian, hipotesis, variabel & indikator, sumber data, metode pengumpulan data, metode analisis data, dan kesimpulan yang diharapkan.
- (d) Daftar Pustaka, yang berisi tentang daftar karya tulis ilmiah yang digunakan untuk menyusun usulan penelitian. Penulisan pustaka menurut abjad sebagaimana dicontohkan dalam tatacara penulisan kepustakaan dalam Buku Pedoman Penulisan Proposal Tesis.

Usulan penelitian tesis dapat diajukan oleh mahasiswa yang telah menempuh perkuliahan minimum 15 SKS dengan IPK $\geq 2,75$ serta tidak ada nilai D. Naskah usulan penelitian dikonsultasikan dengan Komisi Pembimbing untuk mendapat persetujuan, dan setelah disetujui oleh Komisi Pembimbing dapat segera diajukan untuk ujian usulan penelitian.

Mahasiswa harus mempertahankan rencana penelitannya dalam suatu forum seminar yang dihadiri sekurang-kurangnya 10 mahasiswa Pascasarjana. Syarat bagi mahasiswa yang akan menyelenggarakan ujian seminar rencana penelitian ini adalah sekurang-kurangnya telah berpartisipasi hadir pada forum yang sama di PPS yang ada di lingkungan UB sekurang-kurangnya 10 kali dengan menyertakan bukti yang ada.

Ketua Komisi Pembimbing mengusulkan ujian usulan penelitian kepada KPS. Berdasarkan usulan KPS, Direktur PSUB menetapkan dua orang dosen penguji tambahan di luar komisi pembimbing.

Forum ujian usulan penelitian dipimpin oleh Ketua Komisi Pembimbing. Apabila Ketua Komisi Pembimbing tidak hadir karena sesuatu dan lain hal, dapat menugasi salah satu Anggota Komisi

Pembimbing untuk memimpin ujian. Ujian dapat dilaksanakan kalau dihadiri oleh dua orang penguji dan sekurang-kurangnya dua orang komisi pembimbing. Ujian tidak dapat dilakukan di luar forum ujian.

Ujian usulan penelitian dilaksanakan selama \pm 90 menit dengan materi ujian adalah usulan penelitian. Komponen penilaian antara lain naskah usulan penelitian, penyajian/presentasi mahasiswa, dan kemampuan mahasiswa berargumentasi secara ilmiah.

Hasil ujian ditetapkan secara musyawarah sesuai dengan nilai yang diberikan penguji dan diumumkan langsung ke mahasiswa yang bersangkutan. Setelah pengumuman ini secara resmi mahasiswa memulai penelitiannya.

Nilai lulus untuk ujian usulan penelitian minimum 2,75. Apabila kurang dari nilai tersebut, mahasiswa harus mengulang ujian usulan penelitian dan diberi kesempatan satu kali ujian ulangan. Apabila mahasiswa tidak lulus dalam ujian ulangan tersebut maka yang bersangkutan disarankan mengubah topik penelitian tesisnya dan menyusun proposal penelitian yang baru dalam waktu satu semester. Mahasiswa ini diberi kesempatan untuk mengajukan ujian proposal tesis (setelah disetujui oleh semua dosen pembimbingnya), seperti prosedur diatas. Apabila mahasiswa tidak lulus ujian proposal tesis kali ini (setelah diberi kesempatan ujian ulangan sekali), maka yang bersangkutan dinyatakan gagal studi di UB.

Usulan penelitian yang telah disetujui oleh Komisi Pembimbing dan telah lulus ujian usulan penelitian, disahkan/ditanda-tangani oleh KPS. Semua dokumen yang berhubungan dengan hal tersebut menjadi dokumen PPSUB.

Pelaksanaan Penelitian

Penelitian merupakan program akademik mahasiswa, kegiatannya dapat menggunakan metode survei dan / atau percobaan, yang hasilnya akan digunakan untuk penulisan tesis.

Penelitian dilaksanakan di daerah yang dipilih sesuai dengan tujuan penelitian dan disetujui oleh Komisi Pembimbing. Sebelum melaksanakan penelitian mahasiswa harus menyelesaikan persyaratan administrasi di Bagian Pengajaran.

Penelitian disupervisi oleh Ketua Komisi Pembimbing atau yang mewakili, dengan tata cara yang diatur dalam SK Direktur PPSUB tentang Supervisi Penelitian oleh Pembimbing. Hasil supervisi penelitian dilaporkan oleh Pembimbing yang melakukan supervisi dengan menyerahkan hasil evaluasi kepada KPS atau ke bagian pengajaran, yang selanjutnya didokumentasikan sebagai salah satu unsur yang

dipertimbangkan dalam menilai pelaksanaan penelitian. Mahasiswa yang telah selesai melaksanakan penelitian, secepatnya segera menyusun artikel jurnal (untuk seminar hasil penelitian) dan naskah tesis.

Kegiatan penelitian didokumentasikan dalam "Log-Book" yang disediakan untuk setiap mahasiswa yang melaksanakan penelitian tesis. **Log-Book ini wajib dikumpulkan pada PPSUB sebelum mahasiswa melakukan ujian tesis.**



Penulisan Artikel Jurnal dan Naskah Tesis

Artikel jurnal adalah karya tulis ilmiah berupa artikel jurnal yang ditulis berdasarkan hasil-hasil penelitian tesis. Artikel jurnal yang disetujui Komisi Pembimbing digunakan sebagai bahan untuk seminar hasil penelitian. Artikel jurnal ditulis berdasarkan tata cara penulisan artikel jurnal yang ada di UB **dengan komposisi penulis adalah mahasiswa yang bersangkutan diikuti dosen pembimbing lainnya.**

"Naskah Tesis" merupakan karya tulis mahasiswa yang ditulis berdasarkan hasil-hasil penelitian yang telah dilakukan. Naskah tesis ditulis berdasarkan acuan dalam buku pedoman penulisan tesis dan disertasi. Naskah tesis digunakan untuk bahan ujian tesis.



Seminar Hasil Penelitian

Seminar hasil penelitian adalah kegiatan seminar yang diselenggarakan oleh PPSUB dan diikuti oleh tenaga akademik, mahasiswa PPSUB dan pihak-pihak lain yang berkepentingan (bertujuan untuk mengikuti seminar hasil penelitian, atau undangan khusus yang diundang oleh pemrasaran untuk memberikan saran-saran penyempurnaan naskah tesis).

Mahasiswa harus mempertahankan hasil penelitiannya dalam suatu forum seminar yang dihadiri sekurang-kurangnya 10 mahasiswa Pascasarjana. Syarat bagi mahasiswa yang akan menyelenggarakan ujian seminar hasil penelitian ini adalah sekurang-kurangnya telah berpartisipasi hadir pada forum yang sama di PPS yang ada di lingkungan UB sekurang-kurangnya 10 kali dengan menyertakan bukti yang ada.

Seminar hasil penelitian dapat dilakukan oleh lebih dari satu orang pemrasaran dan maksimum tiga orang pemrasaran (panel forum). Pelaksanaan seminar dipandu oleh salah satu wakil mahasiswa.

Bahan seminar berupa artikel jurnal hasil penelitian yang telah disetujui oleh Komisi Pembimbing. Hasil seminar yang berupa artikel

publikasi jurnal akan didokumentasi oleh PPSUB dan dikelompokkan dalam bidang hayati, teknik, dan sosial /ekonomi.

Ketentuan lebih teknis mengenai pelaksanaan seminar hasil penelitian ditetapkan dengan SK Direktur PPSUB.

Ujian Tesis

Mahasiswa yang naskah tesisnya telah disetujui oleh Komisi Pembimbing, telah melakukan seminar hasil penelitian, dan telah mempublikasikan minimal satu artikel ilmiah pada jurnal nasional yang sebaiknya sudah terakreditasi (minimal keterangan dari dewan redaksi jurnal bahwa artikel jurnalnya siap dipublikasikan), berhak mengusulkan ujian tesis.

Ujian tesis dilaksanakan berdasarkan usulan Ketua Komisi Pembimbing kepada Dekan/Direktur PPSUB dan tembusannya kepada Ketua Program Studi. Dekan/Direktur PPSUB berdasarkan usulan KPS menetapkan dua orang dosen penguji tambahan di luar komisi pembimbing. Selanjutnya KPS memproses penyelenggaraan ujian dan mengundang Tim Penguji disertai jadwal, tempat ujian tesis, dan naskah tesis.

Forum ujian tesis dipimpin oleh Ketua Komisi Pembimbing. Apabila Ketua Komisi Pembimbing tidak hadir karena sesuatu dan lain, Ketua Komisi dapat menugaskan Anggota Komisi untuk memimpin ujian. Ujian dapat dilaksanakan kalau dihadiri oleh dua orang penguji dan sekurang-kurangnya dua orang komisi pembimbing. Ujian tesis dilaksanakan selama \pm 90 menit dengan materi berupa naskah tesis. Ujian tidak dapat dilakukan di luar forum ujian. Komponen penilaian antara lain meliputi kemampuan penguasaan materi tesis, kemampuan komprehensif dalam penyajian dan mempertahankan isi tesisnya.

Hasil ujian ditetapkan secara musyawarah sesuai dengan nilai yang diberikan semua penguji dan diumumkan langsung ke mahasiswa yang bersangkutan.

Empat komponen penilaian tesis dengan pembobotannya adalah sbb:

- | | | |
|--|------|--|
| 1. Usulan Penelitian | 10 % | |
| 2. Pelaksanaan Penelitian | 20 % | |
| 3. Penulisan artikel jurnal & seminar hasil penelitian | 30 % | |
| 4. Ujian akhir tesis | 40 % | |

Butir-butir (1), (2), dan (3) diberikan oleh Komisi Pembimbing, dan butir (4) oleh semua anggota tim penguji.

Nilai diberikan sesuai dengan sistem yang berlaku (A, B+, B, C+, C, D+, D dan E). Nilai akhir merupakan rata-rata (sesuai dengan pembobotan) dari nilai-nilai yang disebutkan sebelumnya.

Nilai lulus untuk ujian tesis minimum 2,75. Apabila kurang dari nilai tersebut, mahasiswa harus mengulangi ujian tesis dan diberi kesempatan satu kali ulangan. Apabila mahasiswa tidak lulus lagi maka yang bersangkutan diberi tugas khusus (atas persetujuan komisi pembimbing) untuk memperbaiki naskah tesisnya atau dinyatakan gagal dalam studi di PPSUB.

Perbaikan naskah tesis (berdasarkan saran-saran dari tim penguji tesis) harus diselesaikan paling lambat satu bulan setelah ujian tesis. Jika batas waktu perbaikan yang ditentukan habis dan perbaikan naskah tesis belum selesai dan mahasiswa tidak dapat mempertanggungjawabkan alasannya kepada Komisi Pembimbing maka Ketua Komisi Pembimbing dapat mengusulkan supaya mahasiswa yang bersangkutan menempuh ujian tesis lagi.

Mahasiswa yang telah lulus ujian tesis, dan telah melakukan perbaikan dengan persetujuan komisi pembimbing, dapat menggandakan naskah tesis tersebut sejumlah tertentu (untuk Komisi Pembimbing, PPS di Universitas Brawijaya dan pihak lain yang memerlukan). Naskah tesis kemudian disahkan dengan ditandatangani oleh Komisi Pembimbing, dan Direktur PPSUB.

SYARAT KELULUSAN

Mahasiswa dinyatakan lulus dari Pendidikan Program Magister di Universitas Brawijaya apabila:

- α. Sekurang-kurangnya telah menyelesaikan 36 sks (termasuk tesis) dengan IPK $\geq 2,75$ dan tidak terdapat nilai D.
- β. Mempunyai sertifikat kemampuan bahasa Inggris TOEFL atau setara TOEFL dengan nilai minimum 450, yang didapat dari Lembaga Bahasa Inggris yang diakui oleh Program Pascasarjana Universitas Brawijaya.

PREDIKAT KELULUSAN

Yudisium dilaksanakan setelah mahasiswa dapat menyelesaikan seluruh persyaratan akademik dan administrasi termasuk mampu menunjukkan bahwa sekurang-kurangnya satu publikasi telah diterima di jurnal ilmiah nasional.

Mahasiswa yang dinyatakan lulus menerima predikat kelulusan sebagai berikut:

1. Lulus dengan predikat **cumlaude**: Apabila mahasiswa mempunyai IPK > 3,71 - 4,0, tanpa nilai C, lama studi maksimal lima semester, Nilai Tesis = A, dan Nilai Ujian Tesis = A. Selain itu juga harus tidak ada satupun komponen nilai tesis yang kurang dari 80,56 dan telah mempublikasikan hasil penelitiannya di jurnal ilmiah nasional sekurang-kurangnya dua buah artikel.
2. Lulus dengan predikat **sangat memuaskan** :
 - a. Apabila mahasiswa mempunyai IPK > 3,71 - 4,00 dan tidak memenuhi kriteria pada butir (1).
 - b. Apabila mahasiswa mempunyai IPK = 3,41- 3,70.
3. Lulus dengan predikat **memuaskan** : Apabila mahasiswa mempunyai IPK = 2,75 - 3,40.

BATAS WAKTU STUDI

Program Magister (bagi peserta yang berpendidikan sarjana sebidang) dirancang dalam kurun waktu empat semester (2 tahun) (dapat ditempuh kurang dari empat semester) dan maksimal 8 semester (4 tahun). Bagi mahasiswa yang belum dapat menyelesaikan studi dalam empat tahun tanpa alasan yang dapat dipertanggungjawabkan maka mahasiswa tersebut dinyatakan gagal mengikuti program magister di UB. Lama studi tidak terhitung cuti akademik (terminal), dan setiap mahasiswa berhak cuti akademik sebanyak-banyaknya 2 (dua) semester selama studinya. Cuti akademik dapat diambil oleh mahasiswa dengan syarat (1) gangguan kesehatan/sakit dalam waktu yang lama, sehingga tidak memungkinkan melaksanakan proses pembelajaran, (2) cuti melahirkan, (3) berdomisili di suatu tempat yang tidak memungkinkan untuk melaksanakan proses pembelajaran, (4) alasan-alasan kepentingan keluarga (privacy), sehingga dalam waktu yang cukup lama tidak memungkinkan melaksanakan kegiatan pembelajaran.

PERENCANAAN KALENDER STUDI MAHASISWA

Agar penyelesaian program studi mahasiswa tepat waktu (empat semester) maka pelaksanaan kegiatan akademik mahasiswa dapat dijadwal sebagai berikut :

No	Kegiatan	Semester ke:							
		I	II	III	IV	V	VI	VII	VIII
1	Kuliah 12-18 sks	*							
2	Kuliah 12-18 sks		*						
3	Pembentukan Komisi Pembimbing.		*						
4	Penyusunan Proposal Penelitian		*	....	....	....
5.	Ujian Proposal penelitian tesis		*	*	....	....	....
6	Penelitian tesis		*	* *	....	....	....	....
7.	Penyusunan, analisis data dan penulisan artikel jurnal		*	* *	....	....	....	....
8.	Seminar hasil penelitian			*		....	....	....	*
9.	Penyusunan naskah tesis			*	*	....	....	....	*
10.	Ujian tesis			*	*	....	....	....	*

**Kurikulum
PROGRAM MAGISTER
PENGELOLAAN SUMBERDAYA, LINGKUNGAN &
PEMBANGUNAN (PSLP) 2008/09**

Program Magister Pengelolaan Sumberdaya, Lingkungan dan Pembangunan (PM-PSLP) ini merupakan jenjang pendidikan Strata dua berorientasi pendidikan akademik dan mengkaji masalah-masalah pembangunan dan lingkungan secara interdisiplin. Penyelenggaraan program studi ini berdasarkan Surat ijin Penyelenggaraan Program Studi dari Dirjen DIKTI No. 1504/D/T/2007, tanggal 22 Juni 2007 dan diperpanjang dalam Surat ijin Penyelenggaraan Program Studi dari Dirjen DIKTI No. XXXX/D/T/2012

VISI

Menjadi pusat pendidikan magister, penelitian dan pengembangan IPTEK, dan pusat informasi tentang pengelolaan sumberdaya, lingkungan dan pembangunan masyarakat, bangsa dan Negara Kesatuan Republik Indonesia.

MISI

1. Menyelenggarakan proses pembelajaran yang berkualitas, efektif, efisien, dan tepat waktu, dalam lingkup pengelolaan sumberdaya, lingkungan dan pembangunan dengan penekanan aspek-aspek KEBIJAKAN Sumberdaya alam dan Lingkungan, PENGELOLAAN & PENGENDALIAN Lingkungan, dan Pembangunan Wilayah.
Mengupayakan JOINT-RESEARCH di bidang pengelolaan sumberdaya, lingkungan dan pembangunan dengan mitra-kerja yang relevan dalam kerangka penelitian tesis mahasiswa.
3. Mempublikasikan hasil-hasil penelitian tentang pengelolaan sumberdaya alam, lingkungan dan pembangunan yang relevan dengan permasalahan yang dihadapi oleh masyarakat pembangunan

TUJUAN

1. Menghasilkan lulusan S2 yang menguasai IPTEK pengelolaan sumberdaya, lingkungan dan pembangunan; serta mempunyai

- kepekaan tinggi terhadap permasalahan lingkungan dan pembangunan yang dihadapi oleh masyarakat
2. Menghasilkan publikasi ilmiah hasil-hasil penelitian yang mendukung perkembangan IPTEK dan bermanfaat untuk menjawab permasalahan lingkungan dan pembangunan yang dihadapi oleh masyarakat, bangsa dan negara.

BEBAN DAN LAMA STUDI

Beban dan waktu studi yang dibutuhkan untuk penyelesaian studi adalah sebagai berikut :

1. Beban studi minimal 36 sks, terdiri dari kuliah dan praktikum 24 sks dan tesis 12 sks.(??)
2. Lama studi 2 tahun (dapat ditempuh kurang dari dua tahun), dan maksimum 4 tahun

MATA KULIAH

No	Kode	Mata Kuliah Wajib	sks
1	PSLP-501	Program Studi PSLP: Pembangunan dan Dampak Lingkungan	3
2	PSLP-502	Ekosistem dan Analisisnya	3
3	PSLP-503	Metode Penelitian Lingkungan	3
		MK PILIHAN (sesuai dengan Minat penelitian tesis: Kebijakan Sumberdaya Alam, Lingkungan dan Pembangunan):	
1.	PSLP-504	Pemb. Berkelanjutan-Berwawasan Lingkungan	3
2.	PSLP-505	Hukum Lingkungan	3
3.	PSLP-506	Proses Kebijakan dan Implementasinya	3
		MK PILIHAN (sesuai dengan Minat penelitian tesis: Pengelolaan Sumberdaya Alam, Lingkungan dan Pembangunan)	
1.	PSLP-507	Ekonomi Sumberdaya & Lingkungan	3
2.	PSLP-508	Pengelolaan Sumberdaya & Lingkungan	3
3.	PSLP-509	Audit Lingkungan	3

No	Kode	Mata Kuliah Wajib	sks
		MK PILIHAN (sesuai dengan Minat penelitian tesis: PEMBANGUNAN WILAYAH)	
1.	PSLP-504	Pemb. Berkelanjutan-Berwawasan Lingkungan	3
2.	PSLP-510	Metode & Teknik Perencanaan Wilayah	3
3.	PSLP-511	Dinamika Pembangunan Wilayah	3
		MK PILIHAN (sesuai dengan minat penelitian tesis: Wawasan dan Ketahanan Lingkungan)	
		MK PILIHAN (sesuai dengan minat penelitian tesis: Pengelolaan Kebencanaan)	
	PSLP-600	Tesis	12

Mata Kuliah Pilihan

No	Kode	Mata Kuliah Pilihan Bebas	3 sks
1	PSLP-520	Analisis Neraca SDALH	3
2	PSLP-521	Analisis Risiko Lingkungan	3
3	PSLP-522	Arsitektur Lingkungan dan Perilaku	3
4	PSLP-523	AUDIT LINGKUNGAN	3
5	PSLP-524	Biodiversitas & Biologi Lingkungan	3
6	PSLP-525	Degradasi Sumberdaya Alam & Lingkungan	3
7	PSLP-526	Ecological-economic Hutan Tropika	3
8	PSLP-527	Ecotourism	3
9	PSLP-528	Ekologi Industri	3
10	PSLP-529	EKOLOGI MANUSIA	3
11	PSLP-530	Ekologi Pangan & Pertanian	3
12	PSLP-531	Ekonomi Sumberdaya Hutan-Tanah-Air	3
13	PSLP-532	Ekosistem Lahan Basah	3
14	PSLP-533	Emergency System	3
15	PSLP-534	Environmental Labelling (EL).	3
16	PSLP-535	Environmental Management System (EMS).	3
17	PSLP-536	Environmental Performance Evaluation	3
18	PSLP-537	Environmental Management Systems (EMS)	3
19	PSLP-538	Epidemiologi Lingkungan	3
20	PSLP-539	Evaluasi Kebijakan Lingkungan	3
21	PSLP-540	Kesehatan Lingkungan & Sanitasi	3
22	PSLP-541	Kesehatan Lingkungan	3
23	PSLP-542	Konservasi SDA-Lingkungan	3
24	PSLP-543	Kualitas Lingkungan	3
25	PSLP-544	Life Cycle Analysis (LCA).	3
26	PSLP-545	Manajemen Konflik	3
27	PSLP-546	METODE EKOLOGI KUANTITATIF	3

28	PSLP-547	Metode Pendugaan Dampak Bio-geo-fiskim	3
29	PSLP-548	Metode Pendugaan Dampak Ekonomi	3
30	PSLP-549	Metode Pendugaan Dampak Sosial	3
31	PSLP-550	METODE PENDUGAAN DAMPAK LINGKUNGAN	3
32	PSLP-551	Pemberd Masyarakat & Penguatan Kelembagaan	3
33	PSLP-552	Penataan ruang berwawasan lingkungan	3
34	PSLP-553	Pengelolaan & Teknik Pengolahan Limbah	3
35	PSLP-554	Pengembangan Wilayah Aliran Sungai	3
36	PSLP-555	Pengembangan Wilayah Desa-Kota	3
37	PSLP-556	Pengembangan Wilayah Pesisir & Lautan	3
38	PSLP-557	Pengendalian Pencemaran /Polusi	3
39	PSLP-558	Penyuluhan & Komunikasi Lingkungan	3
40	PSLP-559	PERENCANAAN LINGKUNGAN DAERAH	3
41	PSLP-560	Religi dan ETIKA Lingkungan	3
42	PSLP-561	Sistem Informasi Lingkungan	3
43	PSLP-562	Sistem Produksi Bersih	3
44	PSLP-563	Sosiologi Lingkungan dan Pembangunan	3
45	PSLP-564	TQM Pengelolaan Lingkungan	3

ANALISIS MENGENAI DAMPAK LINGKUNGAN

3 sks

Course Objective:

Upon completion of this course, students should be able to: (1) **define or describe** the concepts, basic methods, and analytical approaches used in biophysical and socioeconomic impact assessment; (2) Design a basic impact assessment study, usually at the local level, Design appropriate field studies or social research, Design an framework for analyzing relevant data, Report on the study results using accepted environmental impact statement (EIS) formats, Make a presentation of your work at a level suitable for a public forum. (3) Appreciate the importance of the public/social, administrative, regulatory and practitioner contexts in which impact assessment occurs. (4). Understand and critically analyze key factors in the impact assessment area: the ways in which biophysical and social impacts are linked, the role of various actors in impact assessment processes, the work or role of corporate groups or clients and consultants, the place of science in impact assessment, impact assessment as a tool for social change or environmental protection, and the special concerns of Native communities and other social groups

Setelah selesai mengikuti mata kuliah ini (pada akhir semester) diharapkan mahasiswa juga mampu untuk: (1). Memahami konsep-konsep AMDAL, (2). Menjelaskan kembali beberapa kaidah dan prinsip dan prosedur AMDAL, (3). Melakukan simulasi Penyusunan AMDAL.

Pokok bahasan meliputi: Pendahuluan: Terminologi; Peraturan perundangan terkait; AMDAL dan kegunaannya. Dampak Lingkungan dan Risiko Lingkungan: Dampak Fisik dan kimia, Dampak Biologis, Dampak sosial-ekonomi, Dampak sosial-budaya, Risiko lingkungan dan pengelolaannya. Metode pendugaan & penyajian DAL: Teknik dan metode pendugaan, Model kuantitatif dalam pendugaan, Sistem informasi DAL. Variabel dampak lingkungan dan Baku Mutu Lingkungan: Variabel Terrestrial, Variabel Akuatik, Variabel udara, Variabel Human- interface. Pendugaan dampak lingkungan (DAL): Dasar penetapan dampak, Prinsip pendugaan dampak, Lingkup pendugaan, Prosedur pendugaan, Teknik Penyajian. Pendugaan DAL: Metode kuantitatif dan kualitatif pendugaan dampak lingkungan, Langkah-langkah dalam pendugaan dampak, Hal-hal khusus dalam pendugaan, Pendekatan ekonomi-ekologi, Penyajian dampak lingkungan. Analisis ekonomi dalam pendugaan DAL: a. Pembangunan; dampak lingkungan dan peran analisis ekonomi, Aspek ekonomi dampak lingkungan, Teknik-teknik yang dapat digunakan, Metode valuasi yang dapat digunakan, Keterbatasan instrumen-instrumen analisis. Analisis ekologi dalam pendugaan DAL: Pembangunan ,dampak lingkungan dan peran analisis ekologi, Aspek ekologi dampak lingkungan, Teknik-teknik yang dapat digunakan, Metode valuasi yang dapat digunakan, Keterbatasan instrumen-instrumen analisis. Analisis sosial dalam pendugaan DAL: Pembangunan ,dampak lingkungan dan peran analisis sosial, Aspek sosial dampak lingkungan, Teknik-teknik yang dapat digunakan, Metode valuasi yang dapat digunakan, Keterbatasan instrumen-instrumen analisis. Alternatif dan rencana pengelolaan: Pengertian dan kedudukan Rencana Pengelo- laan Lingkungan (RKL), Sistem pengelolaan . RKL: Pengertian dan batasan, Regulasi RKL, Implementasi pengelolaan. Pemantauan dampak lingkungan: Pengertian dan batasan, Kegunaan pemantauan, Tipe-tipe pemantauan. RPL: Prosedur pemantauan, Lingkup dan pelaksanaan pemantauan

Dosen: Dr Ir. Arief Rachmansyah, M.T.
Ir. M. Nawawi, M.S.

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Benchmarking: UNIVERSITY OF WATERLOO**ANALISIS GREEN BUDGETING****3 sks**

Green budgeting would enable countries to account for the environmental costs of things such as pollution-producing factories and vehicles that use fossil fuels.

What is the aim of green budgeting? Traditionally, the budget document is seen, first and foremost, as a tool of economic policy, and secondarily as a social and environmental policy framework. Allocations for environmental protection and social support (welfare, health care, public transit, forests, etc.) are counted as costs, not as investments; natural resources existing in the country are not factored in. In many countries, the budget-making exercise provides a major opportunity for Governments to project the future course of the economy in terms of expected Gross Domestic Product (GDP) growth, trade (surplus/deficit), employment figures and inflation. "Green budgeting" is the process whereby the three dimensions of sustainable development [economic growth, ecological balance and social progress] are fully integrated in this single policy document. A driving principle of green budgets is that you can't support the economy at the cost of the environment and social integration. The three are interlinked in many ways. These things are not new, of course, and shades of green have existed in national budgets, especially in industrialized countries, for decades. A green budget, however, is one that consistently and comprehensively analyses government expenditures and revenues to bring about true sustainable development. It will give prominence to non-economic targets, such as the ecological footprint or the percentage of carbon emissions that the government expects to reduce in a given year. It will support economic growth, but help shift its internal composition toward more sustainable production and consumption. The ultimate aim of green budgeting is to help change the public's awareness of all these issues. Generally, the tools of green budgets consist of fiscal incentives/disincentives and subsidies. But they also include simple reallocation of resources from one budget line to another. Green budgets do not necessarily mean higher taxes in the aggregate. They tend to ensure that the true environmental cost of production is factored into the market mechanism.

Dosen: Prof Dr Maryunani SE. MS
Dr Ir Rini Dwi Astuti M.S.

Referensi:

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2. Benedict, M. A. & McMahon, E. T. (2006). Green Infrastructure: Linking Landscapes and Communities. Island Press, Washington. ISBN 1-55963-558-4
3. R. Gale, S. Barg and A. Gillies (editors). Green Budget Reform. An International Casebook of Leading Practices (London: Earthscan, 1995; UK pp. 368, ISBN 1-85383-246-4).

Benchmarking: UNDP
ANALISIS RISIKO LINGKUNGAN
Environmental Risk Assessment
3 SKS

Course Objectives: Understanding of the principles and methods of risk assessment ; Critical discussions of the assumptions and reasons for using risk assessment ; Conduct practical applications of risk methods in making decisions with uncertain hazards and risks likely to affect human or ecological communities in the short or longterm through routine or catastrophic events ; Become aware of the role of risk analysis methods with proper communication ; Make decisions about human death, illnesses or injuries in public and occupational contexts through environmental risk inventory system; to understand quantitative risk assessment (QRA) as applied both to ecological risk assessment and human-health risk assessment; to evaluate logical, epistemological, ethical assumptions in QRA; to gain some methodological and scientific perspectives on the contemporary problems in environmental risk assessment; to learn how to critically evaluate contemporary examples of QRA. Analisis risiko dalam pengelolaan lingkungan juga dirancang untuk memahami pengertian, fungsi, manfaat serta peraturan-peraturan tentang analisis risiko lingkungan. Setelah mengikuti kuliah ini mahasiswa memahami pengertian, fungsi, manfaat serta peraturan-peraturan tentang analisis risiko lingkungan.

Pokok bahasan meliputi: Pengertian dan ruang lingkup risiko lingkungan agribisnis. Jenis-jenis risiko. Risk & uncertainty; Risk & opportunity; Risk, hazard, peril & losses. Proses terjadinya risiko lingkungan. Identifikasi risiko: fungsi identifikasi, proses identifikasi, pengukuran potensi

risiko. Metode dan aplikasi analisis risiko, karakteristik, komponen-komponen lingkungan yang terkena risiko. Teknis identifikasi, prakiraan dan evaluasi risiko.

Introduction to Quantitative Risk Assessment. Ecological Risk Assessment: the Ecosystem Health and Integrity Paradigm. Ecological Risk Assessment (ERA): the Index of Biotic Integrity.

Manajemen risiko: proses-prosesnya. Model-model matematik dan statistik untuk pendugaan risiko. Perencanaan pengelolaan risiko dan respon tanggap darurat serta hubungannya dengan studi analisis sistem agribisnis. Prinsip dasar metode dan aplikasi analisis risiko lingkungan, serta memahami karakteristik, komponen-komponen lingkungan yang terkena risiko. Teknis identifikasi, prakiraan dan evaluasi risiko lingkungan. Perencanaan pengelolaan risiko lingkungan dan respon tanggap darurat serta hubungannya dengan studi AMDAL, UKL dan RPL dll.

DOSEN : PROF. DR. IR. SOEMARNO, MS
Ir M. Nawawi, M. S.

Referensi:

1. E. V. Ohanian, J. A. Moore, J. R. Fowle III, G. S. Omenn, S. C. Lewis, G. M. Gray and D. Warner North, Workshop Overview Risk Characterization: a bridge to informed decision making, *Fundamental and Applied Toxicology*, 39: 81 – 88 (1997).
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8. R. Bonnie, Endangered species mitigation banking : promoting recovery through habitat conservation planning through the Endangered Species Act, *Sci. Tot. Env.*, 240: 11 – 19 (1999).

Benchmarking: Mahidol University International College,
Faculty of Science, Faculty of Environment and Resource
Studies, Mahidol University

ARSITEKTUR & LINGKUNGAN

3 SKS

The course objectives are to develop a deeper understanding of the relationship between architectural design and the environmental forces of sun, wind, and light. This design-centered course is intended to help you develop the ability to quickly test your architectural designs against fundamental ECS criteria informed by an understanding of effective and efficient ways to use energy and other environmental resources.

Course content: **ENERGY, HUMAN COMFORT AND HVAC SYSTEMS:** Energy, 1st & 2nd Laws of Thermodynamics; Fuels, combustion, efficiency and power; Heat flow and the building envelope; Human Comfort: Metabolism, homeostasis, equilibrium and human comfort; Atmospheric and thermal comfort criteria; Psychometrics, sensible and latent heat; Enthalpy. Heat Flow: Convection, conduction, radiation and evaporation: magnitude and direction; Heat gain & loss, steady state conditions; Heat flow computations; R factor, U factors and infiltration; Thermal gradients, dew points and vapor barriers; Transfer through opaque construction, changes in air (CFM) and changes in moisture content. HVAC Systems: Heat loss, gain, and system "load" demands; Degree of control, spatial, economic implications; Zoning concepts, building occupancy, design and orientations; All-air systems; Air-water systems; All-water, hydronic systems; Direct refrigerant, heat pump systems. **FLUID SYSTEMS, HEALTH: SANITATION AND FIRE PROTECTION SYSTEMS.** Resources: Surface, ground water supplies, aquifers, wells, springs and hydrology; Hydrologic cycle; Pumping, treatment and storage; Wells, municipal sources and distribution systems. Distribution: Pressure, pneumatics, hydraulics, theoretical and actual P.S.I. pressure; Pumping and storage systems, components; Sizing of plumbing networks; demand P.M.D. fixture units (F.U.) and codes; Systems distribution networks, components and flow control. Collection/Disposal. Fire Protection Systems. **LIGHT, VISION AND LIGHTING DESIGN:** Light; Vision; Light Sources; Lighting Design. **SOUND, HEARING AND ACOUSTICAL**

DESIGN : Sound; Hearing; Room Acoustics; Sound/Isolation; Mechanical Sound Amplification.

Dosen : Prof Ir Antariksa M.Eng, Ph.D.

Referensi:

1. Brown, Z.G., and DeKay, Mark. 2001. Sun, Wind & Light, 2nd Edition . New York: John Wiley + Sons.
2. Allen, Ed, and Iano, Joseph. 2001. The Architects Studio Companion, 3rd Edition. New York: John Wiley + Sons.
3. Stein, Reynolds, Grondzik, Kwok. 2006. Mechanical and Electrical Equipment for Buildings, 10th edition. New York: Wiley + Sons.

Benchmarking: Washington State University.

AUDIT LINGKUNGAN

3 sks

Environmental Audit

Setelah mengikuti matakuliah ini mahasiswa dapat memahami pengertian, tujuan, manfaat audit lingkungan, serta ruang lingkup dan peraturan-peraturan tentang audit lingkungan.

Pokok bahasan meliputi: Pengertian dan ruang-lingkup audit lingkungan. Proses audit lingkungan: Follow-up action plan, Audit reporting, Exit review, Audit review, Open interview, pre-Audit planning. Jenis-jenis audit lingkungan: management audits dan Transaction audit. Management audit: Waste audit, Compliance audit, Liability audit, Management systems audit, Occupational health & safety audit, Operational audit. Transaction audit: Risk & liability. Pengkajian administrasi, pengkajian teknik lingkungan. Protokol audit, proses pelaksanaan dan teknik pengambilan/pengumpulan data serta pemeriksaan lapangan. Teknik penyusunan laporan dan rekomendasi audit lingkungan. Unsur-unsur audit lingkungan: Kebijakan, peraturan, disain operasi, perawatan & house keeping, sumber pencemar, lingkungan fisik, contingency plan, laporan kecelakaan, kesadaran lingkungan. Metode pendekatan praktis: pengkajian organisasi. Pengkajian aspek teknik lingkungan: lingkup pengkajian, pendekatan sistem, sumber generik pengaruh lingkungan, proses pengkajian. Sertifikasi ISO 14001 : Sistem Pengelolaan Lingkungan. Environmental Auditing Systems.

Audit lingkungan juga dirancang untuk memahami pengertian, tujuan, manfaat audit lingkungan, serta ruang lingkup dan peraturan-peraturan tentang audit lingkungan. Mengenal berbagai jenis audit lingkungan. Memahami protokol audit, proses pelaksanaan dan teknik pengambilan/pengumpulan data serta pemeriksaan lapangan. Memahami teknik penyusunan laporan dan rekomendasi audit lingkungan.

Dosen: Gugus Irianto, SE, M.Act, Ph.D.
Ir Swasono Hedy, M.S.

Referensi:

- 1) Hunt D.,Jonson C. (1995) Environmental Management System-principles and Practice, Mc Graw-Hill Book Company Europe, Brekshire, England.
- 2) Canter, L., Environmental Impact Assessment. McGraw Hill, 1996. ISBN: 0070097674
- 3) Bartell, S., Kolluru, R., Pitblado, R., and Stricoff, S., Risk Assessment and Management Hanbook: For Environmental, Health and Safety Professionals. McGraw Hill, 1996. ISBN: 0070359873
- 4) Lerch, I. And Paleologos, E., Environmental Risk Analysis. McGraw Hill, 2001. ISBN:0071372660
- 5) McGraw, D., Environmental Auditing and Compliance Manual. Wiley Interscience, 1993. ISBN: 0471285854
- 6) Woodside, G. Yturri, J. and Aurricho, P., ISO 14001 Implementation Manual. McGraw Hill, 1998. ISBN: 0070718520
- 7) Curran, M., Environmental Life-Cycle Assessment. McGraw Hill, 1996. ISBN: 007015063X
- 8) Dorf, R.C., Technology, Humans and Society: Toward a Sustainable World. AcademicPress, 2001. ISBN: 0122210905
- 9) Pearce, D. and Barbier, E., Blueprint for a Sustainable Economy. Earthscan Publications, 2000. ISBN: 1853835153

Benchmarking: INSTITUTE OF ENVIRONMENTAL MANAGEMENT & ASSESSMENT

GLOBAL CLIMATE CHANGE
Perubahan Iklim Global

3 sks

Global climate change in the past, present, and future. The course focuses on evidence of climate change in the past, modern climate variability, and the range of theories and arguments regarding potential climate change in the future. The major controls on climate variability at a range of temporal scales. The modern research methods that are used to investigate past climate and to model possible climatic trends, such as global warming.

Questions the Course Will Address: Is climate changing? ; How do I measure climate change? ; What does it matter? What impact will climate change have on me? On life on earth? ; How fast is climate changing? ; What can I do about it? Can I do anything about it? ; Is human activity the cause of climate change? .

Course content: Intro: Water; Heat Budget: Atmospheric Moisture; Clouds/Dew: Historical Changes; Atmosphere Stability: Recent Glaciations; Precipitation: Orbital/astronomic effects, El Nino; Air Pressure: Milankovitch cyclicity; Wind: Species Distributions; Fronts: Snowball Earth; Cyclones: Mountain-ODP, Sea Level; Forecasting: Deforestation; Thunderstorms: Hurricanes, Diseases;

Topics for discussion include the carbon cycle, solar orbital variations, monsoon variations, greenhouse warming, ozone depletion, El Niño-La Niña and ocean-atmosphere feedbacks. The human role in global change, and the response of the environment to such changes, including effects such as sea level rise, vegetation changes, and changes in ocean circulation.

Dosen: Dr Ir Rudy Sulistyono MS
 Ir Didik Suprayogo, MSc, PhD

Reference:

- 1). BECK, R. A., BURBANK, D.W., SERCOMBE, W. J., OLSON, T. L. & KHAN, A. M. (1995) Organic carbon exhumation and global warming during the early Himalayan collision. *Geology*, 23, 387-390.
- 2) CANE, M. A. (1986) El Nino. *Annual Reviews of Earth and Planetary Science Letters*, 14, 43-70.
- 3) CIAIS, P., TANS, P. P., TROLIER, M., WHITE, J. W. C. & FRANCEY, R. J. (1995) A large northern hemisphere terrestrial

- CO₂ sink indicated by the ¹³C / ¹²C ratio of atmospheric CO₂.
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 - 8) ROEMMICH, D. & MCGOWAN, J. (1995) Climatic warming and the decline of zooplankton in the California current. *Science*, 267, 1324-1326.
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Benchmarking: Miami University, Department of Geology / School of Interdisciplinary Studies

DINAMIKA PEMBANGUNAN WILAYAH
Regional Development

3 sks

Setelah selesai mengikuti mata kuliah ini (pada akhir semester) diharapkan mahasiswa mampu untuk: (1). Memahami konsep-konsep dan pendekatan ekonomi-ekologi dalam pengembangan wilayah pedesaan, (2). Menjelaskan kembali beberapa kaidah dan prinsip dalam pengembangan wilayah pedesaan, (3). Melakukan /menerapkan analisis & simulasi sistem dalam perencanaan pengembangan wilayah pedesaan.

Pokok Bahasan Meliputi: PENDAHULUAN: Regional sciences vs Regional Economics. Regional Planning vs Landuse Planning. Regional Development vs Economic Development. Azas dan Prinsip Pengembangan Wilayah: Ekonomi vs ekologi, Temporer vs Spasial, Statik vs dinamik, Input-Proses-Output, Alokasi vs Efisiensi. People center development: Paradigma Pembangunan Daerah, Kaidah-kaidah pemberdayaan masyarakat. Konsep Sumberdaya: Pengertian sumberdaya: EKONOMI vs EKOLOGI, Quality and characteristics, Utility & externality, Scarcity, Value and price, Market mechanism. Konsep SDA: SDA-Lahan, SDA-Hutan, SDA-Air, SDA-Tambang bahan mineral, Availability vs Renewability, Productivity vs sustainability. Konsep Dampak Lingkungan: Proses produksi / pemanfaatan sumberdaya, Produk dan limbah, Externality effects, Perubahan lingkungan, Dampak lingkungan. METODE Perencanaan: Metode analisis kependudukan, Input-Output, Metode Gravitasi, Hubungan antar daerah. Metode Operation Research: Metode Alokasi / Optimasi, Pemrograman . Teknik Perencanaan: Survei sosial, Economic base, Analisis antar industri, Indikator sosial, Distribusi pendapatan. Penginderaan jauh, Landuse analysis, Analisis potensi, PERT/CPM, Flowcharting. Konsep Sistem: Pengertian sistem, Wilayah sebagai suatu Sistem, Sibernetik-Holistik-Sistematik, Analisis Sistem, Simulasi Sistem, Aplikasi Komputer. Model EE dalam Perencanaan pengembangan wilayah pedesaan : Pendekatan sistem & problem solving; Goals of RP: Economic goals, Ecological goals; Planning and development models; Cost-Benefit & Optimization. System Simulation instrument in RP: Pendekatan sistem dalam RP: Multi-objective problems, Objective function, Constraint equation, Mathematical modelling. Economic resource allocation: Cost of production, Pricing strategies, Allocation principles, Programming. Decision analysis: Analysis of public project: Uncertainty, Consideration in project planning, Experimentation. Resources use efficiency (RUE) dalam pengembangan wilayah: Prinsip-prinsip RUE, Landasan ekologis, Landasan ekonomis, Landasan teknis , Model-model simulasi RUE. Model Perencanaan Kawasan pembangunan: Kawasan Potensial, Kawasan Strategis, Kawasan Andalan, KIMBUN: Kawasan Industri Masyarakat Perkebunan, KIMAS: Kawasan Industri Milik Masyarakat, KAPET: Kawasan Pengembangan Ekonomi Terpadu, AGROPOLITAN.

Dosen: Prof Dr Ir Sahri Muhammad, M.S.
 Prof Dr Ir Budi Setiawan, M.S.

Referensi:

- 1) Kilkenny, Maureen. "Transport Costs and Rural Development." Working Paper 95-WP 133, Center for Agricultural and Rural Development, Iowa State University, 1995.
- 2) Greenwood, Michael J. and Gary L. Hunt. "Migration and Employment Change: Empirical Evidence on the Spatial and Temporal Dimensions of the Linkage." *Journal of Regional Science* 26(1986): 223-234.
- 3) Garofalo, Gaspar A. and Devinder M. Malhotra. "Effect of Environmental Regulations on State-Level Manufacturing Capital Formation." *Journal of Regional Science*, Vol. 35, No. 2, 1995, pp. 201-216.
- 4) Richardson, Harry W. "Competitive Versus Generative Growth." *Regional Growth Theory*, London, MacMillan, 1973, pp. 86-88.
- 5) Boadway, Robin W. and David E. Wildasin. "Market Failure and the Rationale for Government Intervention," in *Public Sector Economics*. Boston: Little, Brown, and Company, 1984, pp. 55-73.
- 6) Bartik, T.J. "The Market Failure Approach to Regional Economic Development." *Economic Development Quarterly*, Vol. 4, No. 4, 1990, pp. 361-370.
- 7) Stiglitz, Joseph E. "Markets, Market Failures, and Development." *American Economic Review*, Vol. 79, No. 2, 1989, pp. 197-203.
- 8) Kraybill, David S. and Bruce A. Weber. "Institutional Change and Economic Development in Rural America." *American Journal of Agricultural Economics*, Vol. 77, No. 4, 1995.
- 9) North, Douglas C. "Location Theory and Regional Economic Growth." *Journal of Political Economy*, Vol. 63, No. 3, 1955, pp. 243-258.

Benchmarking: OHIO STATE UNIVERSITY**EKONOMI-EKOLOGI HUTAN TROPIS****3 sks***Ecological-economics of Tropical Forest*

Setelah selesai mengikuti mata kuliah ini (pada akhir semester) diharapkan mahasiswa mampu untuk: (1). Memahami konsep-konsep pemanfaatan & pengelolaan SDA-Hutan, (2). Menjelaskan kembali beberapa kaidah dan prinsip pendekatan ekonomi dan ekologi dalam pengelolaan SDA-

Hutan, (3). Menjelaskan keterkaitan antara fungsi produksi dan fungsi ekologi dari ekosistem dan sumberdaya hutan

Pokok bahasan meliputi: Hutan dan lingkungan: Hutan sebagai ekosistem, Fungsi ekologi-hidrologi, Fungsi ekonomi. Prinsip-prinsip ekonomi: Struktur pasar dan demand produk dan jasa hutan, Produksi; biaya; dan supply, Prices in a “Free Enterprise” economy. Paradigma ekosistem dalam pengelolaan hutan: Kualitas dan karakteristik ekosistem hutan, Produktivitas, Stabilitas /Homeostasis, Sustainability. Pendekatan ekologi-ekonomi dalam pengelolaan hutan: Hutan sbg sistem ekonomi, Hutan sebagai sistem ekologi, Produksi dan konsumsi hasil hutan, Dampak lingkungan dan eksternalitas. Ekonomi produk-produk hutan: Kayu dan non kayu: Proses produksi & ekonomi produksi, Elastisitas permintaan, MEKANISME PASAR, Investasi. Ekonomi produksi hutan Timber: Faktor yang berpengaruh, Taxes, Analisis marginal dan Inp/outp decision, Analisis marginal dan multiple products, Financial objectives, Time preference, production decision dan rate of interest, Prices in a market economy. Ekonomi produksi hutan Non-Timber : Multiple uses, Public production & welfare, benefit/cost analysis, Water and watershed management, Forest based recreation, Cagar alam; Suaka marga satwa; Taman nasional; dll. Manajemen hutan: Tugas-tugas manajemen hutan, Regulasi & enforcement, Manajemen: Penyiapan kontrol dan revisi a business enterprise. Model Taman Nasional dan Wana Wisata di Indonesia: Konsep & batasan, Tujuan dan sasaran, Kebijakan regulasi, Dampak ekologi-ekonomi, Pemberdayaan wilayah/ masyarakat. Manajemen Agroforestry Systems: Konsep & batasan, Tujuan dan sasaran, Kebijakan regulasi, Dampak ekologi-ekonomi, Pemberdayaan wilayah/ masyarakat. Hutan lindung: Konsep & batasan, Tujuan dan sasaran, Kebijakan regulasi, Dampak ekologi-ekonomi, Perlindungan wilayah / masyarakat. HPH dan TPI: Hak Pengusahaan Hutan, Tebang Pilih Indonesia: Konsep & batasan, Tujuan dan sasaran, Kebijakan regulasi, Dampak ekologi-ekonomi, Pemberdayaan wilayah / masyarakat. Hutan Tanaman Industri: Konsep & batasan, Dampak ekologi-ekonomi, Pemberdayaan wilayah/masyarakat.

Dosen: Dr.Ir. Lily Agustina MS
Dr Ir Nuddin Harahap, M.S.

Referensi:

- 1) Bartczak, A. Forest non-market valuation studies in the Czech Republic, Hungary and Poland: a Review. <http://www.medforex.net/e45/2.Catania/Bartczak.pdf>

- 2) Costanza, R., 2004. Social Goals and Valuation of Ecosystem Services Ecosystems Journal. February 19,
- 3) Daly, H. E. & Farley, J. 2004. Ecological economics: Principles and applications. Washington, DC: Island Press.
- 4) Melichar, J., Scasny, M. Introduction to Non-Market Valuation Methods and Critical Review of Their Application in the Czech Republic . http://ies.fsv.cuni.cz/storage/sylab/127_ii-02melichar.pdf
- 5) Bihun, Y, 2004. "Principles of Sustainable Forest Management in the Framework of Regional Economic Development." From the Proceedings of the Fulbright Ukraine Conference on May 20-24, 2004, Skolje, Ukraine. In Publication. 12 pp
- 6) Polyakov, M. O. 1999. Valuation of Forest in Ukraine. Royal Institute of Technology. Retrieved 10/9/06. <http://web6.duc.auburn.edu/polyama/msc/thes.pdf>

Benchmarking: THE UNIVERSITY OF VERMONT.

EKOSISTEM DAN ANALISISNYA

3 sks

Ecosystem Analysis

The goals of this course are to provide an overview of the concepts and methods related to the analysis of ecosystem function and structure. The emphasis of this course will be on key ecological concepts relating to communities and ecosystems and the application of scientific methods to field research and whole ecosystem analysis.

Setelah selesai mengikuti mata kuliah ini (pada akhir semester) diharapkan mahasiswa mampu untuk: (1) memahami konsep-konsep ekologi dan ekosistem; (2) menjelaskan kembali beberapa kaidah dan prinsip pendekatan sistem dalam fenomena ekologi; (3) melakukan analisis ekologis dalam permasalahan LH; dan (4). Menjelaskan beberapa konsep dan instrumen analisis dalam kajian ekosistem.

Pokok bahasan meliputi: Pendahuluan: Filosofi dan konsep ekosistem dalam kajian SDA-LH; Sistem Ekologi ; Ekologi dan ekosistem, Materi, energi dan informasi. Sistem Ekologi: Interaksi populasi, Habitat dan tempat hidup, Adaptasi dan evolusi. Teknik dan metode analisis ekosistem: Ekologi kuantitatif, Kompetisi, eksploitasi. Sistem Lingkungan hidup: Arti dan makna lingkungan hidup sebagai suatu sistem, Kualitas lingkungan, Lingkungan hidup

sebagai sumberdaya, Kebutuhan dasar manusia, Interaksi manusia-lingkungannya, Neraca materi dan energi, Manfaat dan risiko lingkungan. Penerapan Konsep Ekosistem dalam Pengelolaan Pertanian: Agro-ekosistem: Productivity, Stability, Sustainability, Equity; b. Farming Systems. Penerapan Konsep Ekosistem dalam Pengelolaan Perikanan: Usaha perikanan sebagai suatu SISTEM, Identifikasi & deskripsi sistem, Flow-charting sistem, Pemodelan sistem: I-P-O, Feed-back loop. Penerapan Konsep Ekosistem dalam Pengelolaan Peternakan: Usaha perikanan sebagai suatu SISTEM, Identifikasi & deskripsi sistem, Flow-charting sistem, Pemodelan sistem: I-P-O, Feed-back loop. Penerapan Konsep Ekosistem dalam Pengelolaan Hutan: Usaha perikanan sebagai suatu SISTEM, Identifikasi & deskripsi sistem, Flow-charting sistem, Pemodelan sistem: I-P-O, Feed-back loop. Penerapan Konsep Ekosistem dalam Pengelolaan Pertambangan: Usaha perikanan sebagai suatu SISTEM, Identifikasi & deskripsi sistem, Flow-charting sistem, Pemodelan sistem: I-P-O, Feed-back loop. Penerapan Konsep Ekosistem dalam Pengelolaan Permukiman (URBAN): Usaha perikanan sebagai suatu SISTEM, Identifikasi & deskripsi sistem, Flow-charting sistem, Pemodelan sistem: I-P-O, Feed-back loop. Penerapan Konsep Ekosistem dalam Pengelolaan Lingkungan Industri: Usaha perikanan sebagai suatu SISTEM, Identifikasi & deskripsi sistem, Flow-charting sistem, Pemodelan sistem: I-P-O, Feed-back loop

Dosen: Dr.Ir. Didik Suprayogo, M.Sc.
Dr. Bagio Yanuwadi, M.Agr.Sc.

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1. Deaton, M.L. and Winebrake, J. 1999. Dynamic modeling of environmental systems. Springer, New York. 194 pp.
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10. White, I. D., Mottershead, D. N., Harrison, S. J. 1984. Environmental systems: an introductory text. Allen & Unwin, London. 495 pp.

Benchmarking: THE UNIVERSITY OF VERMONT.

EKONOMI SUMBERDAYA ALAM

3 sks

Natural Resources Economics

Setelah selesai mengikuti mata kuliah ini (pada akhir semester) diharapkan mahasiswa mampu untuk: (1). Memahami konsep-konsep ekologi-ekonomi dalam pemanfaatan & pengelolaan SDA, (2). Menjelaskan beberapa kaidah dan prinsip pendekatan ekonomi dan ekologi dalam pemanfaatan SDA, (3). Melakukan simulasi analisis eksternalitas pemanfaatan SDA

Pokok bahasan meliputi: SDA-Pembangunan-LH. Sistem ekonomi Sumberdaya Alam: Produksi-Konsumsi-limbah: Pengertian; sifat dan dimensi, Potensi Sumberdaya Alam Indonesia, Masalah pengembangan sumberdaya alam, Perspektif ekonomi dan ekologi. Pendekatan-pendekatan dan teknik-teknik analisis: Pengambilan keputusan over time: interest rate; compounding; discounting; Property right dan penggunaan SDA, Ekonomi kesejahteraan dan peranan pemerintah, Private vs public goods, Kegagalan mekanisme pasar. Sumberdaya dapat-habis & Kelangkaan Sumberdaya: Optimal depletion, Measures of Scarcity. Sumberdaya Renewable: Model of optimal uses, Problematik common-properties. Penggunaan sumberdaya alam Non-renewable (SDA-NR): Barang tambang sebagai non-renewable resources, Teori ekstraksi barang tambang, Struktur pasar dan strategi penggunaan SDA-NR, Uncertainty, Pertumbuhan ekonomi dan SDA-NR. Eksternalitas dan Polusi/pencemaran lingkungan. Taksonomi eksternalitas: Publik vs privat; eksternalitas dalam konsumsi; eksternalitas dalam produksi; internalisasi eksternalitas. Alternatif pengendalian eksternalitas: Pajak vs subsidi, Pajak vs baku mutu / standar Standar vs fees/penalties Fees for emissions. Marketable permits in externalities control: Tatanan kelembagaan, Karakteristik sistem permits, The ambient based systems, The emission based system, The offset system, Cost of alternative permit system.

Dosen: Dr.Ir. Nuddin Harahap, MS
 Prof.Dr.Ir. M. Muslich Mustajab, M.Sc.

Referensi:

- 1) Boggess, W., R. Lacewell, and D. Zilberman. Economics of Water Use in Agriculture. 1993.” In *Agricultural and Environmental Resource Economics*, G.A. Carlson, D. Zilberman, and J.A. Miranowski (Eds.), New York: Oxford University Press.
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- 3) Hanley, N., J.F. Shogren, and B. White. 1997. *Environmental Economics: In Theory and Practice*. New York: Oxford University Press.
- 4) Hartwick, J.M., and N.D. Olewiler. 1998. *The Economics of Natural Resource Use*. 2nd Edition, Massachusetts: Addison-Wesley.
- 5) Howitt, Richard. 1994. “Water Markets, Individual Incentives and Environmental Goals.” *Choice* (First Quarter 1994):5-9.
- 6) McNerney, J. 1981. Natural Resource Economics: the Basic Analytical Principle.” In John A. Butlin (ed.), *The Economics of Environmental and Natural Resource Policy*.
- 7) Perman, R., Y. Ma, and J. McGilvray. 1996. *Natural Resource and Environmental Economics*. London: Longman.
- 8) Rosegrant, M.W. 1997. Water Resources in the Twenty-First Century: Challenges and Implications for Actions.” Food, Agriculture, and the Environment Discussion Paper 20, IFPRI, March 1997.
- 9) Solow, Robert M. 2000. “Sustainability: An Economist’s Perspective.” In *Economics of the Environment: Selected Readings*. 4th Edition. Ed. R. N. Stavins. New York: Norton & Company.
- 10) Sterner. 2002. Policy Instruments for Environmental and Natural Resource Management. RFF and World Bank.
- 11) Tietenberg, T. 2008. *Environmental and Natural Resource Economics* (8th Ed.)1, Pearson Education, Inc.
- 12) Tom Tietenberg. 1996. *Environmental and Natural Resource Economics*, 4th. edition, HarperCollins Publisher Inc.

Benchmarking: OREGON STATE UNIVERSITY

BIODIVERSITAS & BIOLOGI LINGKUNGAN **3 sks**
Biodiversity & Environmental Biology

Pokok bahasan meliputi: Introduction – Definition: genetic, species and ecosystem diversity; Biogeographical classification; Value of biodiversity: consumptive use, productive use, social, ethical aesthetic and option values; Biodiversity at global, national and local levels; Indonesia as a mega-diversity nation; Hot-spots of biodiversity; Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts; Endangered and endemic species of Indonesia; Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

Biodiversity and Its Value. Biodiversity: Issues, Concerns, Management. Biodiversity: Creation and Destruction, Geologic and Biogeographic Forces, Ecological Processes, Threats, Current Status. Conservation Strategies, Past, Present, and Future: Attitudes about Conservation, Emerging Conservation Movements, Forging a National Strategy. Managing Forests: Ecological History and Principles, From Natural Forests to Plantations, Consequences of Forest Conversion for Biodiversity, Recommendations for Forest Reserve Management, Recommendations for Multiple Use Management. Managing Aquatic Ecosystems: Ecological Principles, Threats to Aquatic Biodiversity, Conserving Biodiversity in Aquatic Systems. Monitoring: The Monitoring/Adaptive Management Cycle, Monitoring Programs, Guidelines for Successful Monitoring. Conserving Biodiversity: Barriers and Priorities.

DOSEN: Dra. Endang Arie Susilaningsih, Ph.D.
 Dr Ir. Aminuddin Affandie, M.S.

Referensi:

- 1) Lambertini, M. 2000. A Naturalists Guide to the Tropics. University of Chicago Press, Chicago, IL. 312 pp.
- 2) Primack, R. and R. Corlett. 2005. Tropical Rain Forests. An Ecological and Biogeographical Comparison. Blackwell Publishing, Malden, MA. 319 pp.
- 3) Riordan, Timothy and Susanne Stoll-Kleemann. 2002. Biodiversity, Sustainability and Human Communities: Protection beyond the Protected. Cambridge University Press.
- 4) Richard B. Primack. 2002. Essentials of Conservation Biology. Sinauer Associates, Inc. Publishers. 698 pp. ISBN 0-87893-719-6.

Benchmarking: UNIVERSITY OF MARYLAND

DEGRADASI SUMBERDAYA ALAM & LINGKUNGAN 3 sks
Natural Resources and Environmental Degradation

Pokok bahasan meliputi: Fundamental Concepts and Principles and a review of how the environment works; the flow of energy through food webs and the movement of materials in the ecosystem, law of tolerance, law of the minimum, and other related concepts and principles. Water resources: The role of water in the environment, human uses of water, water supply and availability and importance of and threats to ground water reserves. Lakes, Coastal and Marine Waters. The lecture focuses on surface water pollution, their causes and consequences, management strategies with special focus on selected lakes, coastal areas and the Indonesia Ocean. Solid and Hazardous Wastes. This lecture is a presentation of the nature, properties and sources of solid wastes and toxic chemicals, the requirements of their safe disposal and the factors that cause disposal problems to remain unresolved.

Air Pollution: air pollution sources, effects on human health and other species, and possible long-term impact on climate. Indoor air pollution will be an interesting sub-topic. Deforestation: the causes and consequences of large-scale removal of forest cover in the region. Mitigating measures as applied by different countries will be presented. Biodiversity Loss: the richness of the flora and fauna in Asia and the Pacific and the imperatives for their conservation-especially the important genetic resources, i.e. wildlife. Food Resources and Hunger: the efforts, the resources and the constraints in feeding the growing human populations. Land Degradation: The soil and how it is being ruined by erosion, water logging, salinization and application of farm chemicals. Special attention is given to soil that is acknowledged to be of poor quality than elsewhere in the world. Causes of Environmental Degradation: The various factors said to be the causes for environmental degradation in the region: rapid population growth, poverty, economic growth, and institutional and policy failures. The validity of each argument will be examined during the discussions. Costs of Environmental Degradation: the economic and the non-economic costs of environmental degradation in Indonesia region.

Dosen : Dr. Ir. Sudarto, MS
Prof. Ir. Yeny Risjani DEA, PhD.

Referensi:

1. Bailey, R.G. 1998. Ecoregions: the Ecosystem Geography of the Oceans and Continents. Spring, NY. 176 pp.

2. Barrow, C.J. 1991. Land Degradation: Development and Breakdown of Terrestrial Environments. Cambridge Univ. Press. 295 pp.
3. Chapin, F.S. III, P.A. Matson, and H.A. Mooney. 2002. Principles of Terrestrial Ecosystem Ecology. Springer, N.Y. 436 pp.
5. FAO, 1996. Assessment of status of human-induced soil degradation in southeast Asia (Assod):Process report in proceeding of the expert consultation of the Asian network on problem soils. Manila Philipines,23-27 October,1975 : 39p
6. FAO, 1994 . Land degradation in South Asia :Its severity, Causes and effect upon the people world soil resources reports No.78.ISSN 0532-0488:102p
7. FAO, 1994. The collection any Analysis of land degradation data , Report of the expert consultation of the Asian network on problem soils. Bangkok, Thailand ,25-29 October 1993:261p
8. Nyle C. Brady, 2001. Natural and properties of soils. 10th edition. Prentice – hall of India, Private Limited, New Delhi - 11001: 621p.
9. Schlesinger, W.H. 1997. Biogeochemistry: an Analysis of Global Change (2nd ed.). Academic Press, NY. 588 pp.

**Benchmarking: Mahidol University International College,
Faculty of Science, Faculty of Environment and Resource
Studies, Mahidol University**

ECOLOGICAL - ECONOMIC SDAL

3 sks

The overall objective of the course is to help students see how natural resource, environmental and ecological economics approaches can be used to work at solving problems. Students will learn the "economic way of thinking." This is all about we frame things, how we organize our thinking. This will help students entering the workforce, or developing their own businesses, and as citizens, to better understand the conversation about issues like energy, water, biodiversity, fish and wildlife, land use, global climate change, and, especially, about long term sustainability and the eco-approach to business and industry, economy and community.

Setelah selesai mengikuti mata kuliah ini diharapkan mahasiswa mampu untuk: (1). Memahami konsep-konsep pemanfaatan & pengelolaan SDALH, (2). Menjelaskan kembali beberapa kaidah dan prinsip pendekatan ekonomi dan ekologi dalam pengelolaan SDALH, (3). Menjelaskan keterkaitan antara fungsi produksi dan fungsi ekologi dari ekosistem dan sumberdaya ALAM

Pokok bahasan meliputi: Pendahuluan: Pembangunan dan lingkungan: Sistem ekologi dan ekosistem, Fungsi ekologi-sosial, Fungsi ekonomi. Sistem ekonomi Sumberdaya Alam : Produksi - Konsumsi-limbah: Pengertian; sifat dan dimensi, Potensi Sumberdaya Alam Indonesia, Masalah pengembangan sumberdaya alam, Perspektif ekonomi dan ekologi. Pendekatan-pendekatan dan teknik-teknik analisis: Pengambilan keputusan over time: interest rate; compounding; discounting; Property right dan penggunaan SDA, Ekonomi kesejahteraan dan peranan pemerintah, Private vs public goods, Kegagalan mekanisme pasar. Sumberdaya dapat-habis & Kelangkaan Sumberdaya : Optimal depletion, Measures of Scarcity. Sumberdaya Renewable: Model of optimal uses, Problematik common-properties. Penggunaan sumberdaya alam Non-renewable (SDA-NR): Barang tambang sebagai non-renewable resources, Teori ekstraksi barang tambang, Struktur pasar dan strategi penggunaan SDA-NR, Uncertainty, Pertumbuhan ekonomi dan SDA-NR. Eksternalitas dan Polusi / pencemaran lingkungan a. Taksonomi eksternalitas: Publik vs privat; eksternalitas dalam konsumsi; eksternalitas dalam produksi; internalisasi eksternalitas; b. Alternatif pengendaliannya: Pajak vs subsidi, Pajak vs baku mutu / standar Standar vs fees / penalties Fees for emissions. Marketable permits in externalities control : a. Tatanan kelembagaan, b. Karakteristik sistem permits, c. The ambient based systems, d. The emission based system, e. The offset system, f. Cost of alternative permit system

Dosen: Prof. Dr. M. Maryunani SE, MS
 Prof Dr.Ir. Soemarno, MS
 Dr Ir Rini Dwi Astuti MS

Referensi:

1. Barbier, E. and G. Heal, "Valuing Ecosystem Services," *Economists' Voice*, Berkeley Electronic Press, Feb. 2006
<http://www2.gsb.columbia.edu/faculty/gheal/Economists-Voice-published.pdf>
2. Castle, E., R. Berrens and S. Polasky. 1996. "Economics of Sustainability" *Natural Resources Journal* 36 (Fall): 715-730.

3. Cleveland, C. J., Costanza, R., Hall, C., Kaufmann. 1984. Energy and the U.S. Economy: A Biophysical Perspective. *Science* 225: 890-897.
4. Costanza, R. "The Real Economy," Vermont Commons <http://vtcommons.org/node/356>
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6. Czech, B. 2003. Technological progress and biodiversity conservation: a dollar spent a dollar burned. *Conservation Biology* 17(5):1455-1457.
7. Daly, H. E., and J. Farley. 2003. *Ecological economics: principles and applications*. Island Press, Washington, DC.
8. Goodstein, E. 2005. *Economics and the Environment*, chapter 8 "Measuring the Benefits of Environmental Protection," and chapter 9 "Measuring the Costs of Environmental Protection."
9. Gunderson, L.H. and C.S. Holling. *Panarchy: Understanding Transformations in Human and Natural Systems*. Washington, D.C.: Island Press, 2002.
10. Hall, C., Lindenberger, D., Kummel, R., Kroeger, T., Eichhorn, W. 2001. The need to reintegrate the natural sciences with economics. *BioScience* 51 (8): 663-673.
11. Harris, J. 2002. *Environmental and Natural Resource Economics: A Contemporary Approach*, chapter 2 "Sustainable Development" (WebCT file)
12. [Harris, J. M. Environmental and Natural Resource Economics: A Contemporary Approach. New York: Houghton Mifflin Company, 2006.](#)
13. Hawken, P. 1999. *Natural Capitalism*. Boston: Little Brown and Co.) chapter 1 "The Next Industrial Revolution." (library reserve)
14. Sagoff, M. 2004. Carrying capacity and ecological economics. In *Price, Principle, and the Environment*. Cambridge University Press.
15. Soderbaum, P. 1999. *Ecological Economics: Chapter 1: Environmental and Other Problems*. Earthscan Publication Ltd, London.
16. Toman, Michael, 1994. "Economics and Sustainability: Balancing Tradeoffs and Imperatives" *Land Economics* 70: 399-413.

Benchmarking: UNIVERSITY OF NEBRASKA

ECOTOURISM**3 sks**

The course will introduce students to the history, concepts, principles, marketing, planning and management of ecotourism activities and development which promote cultural and environmental awareness and local economic benefits with an emphasis on non-western cultures.

Knowledge of current trends in ecotourism; the importance of the local ecology, culture, history and economic development balanced with a social responsibility; identification of ecotourism markets. Awareness of conserving natural resources and maintaining the integrity of the indigenous culture. Development of a feasibility study for potential ecotourism projects; Knowledge of tour planning and site development. Ecotourism: A Short Descriptive Exploration; Tourism, Parks, and Recreation: The New Alliance; Is Ecotourism Eco-friendly?; Ecotourism and Minimum Impact Policy; A Framework for Ecotourism" "Ecotourism in the Third World: Problems for sustainable development; Ecotourism A Sustainable Option?; Ecotourism and Natural Resource Protection: Implications of an Alternative Form of Tourism for Host Nations; Nature tourism: impacts and management; Paying the Price of Ecotourism; Ecotourism: A status report and conceptual framework; Towards a more desirable form of ecotourism; Ecotourism: Reworking the Concepts of Supply and Demand ; Marketing Protected Areas for Ecotourism: An Oxymoron?; Community Ecotourism.

DOSEN: PROF.DR. SURACHMAN, SE, MM
IR. J. ERNAWATI, MSP, PhD

Referensi:

1. Agardy, M.T. (1993). "Accommodating ecotourism in multiple use planning of coastal and marine protected areas" in *Ocean & Coastal Management* (20:3).
2. Andersen, D.L. (1994). "Developing Ecotourism Destinations: Conservation From the Beginning" in *Trends* (31:2).
3. Backman, K.F., B.A. Wright and S.J. Backman. (1994). "Ecotourism: A Short Descriptive Exploration" in *Trends* (31:2).
4. Baker, P. (1984) "Tourism, Parks, and Recreation: The New Alliance." *Parks and Recreation*. 19(10): 48-50, 70.
5. Barrus, J. (1995). "Is Ecotourism Eco-friendly?" in *Hawaii Business* (41).

6. Blane, J M. and R. Jaakson. (1994). "The Impact of Ecotourism Boats on the St. Lawrence Beluga Whales" in *Environmental Conservation* (21:3).
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8. Boo, Elizabeth. *Ecotourism: The Potentials and Pitfalls*, Vol 1. World Wildlife Fund. 1990.
9. Boyd, S.W., R.W. Butler and A. Perera. (1994). "Identifying Areas for Ecotourism in Northern Ontario: Application of a Geographical Information System Methodology in *Journal of Applied Recreation Research* (19:1).
- 10 Buckley, R. (1994). "A Framework for Ecotourism" in *Annals of Tourism Research* (21:3).
- 13 Cater, E. & Lowman G. eds. (1994). *Ecotourism A Sustainable Option?*. London: John Wiley and Sons
- 14 Cater, E. (1994). "Ecotourism in the Third World: Problems for sustainable development" in *Tourism Management*, April (14:2).
- 15 Ceballos-Lascurain, H. & and Johnsingh, A.J.T. (1995). "Ecotourism: An Introduction," in John A. Bissonette and Paul R. Krausman, eds., *Integrating People and Wildlife for a Sustainable Future*. Bethesda, Maryland: The Wildlife Society:
- 16 Chapman, D.M. and G.J. Armstrong. (1994). "Ecotourism--Defining the Ecotourist. *National Parks Journal*, February (38:1).
18. Fennell, David and Bryan Smale. "Ecotourism and Natural Resource Protection: Implications of an Alternative Form of Tourism for Host Nations." *Tourism Recreation Research*, Vol. 17. 1992.
19. Haysmith L. & Hunt, J.D. (1995). "Nature tourism: impacts and management" in R.L. Knight and K.J. Gutzwiller, eds., *Wildlife and Recreationists: Coexistence Through Management and Research*. Washington, D.C.: Island Press.
20. Honey, M. and A. Littlejohn. (1994). "Paying the Price of Ecotourism" in *Americas* (46:6).
21. Hvenegaard, G.T. (1994). "Ecotourism: A status report and conceptual framework" in *The Journal of Tourism Studies* (5:2).
22. Morrill, W.I. (1995). "The tourist safari hunter's role in conservation" in John A. Bissonette and Paul R. Krausman, eds., *Integrating People and Wildlife for a Sustainable Future*. Bethesda, Maryland: The Wildlife Society.

23. Norris, R. (1994). "Ecotourism in the National Parks of Latin America" in *National Parks*, January (68: 1 / 2)
24. Orams, M.B. (1995). "Towards a more desirable form of ecotourism" in *Tourism Management*, February (6:1)
26. Seidl, A. (1994). "Ecotourism: Reworking the Concepts of Supply and Demand" in *Trends* (31:2).
27. Shupe, S.J. (1995). "Community Ecotourism" in *Transitions Abroad*, May (18:6).
28. Weaver, D. (2008). *Ecotourism (2nd ed)*. Milton, Queensland, Australia: John Wiley & Sons Australia, Ltd. ISBN: 978-0-470-81304-1

Benchmarking: Northern Arizona University

EKOLOGI INDUSTRI

3 sks

The focus of industrial ecology is on the material and energy cycles that sustain our living "industrial ecosystems." These material and energy flows are primarily studied using the methods of life-cycle analysis. We will complete group projects in this class using the ideas of industrial ecology to study the overall environmental effects of emerging technologies and concepts that promise to change the industrial ecosystem to one that is more sustainable. The flows of materials and energy in industrial and consumer activities, of the effects of these flows on the environment, and of the influences of economic, political, regulatory, and social factors on the flow, use and transformation of resources. The objective of industrial ecology is to understand better how we can integrate environmental concerns into our economic activities."

THE life-cycle benefits of the wide scale adoption of a new technology or industrial ecology concept, ideas are not limited to the ideas below. This life-cycle analysis will include three stages of the technology's life cycle: manufacturing from raw materials, use of the product, and disposal of the product. If it is a concept, then the analysis will have to include every part of the cycle, and how it is or can be a "closed loop". By attempting to quantify the inputs, outputs and efficiencies in all three stages of the product's life, we gain a "systems" or "ecology" perspective of the product. The framework for this study will be a scenario of adoption, to be chosen by the students, which will allow us to compare the new technology to a currently used technology in order to determine the net environmental benefits.

Sustainable Agriculture: Industrial agriculture today is clearly not sustainable enough to feed present and future global populations; some say that industrial agriculture is the act of using land to convert oil to food. A project like this could focus on key issues like soil fertility, water usage, pesticides, fertilizers, the energy required and alternatives to fossil fuels, and how all of these could become part of a closed loop cycle.

White Light Emitting Diodes: LEDs are solid state lighting devices that turn electricity into light with little thermal inefficiency. Ultra-efficient white LEDs have been called the “holy grail” of modern electronics due to their potential to reduce electricity demands from lighting. By studying the material and energy inputs into the manufacturing of these products we can gain an understanding of the net benefits of large-scale adoption.

Biodiesel: Biodiesel is refined vegetable oil that can be used in place of normal diesel for heavy trucks, automobiles, and busses. The oils can be recycled frying oils from restaurants, oils from plants grown expressly for the purpose of biodiesel, or even possibly from algae grown on human wastewater. This technology has the possibility of reducing petroleum use and reducing the production of cancer causing pollutants.

Fuel Cells: Fuel cells produce electricity by combining fuel with oxygen through chemical conversion rather than combustion. This allows fuel cells to be very efficient. Fuel cells are envisioned as the future of energy producing technology and are expected to form the backbone of the coming “hydrogen economy.” Fuel cells are being developed for applications ranging from mobile phones to automobiles to power plants.

Hydrogen Economy: A concept that utilizes current infrastructure and new technologies to replace fossil fuels with hydrogen, Lester Brown deals with this concept in Plan B. It is clear that we will run out of oil, and the hydrogen economy is a much more sustainable option than coal. This project could examine the current infrastructure and be a feasibility study on how this could work as a cycle.

The Lifecycle of Recycled Materials: What happens to the waste that we recycle? How far does it travel, how much energy does it take to recycle it, and ship it? How does sending recyclables to other countries effect those economies? What are the alternatives? For example, the US is shipping mass amounts of scrap steel to China, we could examine this situation by answering this question. It would be interesting to complete a lifecycle analysis for these materials and propose alternatives.

Industrial Ecology in the Market: How could the idea of a “closed loop” system be applied to different industries? Some ideas: Apparel. Patagonia is a company working towards sustainability, Nike uses a some organic cotton. How could clothing and fabric manufacturers

create a closed loop? What would the lifecycle analysis look like? . New Urban Areas & Eco Villages: With increasing populations, urbanization and consumerism worldwide, energy demand has increased at extraordinary rates. Along with this growing demand is an unprecedented increase in the emission of carbon dioxide and other greenhouse gases and mounting public concern about their impact on the global environment. Metropolitan communities are at the center of this concern as every aspect of urban form and function influences energy consumption. Globally, urban areas account for 75% of all greenhouse gas emissions, the vast majority of which are energy-related. Fortunately, advances in the development of renewable energy and end-use technologies, distributed tri-generation and district energy systems, now enable cities to significantly increase energy reliability and security and reduce energy-related air emissions. The integration of these technologies and systems into urban designs that maximize co-location of uses and minimize the urban heat island effect, further increase their operating efficiencies. Under the industrial ecology umbrella, integrated urban design, coupled with strategies to: convert waste into energy; accelerate use of alternative fuels and transit; and increase green building construction, may reduce urban greenhouse gas emissions by 70%.

DOSEN : DR IR RUDY SOENOKO, M.ENG.
DR AMIN TRILAKSONO, M.SI.

Referensi:

1. Benyus, J. M. Biomimicry: Innovation Inspired by Nature Quill: New York, 1998.
2. Cincinnati J. 1993. Life Cycle Assessment: Inventory Guidelines and Principles (EPA 600/R-92/245).: U.S.EPA, Office of Research and Development, Risk Reduction Engineering Laboratory, February 1993.
3. Graedel, T.E. and Allenby, B., 1995. Industrial Ecology. Prentice Hall: Englewood Cliffs, NJ, 1995.
4. Hawken, P., Lovins, A. and Lovins, L.H. Natural Capitalism: Creating the Next Industrial Revolution, Little, Brown and Company: Boston, 1999.
5. Keoleian, G., Koch, J., Menerey, D. and Bulkley, J. Cincinnati. 1995. Life Cycle Design Framework and Demonstration Projects: Profiles of AT&T and Allied Signal (EPA/600/R-95/107). U.S.EPA, Office of Research and Development, National Risk Management Research Laboratory, July 1995.

6. Mary Ann Curran . 1996. Environmental Life-Cycle Assessment Ed., McGraw-Hill, New York
7. Socolow, R. C. Andrews, F. Berkhout, and V. Thomas. 1994. Industrial Ecology and Global Change. Ed. Cambridge University Press, 1994.
8. The Journal of Industrial Ecology (<http://mitpress.mit.edu/JIE> or <http://www.yale.edu/jie>)
9. U.S. Congress . 1992. Green Products by Design: Choices for a Cleaner Environment (OTA-E-541) U.S. Congress, Office of Technology Assessment, 1992.

Benchmarking: YALE UNIVERSITY

EKOLOGI MANUSIA

3 sks

Human Ecology & Sustainability

This course will introduce you to the study the study of humans as organisms and as a species in our environment – which is, of course, now effectively the entire earth. In this course, we will explore several approaches and key problems in this obviously ambitious but equally obviously necessary field. Human Ecology is the interdisciplinary study of the relationships between the human community and its environment. It crosses traditional academic and scientific boundaries and represents attempts to integrate scientific, behavioral, sociological, political, economic, and ethical functions in human relationships to the environment.

Setelah selesai mengikuti mata kuliah ini (pada akhir semester) diharapkan mahasiswa mampu untuk: (1) memahami konsep-konsep dan teori Ekologi Manusia; (2). menjelaskan kembali beberapa kaidah dan prinsip pendekatan ekologi manusia dalam pengelolaan SDA-LH; (3). melakukan simulasi analisis pembangunan dengan menerapkan paradigma ekologi manusia.

Pokok bahasan meliputi: Pendekatan ekologi manusia dalam perencanaan dan pengelolaan lingkungan. Perspektif ekologi- ekonomi: Paradigma ko-evolusioner, Daya dukung lingkungan hidup, Substitusi vs Komplementer, Optimisme teknologi vs Skeptisisme, Kaidah kekekalan energi, Entalpi dan Entropi, Entropi dan ekonomi, Apa itu Produktivitas?, Apa itu Stabilitas, Apa itu sustainability?. Interaksi Manusia – Lingkungan: Teori ekosistem, Teori-ekologi manusia, Teori sosio-teknologi, Teori ekologi budaya. Interaksi sosial dan dinamikanya: a. Stratifikasi, b. Teori interaksi sosial, a.

Altruisme; Egoisme dan Genetic fitness. Ekonomi dan Sosio-biologi : a. Dinamika sosial, b. Perubahan sosial. Strategi Investasi: Green taxes, Gradual eco-zoning, Natural capital depletion taxes, Link between Human and natural capital, Polluter-pays principles, Ecological tariffs, Property right regime, Resources utility.

DOSEN: PROF.DR. IR. KLIWON HIDAYAT, M.S.
DR IR. YAYUK YULIATI , M.S.

Referensi:

1. Diesendorf, M. and Hamilton, C. (eds.), Human Ecology, Human Economy. (Part 1). St Leonards, Allen and Unwin, 1997
2. Eckersley, R., (ed.), Measuring Progress: Is life getting better? Melbourne, CSIRO Publishing, 1998
3. Girardet, H., The Gaia Atlas of Cities: New directions for sustainable urban living, London, Gaia Books (revised edition), 1996
4. Gliessman, S.R., Agroecology: Ecological Processes in Sustainable Agriculture, Ann Arbour Press, 1997
5. Jordan, C.F., Working with Nature, Harwood Academic Publishers, 1998.
6. McMichael, A. J., Planetary Overload, Cambridge 1993
7. Moran, E. F. (2006). People and nature: An introduction to human ecological relations. Oxford: Blackwell Publishing.
8. White, R. (1991). Land use, environment, and social change: The shaping of Island County, Washington. Seattle: Univ. of Washington Press.
9. White, R., Urban Environmental Management: Environmental change and urban design, Brisbane, John Wiley and sons, 1994

**Benchmarking: WESTERN WASHINGTON UNIVERSITY:
HUXLEY COLLEGE OF THE ENVIRONMENT**

EKOLOGI PANGAN & GIZI
Food Ecology & Nutrition

3 sks

Course content: Food, Ecology and Nutrition: Balanced diets, reliable food sources, clean drinking water, stable agricultural systems fed by predictable water flow, and plant pollinators all contribute to the stability and

well-being of a populace's nutritional health. Caloric intake alone is not a sufficient indicator of an individual's or a society's nutritional status. Healthy populations require healthy environments and sufficient nutrients to meet basic dietary needs. Ecosystems Health and Monitoring : Healthy ecosystems are important to life on Earth. They provide priceless services such as air purification, water filtration and food production, and they support a tremendous diversity of plant and animal species.

Dosen: Prof Ir Hariyono, M.App.Sc., Ph.D.
Dr Ir. Soedarminto MS

Referensi:

1. Watts, Michael .J. 1987. [Conjunctures and Crisis: Food, Ecology and Population, and the Internationalization of Capital.](#) Journal of Geography, v86 n6 p292-99 Nov-Dec 1987.
2. ECOLOGY OF FOOD AND NUTRITION JOURNAL. ISSN: 1543-5237 (electronic) 0367-0244 (paper) . Publication Frequency: 6 issues per year . Subjects: Anthropology - Soc Sci; Food Chemistry; Publisher: Routledge.

Benchmarking: The Earth Institute, Columbia University.

EKONOMI SUMBERDAYA HUTAN
FOREST RESOURCES ECONOMICS

3 sks

The goal of this course is to provide students with the foundations of the economic tools and models for conducting analysis of forestry and natural resource issues. **Specific Objectives:** (1) apply economic tools to make natural resource management decisions which will most effectively meet public and private goals; (2) identify and evaluate costs, benefits, and tradeoffs of alternative resource utilization strategies.

Course content: PART I Balancing Economy and the Environment : Introduction to Forest and Natural Resource Economics ; Economics of Markets ; Externalities and Market Failure ; Nonmarket Valuation . PART II Resource Utilization : Economics of Timber Harvesting ; Economics of Regulatory Compliance ; Forests in Rural Economic Development ; Forests in a Global Economy .

Part III. ECONOMIC CONTEXT FOR ECOSYSTEM MANAGEMENT : Historical Economic Background ; Environmental vs. Ecological Economics ; Positivism vs. Subjectivism ; Concepts of Value ; Sustainability ; Neoclassical View ; Ecological Economics View ; The Safe Minimum Standard; Measuring Economic Benefits ; Monetary Measures ; Energy Metrics ; Multiple Criteria ; Components of Ecosystem Value ; Nonmarket Valuation of Ecosystem Benefits ; Estimating Tradeoffs and Values

Dosen: Dr Ir Rini Dwi Astuti MS
Dr Ir Nuddin Harahap MS

Referensi:

1. Ian Hodge. 1995. *Environmental Economics: Individual Incentives and Public Choices*. St. Martin's Press, New York.
2. David Klemperer. 1996. *Forest Resource Economics and Finance*, McGraw-Hill, New York.
3. Wood, Christopher A. 1994. Ecosystem Management: Achieving the New Land Ethic. *Renewable Resources Journal*. 12(1):6-12.
4. Shaw, W. 1984. Problems in Wildlife Valuation in Natural Resource Management. In: *Valuation of Wildland Resource Benefits*. G. Peterson and A. Randall (eds.). Westview Press, CO. Society of American Foresters. 1993. Task Force Report on Sustaining Long-term Forest Health and Productivity. Bethesda, MD. 83 pages.
5. Solow, Robert M. 1974. The Economics of Resources or the Resources of Economics. *American Economic Review*. 64:1-14.
6. Solow, Robert M. 1993. An Almost Practical Step Toward Sustainability. *Resources Policy*. 19(9):162-172.
7. Svedin, Uno. 1985. Economic and Ecological Theory: Differences and Similarities. *Economics of Ecosystem Management*. (eds.) D.O. Hall, N. Myers and N.S. Margaris. Dordrecht, The Netherlands: Dr W. Junk Publishers.
8. Palmquist, Ray. 1991. Hedonic Methods. In: *Measuring the Demand for Environmental Improvement*. Branden and Kolstad, eds. North-Holland: Elsevier Science Publishing Co.
9. Pearce, David and R.K. Turner. 1990. *Economics of Natural Resources and the Environment*. Baltimore: John Hopkins University Press.

10. Pearse, Peter H. and T.P. Holmes. 1993. Accounting for Non-Market Benefits in Southern Forest Management. *Southern Journal of Applied Forestry*. 17(2):84-89.
12. Robertson, F. Dale. 1992. Ecosystem Management of the National Forests and Grasslands. Memo of June 4, 1992 to Regional Foresters and Station Directors.
13. Munda, G., P. Nijkamp, P. Rietveld. 1994. Qualitative Multicriteria Evaluation for Environmental Management. *Ecological Economics*. 10:97-112.

Benchmarking: North Carolina State University, Department of Forestry.

EKOSISTEM LAHAN BASAH
WETLANDS ECOLOGY & MANAGEMENT

3 sks

Course objectives: This course has several objectives. First, the material presented in this course is intended to provide you with an introduction to the biogeochemical processes that form wetlands and their associated plant and animal communities. Second, this course is intended to introduce you to many of the most important issues pertaining to wetland ecology and management currently being addressed by scientists and governments around the world. Third, the readings in this course are intended to provide you with opportunities to evaluate ecological concepts associated with wetlands and discuss your insights in an open classroom forum. Last, the wetland monitoring assignment you will prepare for this class is intended to strengthen your critical thinking and analysis skills. It is my intent that at the end of this course you will have a well developed appreciation for the biogeochemical, ecological, societal, and regulatory aspects of wetland ecosystems

Course content: What's a wetland and why should we care? Liquid and landscapes: wetland hydrology and geomorphology . Mud and molecules: wetland soils and biogeochemistry. Throwin' it all away: wetland creation, restoration, and management. Wetland Values; Wetland Classification; Sawah-ecosystem; Wetland Hydrology; Wetland Soils; Wetland Biogeochemistry ; Wetland Communities; Wetland Losses; Wetland Ecosystem Development: Succession; Wetland Ecosystem Function: Productivity & Energy Flow; Wetland Remediation; Wetland Wildlife; Sampling Techniques; Wetland Management.

Dosen: Prof Dr Ir M.L. Rayes, MSc.
Dr. Luqman Hakim, M.Sc.

Referensi:

1. Baird, A.J. 1997. Continuity in Hydrological Systems. In: Contemporary Hydrology (ed. R.L. Wilby). John Wiley & Sons, Ltd., England
2. Mitsch, W. J. and J. G. Gosselink. 2001. Wetlands. (3rd ed.) Van Nostrand Reinhold Publishers
3. Schaetzl, R. and Anderson, S. 2005. Soils: Genesis and Geomorphology. Cambridge University Press, NY.
4. Tiner, R.W., Jr., and Veneman, P.L.M. 1995. Hydric Soils of New England. University of Massachusetts Extension, Revised Bulletin C-183R, Amherst, MA. 28 pp.

Benchmarking: DUKE UNIVERSITY

EMERGENCY MANAGEMENT SYSTEM 3 sks

Course Objectives: Accidents and emergency situations have plagued man since the beginning of history and will undoubtedly occur during our conceivable future. Armed with knowledge and skills for managing such occurrences can lessen their impacts on society. This course presents the theories, principles, and approaches to emergency management. The philosophy of Comprehensive Emergency Management will be discussed with the four attendant steps which include mitigation, preparedness, response, and recovery. An analysis of past disasters will be presented along with their impacts on policy formation leading up to the current FEMA all-hazards approach. The role, duties, and importance of the Emergency Manager will be discussed throughout the semester. Finally, legal issues involving emergency management will be presented.

COURSE CONTENT: Introduction to Emergency Management; The Function and Evolution of Emergency Management; Organizing and Planning in Emergency Management; Governmental Roles in Emergency Management; Earthquakes and Volcanoes; Hurricanes and Floods; Tornadoes & Wildfires; Hazardous Materials Incidents; Disaster Mitigation and Hazard Management; Air Disasters; Oral Presentations; Planning, Training, and Exercising; Structural Failures; Oral Presentations; Managing Disaster Response Operations; Public Health Emergencies; Oral Presentations; All-Hazards

Programs; Recovery from Disaster; Legal Aspects of Emergency Management.

Dosen: Dr. Agung Permana MS

Referensi:

1. Platt, R. H. (1999). *Disasters and Democracy*. Washington, D.C.: Island Press.
2. FEMA (1998). *The Emergency Program Manager*. Washington, D.C.: Government Publishing.
3. Waugh, William & Hy, Ronald. (1990). *Handbook of Emergency Management*. Westport, CT: The Greenwood Press.
4. Kaplan, Laura G. (1996). *Emergency and Disaster Planning Manual*. New York: McGraw-Hill.
5. Henry W. Fischer, III-2 nd ed. (1998). *Response to disaster; Fact versus Fiction and its perpetuation, The Sociology of Disaster*.

Benchmarking: Arizona State University.

ENVIRONMENTAL LABELLING (EL). 3 sks

This course is aimed to provide students with the recent global trends and significance of environmental design and green manufacture in industry; ensure that students are aware of the regulatory requirements of European Union (EU), China, USA, Japan, and other regions on Green design and manufacture; provide students with a holistic approach to green design and manufacture, and to address issues such as: environmental impact; product design, use, and life; technology capabilities; and business benefits; enable students to contribute to society by reducing environmental impact throughout the complete product life cycle by better product design and use.

Course content: Environmental labeling programs and environmental certification schemes are two tools that have been used to promote environmental responsibility within industry. They are largely voluntary programs that provide consumers with environmental information. By enabling environmental criteria to be considered during purchasing decisions, labeling and certification programs help consumers to “vote through the marketplace” for more environmentally responsible products. Some proponents suggest that these voluntary systems may obviate the need for some environmental regulations. Indeed, many governments are considering restructuring their environmental regulation regimes around these voluntary programs.

Environmental labeling: The ISO (International Organization for Standardization) has developed standards for the following three types of environmental labeling programs.

Dosen: Dr Ir Sudiarso MS

Referensi:

1. Davis M.L. and Masten S.J., Principles of Environmental Engineering and Science, McGraw-Hill, 2004.
2. Ulrich K.T. and Eppinger S.D., Product Design and Development, McGraw-Hill, 2003.
3. J. Rodrigo, Electrical and Electronic: Practical Design Guide, F. Castells University Rovira I Virgili, Tarragona, Spain, 2002.
4. H. Lewis and J. Gertsakis, Design + Environment: A Global Guide to Design Greener Goods, Greenleaf Publishing Ltd, 2001.

WORLD WIDE WEB HOME PAGE ADDRESS:

Benchmarking: <http://www.gen.gr.jp>

ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)

Principle of Environmental Management System of ISO14001. Development and setting of environmental policy, environmental management system planning. EMS implementation and operating, EMS checking and correction, Management review, including management audit.

The objective of the course introduce students to the major environmental concepts and issues confronting managers working in corporations, businesses, government, industries, and non-profit groups; to be able to design environmental management strategies that reduce environmental impacts, optimize resource use, promote waste reduction and recycling, prevent pollution, and involve public stakeholders, leading to superior environmental and bottom-line performance. The course includes guest speakers, class exercises, role playing, and a student group project—EMS planning for our case study firm.

Pokok bahasan meliputi: Introduction and course overview. Policy background of EMS: UULH dan peraturan perundangan yang berlaku di Indonesia. Environmental management systems overview: ISO 14000 and

other EMS frameworks; EMS elements. Management Practice & the Environment; Toward a Sustainable Society. Introduction to ISO 14001 & Other Environmental Management Systems. ISO 14001: Implementation and Operation. ISO 14000 Guidelines. EMS auditing, and certification. Environmental Aspects I: air pollution. Environmental Aspects II: surface water pollution. Environmental Aspects III: land use, groundwater and solid waste. Regulatory processes: Clean Air Act, Clean Water Act, and EPA (AMDAL). Green Engineering I: life cycle issues. Management I: EMS impact on operations – quality, capacity, and supply-chain management. Management II: EMS impact on marketing and finance. Implementing EMS in practice. EMS and Occupational and Public Health & Safety. Putting the Pieces Together: EMS, strategic planning, management integration, and planned organization change.

Dosen: Dr. Ir. Arief Rachmansyah
Dr. Ir. Imam Santoso MS

Referensi:

1. Principles of Environmental Management; The Greening of Business; by Rogene A. Buchholz; Second Edition, Prentice Hall, 1998 (Required).
2. ISO 14001 Implementation Manual; by Gayle Woodside, Patrick Aurricchio, and Jeanne Yturri; McGraw Hill, 1998.
3. Ibbotson, Brett, and John-David Phyper, eds. 1996. *Environmental Management in Canada*. Toronto: McGraw-Hill Ryerson Limited.
4. Welford, Richard. 1996. *Environmental Strategy and Sustainable Development: The Corporate Challenge for the Twenty-First Century*. New York: Routledge.
5. Juran, J.M., "Quality Control Handbook", McGraw Hill, 1988
6. Menon, H.G., "TQM in New Product Manufacturing", McGraw Hills, 1992
7. Soin, S.S., "Total Quality Control Essentials", McGraw Hill, 1992
8. King, B., "Better Designs in Half the Time", GOAL/QPC, 1989
9. Phadke, M.S., "Quality Engineering Using Robust Design", Prentice Hall, 19892.
10. ISO 9001 Quality System Standards
11. ISO 14001 Environmental Management System.

Benchmarking: University of New Orleans; Environmental Management.

ENVIRONMENTAL PERFORMANCE EVALUATION 3 sks

At the end of this course, students will be able to: describe the key steps in an EPE model explain the role of EPE in developing, maintaining and improving an EMS identify a range of performance indicators select suitable indicators to track environmental performance.

Course content: [Environmental Management](#); [Awareness to ISO 14001](#); [Environmental Legislation](#); [Performance Evaluation](#); [Climate Change](#); [EU Emissions Trading Scheme](#); [WEEE & ROHS Directive Awareness](#); [Environmental Review](#); [Implementing ISO 14001](#); [ISO 14001 Internal Auditor](#); [ISO 14001 Lead Auditor](#); [Auditor Conversion to ISO 14001](#); [Changes To ISO 14001](#).

Dosen: Eko Ganis SE.Ak, M.Com(Hons)., Ph.D.

Referensi:

- 1 1. ISO/TC207/SC4/JWG. ISO 14031: 1999(E) - Environmental Performance Evaluation – Guidelines. Canadian Standards Association.
- 2 2. ISO/TC207/SC4/JWG. ISO/TR 14032: 1999 - Examples of Environmental Performance Evaluation (EPE). Canadian Standards Association.
- 3 3. Kuhre, W. Lee. ISO 14031- Environmental Performance Evaluation (EPE): Practical Tools for Conducting an Environmental Performance Evaluation. Prentice Hall, Upper Saddle River, NJ. 1998.
- 4 4. ISO 14031: Environmental Performance Evaluation . By David Putnam, P.Eng., CEA, Altech Environmental Consulting Ltd.

Benchmarking: SGS United Kingdom Ltd. **Training Services**
FREEPOST SCE7430. Camberley. Surrey, GU15 3BR
United Kingdom.

EPIDEMIOLOGI LINGKUNGAN

3 sks

Environmental Epidemiology

Tujuan mata kuliah ini: to give students an understanding of the main themes in environmental epidemiology, with particular emphasis on methods of investigation, including those of time-series and spatial analysis.

It covers pollution of the air, water and land, of ionizing and non-ionizing radiation, and the investigation of disease clusters. Emphasis is given to critical interpretation of scientific evidence relating to potential environmental hazards to health.

Pokok bahasan: the uses of epidemiology and appreciate the issues to be considered before undertaking an epidemiological study; the use of measures of disease frequency (prevalence and incidence), measures of effect (e.g. rate/risk ratios and rate/risk differences) and measures of public health impact (e.g. population attributable risk fraction); The principles and relative merits of different study designs and be aware of the main analytic methods available; The uses, strengths and limitations of routine data sources in both developed and developing countries; The concepts and implications of sampling error, bias and confounding in epidemiological studies and be aware of the strategies available to deal with them; The concepts of misclassification and validity of disease and exposure measurements, and appreciate the principles and practice of disease screening; The issues that need to be considered when judging whether there is a causal link between exposure and disease; The critical evaluation of the results and interpretations of published epidemiological studies; choice of study design appropriate to address particular epidemiological questions.

Dosen: Prof dr M. Aris Widodo. SpF.,PhD.
Prof Dr Ir Ika Rochjatun S.

Referensi:

1. Astrakianakis G, Seixas NS, Ray R, et al. Reduced risk of lung cancer among female textile workers exposed to endotoxin. *J Natl Cancer Inst* 2007;99:357-64.
2. Boice JD. Chapter 15: Ionizing Radiation. In Schottenfeld D, Fraumeni JF Jr (eds.). *Cancer Epidemiology and Prevention*. Third Edition. Oxford University Press. New York, New York, 2006.
3. Consonni D, Pestori AC, Zochetti C, et al. Mortality in a population exposed to dioxin after the Seveso, Italy accident in 1976: 25 years of follow-up. *Am J Epidemiol* 2008;167:847-58.
4. Friessen MC, Davies HW, Teschke K, et al. Impact of the specificity of the exposure metric on exposure-response relationships. *Occup Environ Med* 2007; 18:88-94
5. Kopecky KJ, Stepanenko V, Rivkind N, et al. Childhood Thyroid Cancer, radiation Dose from Chernobyl, and Dose Uncertainties in

- Bryansk Oblast, Russia: A Population-Based Case-Control Study. *Rad Res* 2006;166:367-374.
6. MacKenzie WR, Hoxie NJ, Proctor ME, et al. A massive outbreak in Milwaukee of Cryptosporidium infection transmitted through the public water supply. *N Engl J Med* 1994;331:161-7.
 7. McCauley L, Anger WK, Keifer M, et al. Studying health outcomes in farmworker populations exposed to pesticides. *Environ Health Perspect* 2006;114:953-60.
 8. Meejer JD, Rossano MG, Protas B, et al. Cadmium, lead, and other metals in relation to semen quality: human evidence for molybdenum as a male reproductive toxicant. *Environ Health Perspect* 2008;116:1473-9.
 9. Merrill RM. *Environmental Epidemiology: Principles and Methods*. Sudbury, MA: Jones & Bartlett Publishers, 2008, pp 3-35
 10. Miller KA, Siscovick DS, Sheppard L, et al. Long-term exposure to air pollution and incidence of cardiovascular events in women. *N Engl J Med* 2007;356:447-58.
 11. Villanueva CM, Kantor KP, Grimalt JO, et al. Bladder cancer and exposure to water disinfection by-products through ingestion, bathing, showering, & swimming in pools. *Am J Epidemiol* 2007;165:148-56.

**Benchmarking: WASHINGTON STATE UNIVERSITY
Department of Environmental Health**

**ETIKA LINGKUNGAN
ENVIRONMENTAL ETHICS**

3 sks

The major objectives are to (1) gain an understanding of the field of moral philosophy as it appertains to environmental ethics; (2) gain an understanding of the context of environmental, personal and professional ethics ; (3) become familiar with the use of ethical theory in environmental analysis; (4) To understand the major applications of ethics to environmental ; (5) be introduced to some of the major alternatives in ethical theory in environmental policy; (6) be able to incorporate environmental ethics into professional judgments in environmental decision.

Course content: Introduction to ethical theory: A general discussion of the major fields of moral theory. The distinction between personal, professional

and public ethics will be discussed. The modern and post-modern paradigm of scientific reductionism will be examined.

A review of general philosophical ethics: A discussion of how ethics in general relates to environmental policy analysis. A discussion of homocentric, biocentric and ecocentric theory to environmental policy.

Applications of ethics to environmental policy: Discussion of how to apply ethical theory to environmental issues. An historical review of ethics in environmental policy. Animal rights, ecofeminism, deep ecology, and social ecology. The application of moral theory to ecology and ecology to moral theory. Ecology and ethics in environmental policy. Can there be a monist theory of environmental ethics?

A discussion of the land ethic: A general discussion of the application of ethical theory to environmental policy. Environmental activism and the role of personal ethics in environmental policy.

Dosen: Prof Dr M. Tohir Luth MA.
Dr Ir L. Agustina MS

Referensi:

1. Armstrong and Botzler (editors). 1993. *Environmental Ethics: Divergence and Convergence*. McGraw-Hill.
2. Donald VanDeVeer and Christine Pierce (editors) 1994. *The Environmental ethics and Policy Book: Philosophy, Ecology, Economics*. Wadsworth Publishing.
3. Pojman (editor). 1994. *Environmental Ethics: Readings in Theory and Application*. Jones and Bartlett Publishers.
4. Bormann and Kellert (editors) *Ecology, Economics, Ethics: The Broken Circle*. Yale.
5. Engel and Engel (editors) *Ethics of Environment and Development: Global Challenge and International Response*. Arizona.
6. Ferre and Hartel (editors) *Ethics and Environmental Policy: Theory Meets Practice*. Georgia.
7. Gruen and Jamieson (editors) *Reflecting on Nature: Readings in Environmental Philosophy*. Oxford.
8. Pojman (editor) *Environmental Ethics: Readings in Theory and Application*. Jones and Bartlett.
9. Scherer (editor) *Upstream/Downstream: Issues in Environmental Ethics*. Temple.
10. Sterba (editor) *Earth Ethics: Environmental Ethics, Animal Rights, and Practical Applications*. Prentice-Hall.

11. Elliot (editor) 1995. *Environmental Ethics*. Oxford University Press.
12. Soule and Lease (editors) 1995. *Reinventing Nature?: Responses to postmodern deconstruction*. Island Press.

Benchmarking: University of Colorado

EVALUASI KEBIJAKAN LINGKUNGAN **3 sks**
ENVIRONMENTAL POLICY ANALYSIS

Upon completion of this course, you will be able to: Articulate the role and responsibilities of the policy scientist/ analyst in advancing knowledge and practice in environmental and natural resource decision-making. Differentiate among methods used to synthesize knowledge, forecast results, analyze programs, and evaluate outcomes of environmental and natural resource policies. Critically analyze various natural resource and environmental policy analyses. Identify and carry out key aspects of a policy analysis study including preparation and presentation of an analysis of a natural resource or environmental policy or program.

Course content: Introduction to Policy Analysis: Process & Participants ; Political Environment for Policy Analysis ; Role of the Policy Analyst; Analysis Overview ; Define the Problem Construct Policy Alternatives; Data Collection Overview ; Focus Groups and Nominal Group Design; Interviews, Observations and Other Methods ; Mail Surveys and the Delphi technique; Benefit Transfer ; Ecosystem Valuation ; Evaluation Criteria; Sampling and Data Quality ; Data Analysis; Comparing alternatives ; Presenting Analysis Results; Policy Analysis Presentations; Policy Analysis Presentations.

Dosen: Dr. Imam Hanafie MS
 Dr Ir N. Hanani MS

Referensi:

1. Cohen, Steven (2006) *Understanding Environmental Policy*. New York: Columbia University Press.
2. Drysek, John S. (1997) *The Politics of the Earth: Environmental Discourses*. (New York: Oxford University Press).
3. Durant, Robert, Daniel Fiorino, and Rosemary O'Leary (eds) (2004) *Environmental Governance Reconsidered: Challenges, Choices, and Opportunities*. Cambridge, MA: The MIT Press.

4. Field, Barry C. (2007) Environmental Policy: an Introduction. Long Grove, IL: Waveland Press.
5. Lutter, Randall and Jason Shogren (eds) (2004) Painting the White House Green. Washington, DC: Resources for the Future Press.

**Benchmarking: School of Planning, College of Design,
Architecture, Art, and Planning; University of Cincinnati**

FARMING SYSTEM MANAGEMENT

3 sks

Course content: Farming Systems - Components - need for farming systems approach - cropping systems - Importance of cropping systems - objectives and scope in the tropics with special reference to Indian conditions - principles - definition of terms - multiple, relay, inter, mixing and multistoreyed cropping - Population and geometry of planting of associated crops - competitive and complementary effects. Other components - dairy - poultry - rabbits – piggery - sheep and goat - sericulture - agriculture - horticulture - agroforestry - fisheries - value based products - mushroom culture - biogas production.

Factors influencing choice and size of enterprises in an integrated farming system - merits of integrated farming systems - organic recycling - research allocation to different enterprises - evaluation - research methodology for station and onfarm trials - inter disciplinary approach in farming system research - economics of farming system - role of farming system management in sustainable agriculture.

Practical work: Indices for biological and economic evaluation of cropping system - preparation of cropping system under different resources - methodology for on - farm research- review of cropping system experiments in India and Tamil Nadu - components of farming system and their contribution. - planning Cropping system to suit resource availability for selected intensive cropping system. Collection of data on resource availability-allocation and use efficiency - analysis of risks involved and opportunity available – piggery - sheep and goat - rabbits - dairy - sericulture - fisheries. - Suggestion for development and alternate farming systems.

**Dosen: Prof Dr Ir H. Thamrin S, M.S.
Dr Ir Agus Suryanto MS**

References

1. Francies, C.A. (1986). Multiple Cropping System Mac. Millan – New York.
2. Palaniappan. SP (1985). Cropping Systems in the Tropics – Principles and management. Willey Easterns Limited. New Delhi.
3. Ruthenberg. H. (1980). Farming Systems in the tropics. Oxford Clarendon Press.
4. Shaner, W.W., P.G. Philip and W.R. Schmehl. 1982. Farming systems research and development. A guideline for development countries. Westview Press. Boelder Colorado.
5. Zandstra, H. E.Price, J. Lisinger and R.S. Morris, 1981. Methodology for on-farm cropping systems. Research, IRRI. Los Banos – Philippines.

Benchmarking : Tamil Nadu Agriculture University

GIS IN FOR ENVIRONMENTAL APPLICATIONS 3 sks

The applications of GIS for environment managements are endless and varied in environmental spheres and specific environmental issues. GIS for environment assists the use of location-based data with management tools in the decision making processes that together can form an environmental management strategy.

The specific objectives of the course include: (1) Introduce principles and steps of spatial modeling with GIS.; (2) Provide students with a series of practical exercises to develop technical proficiency in spatial modeling and database development for environmental applications using GIS; (3) Understand the utilities and limitations of GIS in environmental management decision-making; (4) Have the ability to discuss the application of GIS techniques to real-world environmental issues; (5) Develop skills in using GIS software tools for advance analysis and modeling techniques; (6) Introduce graphical modeling and customization possibilities to solve custom tasks in GIS.

Course content: The principles and elements of Global Positioning systems (GPS) ; Identification of the errors associated with GPS systems ; The concepts and functioning of Differential Global Positioning Systems (DGPS) ; The concept of spatial variability ; The scope of precision farming and the

know the precision farming cycle; The potential benefits of Precision Agriculture ; Real-time field mapping and grid soil sampling ; Variable rate nutrient and other agri-chemical digital application maps; Monitor and map yield data and post processing of the yield maps ; Work with precision farming software (i.e.) SGIS suite of software (Farm GPS, Grid Sampler, Farm Lab, SGIS, and Farm HMS).

GIS Modeling Theory, Classifying Models, Modeling Process . Air Pollution Modeling with GIS: Modeling source factors, atmosphere factors and environmental factors, statistical and dynamic models. Modeling of Environment Spatial Databases: Spatial database modeling process, geodatabase model schemas samples.

Dosen : Prof Dr Ir. Heny Pramoedya, MS.
 Dr Ir Sudarto, S.U
 Dr Ir M. Ruslin Anwar MS

Referensi:

1. Andy Mitchell. The ESRI Guide to GIS Analysis, vol.1: Geographic Patterns and Relationships, ESRI Press, Redlands, CA, 1999.
2. Burgh P.A. 1986. Principles of geographical Information System for Land Resources Assessment, Clarendon Press, Oxford.
3. Burrough P A 2000 P A McDonnell . 2000. Principles of Geographical Information systems, London: Oxford University Press
4. Haywood.L, Comelius.S and S. Carver. 1988. A Introduction to Geographical Information Systems, Addison Wiley Longmont, New York.
5. Juliana Maantay and John Zeigler. 2006. GIS for the Urban Environment. ESRI Press, Redlands, CA, 2006
6. Longley, P. A., M. Batty. 1997. Spatial Analysis: Modelling in a GIS Environment.

**Benchmarking: CENTRE FOR ENVIRONMENT,
 UNIVERSITY OF TORONTO**

GLOBAL WARMING**3 sks**

There have been few environmental issues that have polarized a nation as much as Global Warming. From those who predict that the Earth will eventually get so hot that it will self-incinerate to those who believe that the entire notion of a warming planet is something manufactured by political operatives anxious to please their constituents, Global Warming is an issue that has been and will continue to be hotly contested in both public and private arenas.

This course presents the science behind the forecast of global warming to enable the student to evaluate the likelihood and potential severity of anthropogenic climate change in the coming centuries. An overview of the physics of the greenhouse effect including comparisons with Venus and Mars; overview of the carbon cycle in its role as a global thermostat; predictions and reliability of climate model forecasts of the greenhouse world; an examination of the records of recent and past climates.

Course content: "What is the Greenhouse Effect". The nature of light as an energy carrier through vacuum, and with the nature of gases, pressure, and the structure of the atmosphere. How light interacts with matter, which explains why only certain wavelengths are absorbed and also, parenthetically, the "ultraviolet catastrophe" paradox which led to the development of quantum mechanics. How blocking outgoing infrared light by CO₂ can make the earth hotter.

"Fossil Fuel and the Carbon Cycle", and how the greenhouse effect theory and CO₂ cycling fit into geologists' theories about the long-term climates of Earth, Venus, and Mars. Where the energy stored in fossil fuels comes from, and something about relative warming potential of different forms of energy. "Clearly for planetary good housekeeping we should watch where we put our carbon" (Weiner, *The Next One Hundred Years*). "The Forecast". The mechanics of how climate models work, the sources of uncertainty in climate forecasting, and discuss records of recent and past climates, including records of abrupt climate change in recent climate of the past.

Specific discussion topics: Introduction to Global Warming; Understanding Climatology; The Greenhouse Effect; Where is all the Hot Air Coming From?; The Effects of Global Warming - Part 1 ; The Effects of Global Warming - Part II ; The Scientific Support for Global Warming ; The Argument Against Global Warming; Our Response Thus Far; Doing our Part.

Dosen: Dr Lukman Hakim MSc

Reference:

- 1) Anderson, J. W. 2001. How the Kyoto Protocol developed: a brief history. in M. A. Toman, editor. *Climate Change Economics and Policy*. Resources for the Future, Washington, DC.
- 2) Ashmore, M. R. 2005. Assessing the future global impacts of ozone on vegetation. *Plant, Cell and Environment* 28:949-964.
- 3) Chameides, W. L., P. S. Kasibhatla, J. Yienger, and H. Levy, II. 1994. Growth of continental-scale metro-agro-plexes, regional ozone pollution and world food production. *Science* 264:74-77.
- 4) Kolstad, C. D., and M. A. Toman. 2001. The economics of climate policy. in M. A. Toman, editor. *Climate Change Economics and Policy*. Resources for the Future, Washington, DC.
- 5) Mack, R. N., D. Simberloff, W. M. Lonsdale, H. Evans, M. Clout, and F. I. Bazzaz. 2000. Biotic invasions: Causes, epidemiology, global consequences, and control. *Ecological Applications* 10:689-710.
- 6) Millenium Assessment. 2005. *Ecosystems and Human Well-Being: Synthesis*. Island Press, Washington, DC.
- 7) Polasky, S., C. Costello, and A. Solow. 2005. The economics of biodiversity. in J. Vincent and K.-G. Maler, editors. *The Handbook of Environmental Economics*. Elsevier, North Holland.
- 8) Socolow, R., R. Hotinkski, J. B. Greenblatt, and S. Pacala. 2004. Solving the climate problem: technologies available to curb CO2 emissions. *Environment* 46:8-19.
- 9) Swanson, T. 1997. *The Biodiversity Convention: a meeting of the minds?* in *Global Action for Biodiversity*. Earthscan.
- 10) Vitousek, P. M. 1994. Beyond global warming: ecology and global change. *Ecology* 75:1861-1876.
- 11) Vitousek, P. M., C. M. D'Antonio, L. L. Loope, and R. Westbrooks. 1996. Biological invasions as global environmental change. *American Scientist* 84:468-478.

Benchmarking: UNIVERSITY OF CHICAGO.**HUKUM LINGKUNGAN****3 sks***Environmental Justice*

The objective of this course is to motivate student to question history and authority, expand student view of race, gender, class and the

environmental to a global scale and perspective. Since the linking of social and environmental justice movement is relatively young this course will be an exciting opportunity to work as a group to clarify and promote the issues surrounding the environmental justice movement.

Mata kuliah ini juga dirancang untuk memahami perkembangan kebijakan dan hukum penyelenggaraan pengelolaan SDA & lingkungan hidup dalam rangka pembangunan berkelanjutan yang berwawasan lingkungan pada norma hukum dengan memperhatikan tingkat kesadaran masyarakat dan perkembangan lingkungan global serta perangkat hukum internasional yang berkaitan dengan SDA & lingkungan hidup. Menelaah tentang peraturan perundangan yang bersangkutan, yang tumbuh dan berkembang sesuai dengan masalah-masalah lingkungan yang aktual untuk memperoleh cara pengaturan dan implementasinya yang tepat serta menjawab tantangan-tantangan pada era otonomi daerah dan era globalisasi.

Dosen: Prof Dr I Nyoman Nurjaya, SH, M.Hum.
Dr Latief Fariqun, SH MS

Referensi:

1. Bowen, William. 2002. "An Analytical Review of Environmental Justice Research: What do we really know?" *Environmental Management* 29 (1): 3-15.
2. Brechen S., P. Wilshuen, C. Fortwangler, P. West. 2003. "The Road Less Traveled: Towards Nature Protection with Social Justice." In *Contested Nature: Promoting International Biodiversity with Social Justice in the Twenty-fifth Century*. S. Brechen, P. Wilshuen, C. Fortwangler, P. West, eds, pp 251-270. Albany: State University of New York Press.
3. Brechen, P. Wilshuen, C. Fortwangler, P. West, eds. 2003. *Contested Nature: Promoting International Biodiversity with Social Justice in the Twenty-first Century*. Albany: State University of New York Press.
4. Fortwangler, C. 2003 "Incorporating Social Justice and Human Rights into Protected Area Policies". In *Contested Nature: Promoting International Biodiversity with Social Justice in the Twenty-fifth Century*. S. Brechen, P. Wilshuen, C. Fortwangler, P. West, eds, pp 25-40. Albany: State University of New York Press.
5. Keck, M. 1995. "Social Equity and Environmental Politics in Brazil: Lessons from the Rubber Tappers of Acre" *Comparative Politics* 27 (4): 409-424.

6. Pellow, David. 2000. "Environmental Inequality Formation," *American Behavioral Scientist* 43(4): 581-601.
7. Peluso, Nancy Lee, 2000. "Coercing Conservation?: The Politics of State Resource Control" *Global Environmental Change* 3:2 (June):199-218.
8. Szasz, Andres and Michael Meusser. 2000. "Unintended, Inexorable: The Production of Environmental Inequalities in Santa Clara County, California," *American Behavioral Scientist* 43(4): 602-632.
9. Talyor, Doreceta. 2000. "The Rise of the Environmental Justice Paradigm: Injustice Framing and the Social Construction of Environmental Discourses," *American Behavioral Scientist* 43(4): 508-566.
10. Taylor, Dorceta. 2000. *Advances in Environmental Justice: Research, Theory, and Methodology*. *American Behavioral Scientist* 43(4): 602-632

Benchmarking: Tropical Resources Institute. Yale School of Forestry and Environmental Studies. YALE UNIVERSITY.

KEMISKINAN DAN LINGKUNGAN HIDUP **3 sks**
Poverty and Environmental Problems

Sustainable Development 1: Growth and the Environment. The Simple Economics of Easter Island: A Ricardo-Malthus Model of Renewable Resource Use ; Positive Model of Growth and Pollution Control. Structural Change and Sustainable Development. *Economic Development and Environmental Sustainability*.

Sustainable Development 2: Poverty and the Environment. Where Development Can or Cannot Go: The Role of Poverty-Environment Linkages, Managing Environmental Wealth for Poverty Reduction. Poverty and Environmental Partnership.

Humans & Sustainability : Living Sustainably ; Population Growth , Economics, Poverty & Globalization ; Resources , Pollution , Environmental & Resource Problems , Cultural Changes & Sustainability , Are We Living Sustainably? , Economy & the Environment , Economics & Environmental Quality , Poverty & Environmental Quality , Environmental Sustainable Economies .

Environmental Issues: Environmental degradation - deforestation - urbanization - population explosion and other environmental hazards - depleting natural resources and relationship between poverty and environmental degradation and vice versa - competition, man's thoughtless exploitation of natural resources - Hiroshima and Nagasaki - Bhopal tragedy - Gulf war - oil pollution. Principles of Environmental Impact Assessment and Environmental Monitoring and Auditing. Environmental ethics and laws - Earth summits - Role of Governmental & Non-Governmental agencies for environmental monitoring.

Dosen: Dr Ir Djoko Kustiono, M.S.
Dr. Khusnul Azhar, SE., M.S.

Referensi:

1. Bodley, John H. 2008. *Anthropology and Contemporary Human Problems* (5th edition). Altamira Press: Lanham, MD.
2. Gardner, G. T. & Stern, P. C. (2002). *Environmental problems and human behavior*, 2nd ed. Boston: Pearson Custom Publishing. 371 pp. ISBN: 0536686335 .
3. Hannen, Nora and Wilk, R.(editors), 2006. *The Environment in Anthropology: A Reader in Ecology, Culture, and Sustainable Living*. New York University Press: New York, NY.
4. López, R. (1998). "Where Development Can or Cannot Go: The Role of Poverty-Environment Linkages," in B. Pleskovic and J. Stiglitz, eds., *Annual Bank Conference on Development Economics 1997*, The World Bank, Washington, D.C.
5. López, R. (2007). "Structural Adjustment and Sustainable Development", in G. Atkinson, S. Dietz and E. Neumayer, *Handbook of Sustainable Development*, Edward Elgar, Cheltenham, UK and Northampton, MA, USA
6. Myers, Norman and Kent, Jennifer. 2005. *The New Atlas of Planet Management*. University of California Press: Berkeley, CA.
7. Pearce, David (2005). *Managing Environmental Wealth for Poverty Reduction*. Poverty and Environmental Partnership, MDG7 Initiative, UNDP, New York.

Benchmarking: THE UNITED NATION UNIVERSITY

KESEHATAN LINGKUNGAN
Environmental Health

3 sks

Upon completion of this course, you will be able to: Define the major sources and types of environmental agents; Discuss the transport and fate of these agents in the environment; Identify the carriers or vectors that promote the transfer of these agents from the environment to the human; Describe how these agents interact with biological systems, and the mechanisms by which they exert adverse health effects; Explain and use models for prediction of the magnitude of adverse effects in biological systems; Identify and define the steps in the risk-assessment and risk-management processes; Describe the steps in the regulatory process in terms of risk assessment and risk management and identify current legislation and regulation regarding environmental issues; Identify significant gaps in the current knowledge base concerning the health effects of environmental agents and identify areas of uncertainty in the risk-assessment process.

Course Topics :

Human impact on the environment ; Environment-human interaction ; Environmental impact on humans ; Exposure, dose, response ; Environmental toxicology ; Environmental carcinogenesis ; Risk assessment and management ; Indoor and outdoor air pollution ; Environmental health economics and policy ; Occupational health ; Food- and water-borne disease ; Municipal, industrial, and hazardous waste ; Environmental justice and policy ; Risk communication.

Dosen : Dr.dr Jack Roebiyoso, M.Kes
 Prof dr M. Aries Widodo MS, Ph.D. SpF.

Referensi:

1. Blumenthal, D. S., and Ruttenber, A. J. (1995). *Introduction to environmental health*. Second Edition. New York: Springer.
2. Lippmann, M. (Ed.). (1992). *Environmental toxicants: Human exposures and their health effects*. New York: Van Nostrand Reinhold.
3. Moeller, D. W. (1997). *Environmental health* (Revised ed.). Cambridge: Harvard University Press.
4. Moore, G. S. (1999). *Living with the earth: Concepts in environmental health science*. Boca Raton: Lewis Publishers.
5. Nadakavukaren, A. (2000). *Our global environment: A health perspective* (5th ed.) Prospect Heights: Waveland Press, Inc.

6. Philp, R. B. (1995). *Environmental hazards and human health*. Boca Raton: Lewis Publishers.
7. Yassi, A., Kjellstrom, T., de Kok, T., Guidotti, T. L. (2001). *Basic environmental health*. New York: Oxford University Press.

Benchmarking: Johns Hopkins University

KONSERVASI SUMBERDAYA ALAM
Conservation of Natural Resources

3 sks

Course content: Natural Resource Conservation and Management: Past, Present and Future; Economics, Ethics, and Critical Thinking: Tools for Creating a Sustainable Future; Lessons from Ecology; The Human Population Challenge; World Hunger: Solving the Problem Sustainably; The Nature of Soils; Soil Conservation and Sustainable Agriculture; Integrated Pest Management; Aquatic Environments; Managing Water Resources Sustainability; Water Pollution; Fisheries Conservation; Land Management; Forest Management; Plant and Animal Extinction; Wildlife Management; Sustainable Waste Management; Air Pollution; Pollution: Global Problems; Minerals, Mining, and a Sustainable Society; Nonrenewable Energy Resources: Issues and Options.

Dosen: Dr Ir Sudarto SU
 Dr M Luqman Hakim, M.Sc.

Referensi:

1. Daniel D. Chiras, John P. Reganold, & Oliver S. Owen. 9th Edition *Natural Resource Conservation: Management for a Sustainable Future*. Prentice Hall Publisher. ISBN: 0-13-145832-9
2. Cutter, S. and W. Renwick. 2004. **Exploitation, Conservation, Preservation: A Geographic Perspective on Natural Resource Use**. Wiley & Sons. 4th Edition
3. Sterner. 2002. *Policy Instruments for Environmental and Natural Resource Management*. RFF and World Bank.
4. Rasband and Garrett, 2007. *A New Era in Public Land Policy: The Shift Toward Reacquisition of Land and Natural Resources*, Rocky Mountain Mineral Law Institute, Vol. 53 (2007) (PP.1-35); *Matter of Smith v. Town of Mendon*, 4 N.Y. 3d 1

5. Soulé M. E. and B. A. Wilcox. 1980. *Conservation Biology: An Evolutionary-Ecological Perspective*. Sinauer Associates. Sunderland, Massachusetts.
6. Soule, Michael E. (1986). *Conservation Biology: The Science of Scarcity and Diversity*. Sinauer Associates. pp. 584. [ISBN 0878937951](#), 9780878937950 (hc).7. Hunter, M. L. (1996). *Fundamentals of Conservation Biology*. Blackwell Science Inc., Cambridge, Massachusetts., [ISBN 0-86542-371-7](#).
8. Groom, M.J., Meffe, G.K. and Carroll, C.R. (2006) *Principles of Conservation Biology* (3rd ed.). Sinauer Associates, Sunderland, MA. [ISBN 0-87893-518-5](#)
9. van Dyke, Fred (2008). *Conservation Biology: Foundations, Concepts, Applications, 2nd ed.*. Springer Verlag. pp. 478. [ISBN 978-1-4020-6890-4](#) (hc).

Benchmarking: University of Texas at Brownsville (UTB)

KUALITAS LINGKUNGAN
ENVIRONMENTAL QUALITY

3 sks

The quality of the natural environment as a whole should be protected and improved. We must maintain a balance between healthy natural systems and what we need to survive and enjoy life.

Kriteria penilaian kualitas lingkungan : dirancang untuk memahami tentang teknis-teknis analisis kimia, fisik dan biologis, termasuk pemanfaatan berbagai macam indikator biologis. Memahami data/informasi standar serta analisis statistika yang lazim. Memahami tentang teknis-teknis analisis untuk aspek sosial ekonomis, sosial budaya dan kesehatan sesuai dengan kelaziman pada aspek tersebut. Memahami interpretasi data dan teknik pelaporan dalam suatu studi kasus tertentu.

Air Quality: Characteristics & Sources of Air Pollutant, Air Quality Standard, Air Quality monitoring: Sampling of ambient air, air quality monitoring system, stack sampling, continuous emission monitoring, remote sensing for air monitoring and analysis. Soil Quality: Introduction; Physical properties of soil: Soil texture, Physical nature of soil separates, mineralogical and chemical composition of soil, Soil textural class, structure of mineral soils: Sources of soil organic matters, Influence of soil organic matter on soil properties; Effects of fertilizers, pesticides etc. on soil; Origin, nature and classification of soil parent material; Soil micro animals; Characteristics of

saline and sodic soil; Peat soils. Water and Waste water Quality: (a) Physical characteristics and quality of water and wastewater; (b) Chemical quality and characteristics of water and water; (c) Microbiology of Water and wastewater: Introduction, Microbes, virus, Bacteria, Fungi, Protozoa, Algae and Cyanobacteria and Other Microorganisms (rotifers, helminthes, crustaceans, worms etc), (d) Microbial characteristics and quality of water and wastewater, (e) BOD (definition, equation and sag curve), COD, DO, ThOD, TKN, PKN etc, (f) Water Quality Standard: Bases, WHO Guidelines, Bangladesh water quality standard, (g) Test and Analysis for Water Quality, (h) Water Quality Monitoring: Bio monitoring, Chemical versus biological pollution monitoring, plant bioassay, fish bioassay, algal bioassay.

FUNDAMENTALS OF ENVIRONMENTAL QUALITY: Introduction to Environmental Quality. Environmentalism; Studying the Environment: The Scientific Method; *EQ Issue/Event*; Environmental Science and the General Public; Defining Pollution and Contamination. Classifying and Characterizing Pollutants; Human Exposure to Soil Contaminants; Federal Environmental Legislation; Major Environmental Issues in Soil Science; *Overview of Risk Assessment*.

Our Environment: Atmosphere and Hydrosphere. Atmosphere - Atmospheric Layers and Their Properties; Atmospheric Cycles; Characterizing the Atmosphere; Atmospheric Pollution; Hydrosphere - Properties of Water; Components of the Hydrologic Cycle; Water Use; Legislative Efforts Related to Water Quality Issues; Water Pollution; Our Environment: Soil Ecosystems. The Soil Environment - Soil Physical Attributes; Particle Size, Texture, Structure, Density, Solids, Carbon, Water, Climate; Soil Physical Processes; Gas Transfer, Water Movement, Erosion.

Soil Chemical Attributes; Clay Minerals, Organic Matter, Acidity, Salinity, Sodicity, Redox; Soil Chemical Processes; Weathering, Exchange, Sorption. Soil Biological Attributes; Plants, Animals, Microorganisms; Soil Biological Processes; Factors, Pathogens; Soil Development and Land Use; Soil Quality.

Environmental Testing: Soils, Waters, Plants, Wastes, Organics. Agronomic and Environmental Testing Practices for Soils; Environmental . Testing Practices for Waters; Plant and Organic By-Product Analysis; Environmental Testing Practices for Air and Atmospheric Deposition

NUTRIENTS, MANAGEMENT AND ENVIRONMENTAL QUALITY. Soil Nitrogen and Environmental Quality: Nitrogen in the Environment - Origin and Distribution; Effects on Human and Animal Health. Eutrophication; Atmospheric Effects; Risk Assessment. Soil Nitrogen Cycle -

Mineralization; Nitrification, and Immobilization; Gaseous Losses; Leaching and Erosion Losses; Biological N Fixation; N Additions to Soils.

Nutrient Management Planning: Nutrient Management Planning - Definition, Basic Components, Other Land Uses; Nutrient Management Practices for N - Principles, Availability, Sources, Application Methods, Conservation, Nonagricultural Settings; Nutrient Management Practices for P - Principles, Testing, Sources, Application Methods, Conservation.

INORGANIC AND ORGANIC CONTAMINANTS: Trace Elements: Trace Element Categories and Importance; Sources of Trace Elements for the Terrestrial Environment; Adverse Effects. Trace Element Cycles in Soils; Bioavailability of Trace Elements in Soils; Radionuclides. Organic Chemicals in the Environment: Organic Chemicals - Sources, Categories. Effects - Human, Animal and Wildlife, Aquatic Organisms, Groundwaters, Plants, Microorganisms; Predicting Organic Chemical Fate - Uptake, Solubility, Half-life, Hydrolysis, Volatilization, Photolysis, Sorption-Desorption, Abiotic and Biotic. Response of Organic Chemicals in the Environment; Organic Chemical Analysis - Sample Collection and Preparation, Identification and Quantification. Alternative Pest Management and Plant Breeding Strategies - Integrated Pest Management, Biological Control, Genetically Modified Crops.

The Atmosphere: Global Climate Change And Acidic Deposition: The Climate and Global Climate Change - Greenhouse Effect and Evidence of Greenhouse Gases, Carbon Dioxide, Methane, Nitrous Oxide, Uncertainties and Complexities. Acidic deposition - Legislative Acts and Programs, Sources and Distribution; Human Health, Material and Cultural Resources, Ecosystems, Reversing the Effects of Acidic Deposition.

Remediation of Soil and Groundwater. Inorganic Contaminants - Soil and Water. CONTAMINANT ASSESSMENT AND REMEDIATION. Remediation of Soil and Groundwater: Organic Contaminants - Soil and Water. Risk Assessment: Risk Perception; Carcinogenicity; Risk Assessment - Exposure Assessment, Dose-Response Assessment, Risk Characterization; Ecological Risk Assessment; Uncertainty.

DOSEN: PROF. IR. YENY RISJANI, DEA, PHD
DR.IR. BUDI PRASETYA, MS

Referensi:

1. The Journal of Environmental Quality (JEQ) published by ASA, CSSA, and SSSA.
2. The Journal of [Environmental Quality Management](#). Wiley Periodicals, Inc., A Wiley Company.

3. **AN INTERNATIONAL JOURNAL: MANAGEMENT OF ENVIRONMENTAL QUALITY. ISSN: 1477-7835.**
4. FEIGENBAUM, A. V. 2008. *Total Quality Control, vol. 1.* USA: McGraw-Hill Companies. 863 s. ISBN 0-071-62628-X.
5. FEIGENBAUM, A. V. 2008. *Total Quality Control, vol. 2.* USA: McGraw-Hill Companies. 526 s. ISBN 0-07-162629-8.
6. KOLEKTIV, E. 2009. Eco-Management and Audit Scheme. URL: <http://www.iema.net/ems/emas>.
7. KOLEKTIV, E. 2009. Integrated Pollution Prevention Control. 2009. URL: <http://www.epa.ie/whatwedo/licensing/ippc/>.

Benchmarking: UNIVERSITY OF WYOMING

LANDUSE PLANNING & BASIN MANAGEMENT

3 sks

Rural development strategies in developing countries increasingly focus on watershed management. A watershed is an attractive hydrological unit for conserving natural resources and raising agricultural productivity. Socioeconomic factors, however, make successful watershed management very difficult.

Course content: Socioeconomic Issues in Watershed Management:

Upstream-downstream relationships in watershed management; Constraints to investment at an individual landholding level; Collective action problems.

Biophysical Issues in Watershed Management: Water; Soil; Threats to sustainable land use; Soil erosion; Assessing the risk of erosion. **Biophysical Treatments and Technical Interventions:** Introduction to soil and water conservation practices; Vegetative cover; Examples of farming practices that increase vegetative cover and/or conserve soil; Artificial land transformations (soil conservation structures and barriers); Water disposal and water harvesting; Indigenous soil and water conservation practices.

Assessment of physical resources of the land using the latest criteria like remote sensing - Factors influencing the land use pattern - Land use capability classification - usefulness for agriculture - Evaluation of land use pattern - scope - utility - present status - physical biological and other related factors. Watershed management - scope - present status with special reference to drylands - rain water management technology in different watersheds - Pre and post sowing moisture conservation technology - fitting cropping system based on the rainfall pattern, edaphic and socio economic factors of the farmer. Need for alternate land use systems in different watershed areas - waste lands -

marginal lands - polluted soils due to industrial effluent and coastal swamp areas - recent concepts and trends in dryland watershed cropping - agrihorticultural system for deep vertisols and alfisols - agrisylviculture for marginal soils - tree farming - nutrient management in tree crop culture - shifts in the pattern of farm utilisation. Other alternate proposition - integrated farming system - scope and concepts for sustaining productivity and income - role of organisation - Governmental - Co-operative sector in promoting watershed management in a collective way over larger areas - Futurology.

Dosen: Dr. Ir. M.Bisri, MS
Ir. Didik Suprayogo MSc, PhD.

Reference

1. Bator & Worthington. Arid land irrigation in Developing Countries. Pevengu Press.
2. FAO. 2000. Land and Water Linkages in Rural Watersheds Electronic Workshop: Conclusions and Recommendations. FAO, Rome, September 18 – October 27, 2000. <http://www.fao.org/landandwater/watershed/watershed/papers/conclusions.pdf>
3. John Mathew, R. Water Resources Evaluation, Use and Management. John Wiley and Sons.
4. Kerr, John, and Ganesh Pangare. 2001. Water Harvesting and Watershed Management. 2020 Focus 9 (Overcoming Water Scarcity and Quality Constraints), Brief 9 of 14. International Food Policy Research Institute, Washington DC.
5. Michael, A.M. 1984. Irrigation Theory and Practice. Tata Mc Grow Publishing Company Ltd.
6. Palaniappan, S.P. 1988. Cropping Systems in the Tropics - Principle and Management. Wiley Eastern Ltd., New Delhi
7. Pretty, Jules, Irene Guijt, Parmesh Shah, and Fiona Hinchcliffe. 1995. Joint watershed management: new evidence from the New Horizons project. Indigenous Knowledge and Development Monitor 3(1), April. <http://www.nuffic.nl/ciran/ikdm/3-1/articles/pretty.html>
8. Ravnborg, Helle Munk, and Maria del Pilar Guerrero. 1998, "[Collective Action in Watershed Management: Experiences from the Andean Hillside](#)." Paper presented at the 7th Meeting of the International Association for the Study of Common Property (IASCP), Vancouver, Canada.

9. Rhoades, Robert. 2002. "[Participatory Watershed Research and Management: Where the Shadow Falls](#)." Gatekeeper Series #81. Sustainable Agriculture and Rural Livelihoods Program, International Institute for Environment and Development, London.
10. Stocking, Michael. 1996. Land management for sustainable development: farmers' participation. Chapter 2 in Uitto, Juha, and Akiko Ono. Population, land management, and environmental change. Tokyo: United Nations University. <http://www.unu.edu/unupress/unupbooks/uu03pe/uu03pe05.htm#2>.

BENCHMARKING: MICHIGAN STATE UNIVERSITY

INDUSTRIAL ECOLOGY & LIFE CYCLE ASSESSMENT 3 sks

This course introduces students to the theory and applications of environmental life cycle assessment (LCA) in engineering, corporate and government decision situations. Students will review cases, do problem sets, learn how to use LCA software, and conduct a project in LCA software package.

Life Cycle Assessment is a systematic set of procedures for compiling and examining the inputs and outputs of materials and energy and the associated environmental impacts directly attributable to the functioning of a product or service system throughout its life cycle. Life-cycle assessments involve cradle-to-grave analyses of production systems and provide comprehensive evaluations of all upstream and downstream energy inputs and multimedia environmental emissions. This course will offer students an examination of the theory, methodology and applications of life cycle analysis..

Course content: Introduction – What is Life Cycle Management?; Life Cycle Management History, Assessment Methodologies, Examples of its Applications; Application of Life Cycle Analysis to Recycling and Waste Management, Manufacturing, Formulation and Processing; Application of Life Cycle Analysis to EIS and Land Use Decisions; the intersection of the precautionary principle and life cycle analysis.

Dosen: Dr Ir Susinggih Wijana MS
Dr Ir Imam Santoso MS

Referensi:

1. Allenby BR, Industrial Ecology: Policy Framework and Implementation, Prentice Hall, 1999.
2. Baumann H and Tillman A-M, The Hitch Hiker's Guide to LCA: An Orientation in Life Cycle Assessment Methodology and Application, Studentlitteratur, 2004.
3. David F. Ciambrone, Environmental Life Cycle Analysis, Lewis Publishers. Draft Report of the LCM Definition Study, UNEP/SETAC Life Cycle Initiative.
4. Field, F., R. Kirchain, J. Clark (2001) "Life-Cycle Assessment and Temporal Distributions of Emissions: Developing a Fleet-Based Analysis," Journal of Industrial Ecology 4 (2) 71-91
5. Graedel TE, Streamlined Life-Cycle Assessment, Prentice Hall, 1998.
6. Guinée JB et al., Handbook on Life Cycle Assessment: Operational Guide to the ISO Standards, Kluwer Academic Publications, 2002.
7. Hauschild M and Wenzel H, Environmental Assessment of Products. Vol 2 Scientific Background, Chapman & Hall, 1998
8. Heijungs, R., R. Kleijn (2001) "Numerical approaches towards life cycle interpretation: five examples," International Journal of Life Cycle Assessment, 6(3) Available at http://www.leidenuniv.nl/cml/ssp/publications/wp2_000-001.pdf
9. Heijungs, R., S. Suh (2002) The Computational Structure of Life Cycle Assessment, Kluwer Academic Publishers: Dordrecht, The Netherlands
11. Sheehan, et al. (1998) Life Cycle Inventory of Biodiesel and Petroleum Diesel for Use in an Urban Bus. Prepared for the National Renewable Energy Laboratory, NREL/SR-580-24089. Available at www.nrel.gov/docs/legosti/fy98/24089.pdf
12. Standards: ISO 14040:2006 and ISO 14044:2006
13. Wenzel H, Hauschild M & Alting L, Environmental Assessment of Products Vol 1 Methodology, tools and case studies in product development, Kluwer Academic Publications, 1997.

Benchmarking: THE UNIVERSITY OF MAINE

METODE DAN TEKNIK PERENC. WILAYAH
Methods of Regional Planning Analysis

3 sks

The aims of this course are to: (1) Provide methods and practical tools for collecting and analyzing information used in urban and regional planning practice, demography, and regional economics; (2) Provide knowledge about various quantitative methods for analyzing, forecasting and planning in regional development.

Pokok Bahasan Meliputi: PENDAHULUAN: Regional sciences vs Regional Economics. Regional Planning vs Landuse Planning. Regional Development vs Economic Development. Azas dan Prinsip Pengembangan Wilayah: Ekonomi vs ekologi, Temporer vs Spasial, Statik vs dinamik, Input-Proses-Output, Alokasi vs Efisiensi. People center development: Paradigma Pembangunan Daerah, Kaidah-kaidah pemberdayaan masyarakat. Konsep Sumberdaya: Pengertian sumberdaya: EKONOMI vs EKOLOGI, Quality and characteristics, Utility & externality, Scarcity, Value and price, Market mechanism. Konsep SDA: SDA-Lahan, SDA-Hutan, SDA-Air, SDA-Tambang bahan mineral, Availability vs Renewability, Productivity vs sustainability. Konsep Dampak Lingkungan: Proses produksi/pemanfaatan sumberdaya, Produk dan limbah, Externality effects, Perubahan lingkungan, Dampak lingkungan. METODE Perencanaan: Metode analisis kependudukan, Input-Output, Metode Gravitasi, Hubungan antar daerah. Metode Operation Research: Metode Alokasi/Optimasi, Pemrograman. Teknik Perencanaan: Survei sosial, Economic base, Analisis antar industri, Indikator sosial, Distribusi pendapatan. Penginderaan jauh, Landuse analysis, Analisis potensi, PERT/CPM, Flowcharting. Konsep Sistem: Pengertian sistem, Wilayah sebagai suatu Sistem, Sibernetik-Holistik-Sistematik, Analisis Sistem, Simulasi Sistem, Aplikasi Komputer. Model EE dalam Perencanaan pengembangan wilayah pedesaan : Pendekatan sistem & problem solving; Goals of RP: Economic goals, Ecological goals; Planning and development models; Cost-Benefit & Optimization. System Simulation instrument in RP: Pendekatan sistem dalam RP: Multi-objective problems, Objective function, Constraint equation, Mathematical modelling. Economic resource allocation: Cost of production, Pricing strategies, Allocation principles, Programming. Decision analysis: Analysis of public project: Uncertainty, Consideration in project planning, Experimentation. Resources use efficiency (RUE) dalam pengembangan wilayah: Prinsip-prinsip RUE, Landasan ekologis, Landasan ekonomis, Landasan teknis , Model-model simulasi RUE. Model Perencanaan Kawasan pembangunan: Kawasan Potensial, Kawasan Strategis, Kawasan

Andalan, KIMBUN: Kawasan Industri Masyarakat Perkebunan, KIMAS: Kawasan Industri Milik Masyarakat, KAPET: Kawasan Pengembangan Ekonomi Terpadu, AGROPOLITAN.

Dosen: Ir Yeny Ernawati, MSc.,PhD.
Dr Ir. B. Setiawan MS.

Referensi:

1. Bendavid-Val, Avrom (1991), *Regional and Local Economic Analysis for Practitioners*, 4th Edition, Westport, CT: Praeger Publishers.
2. Isserman A. M. (1984) "Projection, Forecast and Plan: On the Future of Population Forecasting" *Journal of American Planning Association* 50:208-221
3. Kaufman, S., and Simons, R.A., (1995) *Quantitative Research Methods in Planning: Are Schools Teaching what Practitioners Practice?* *Journal of Planning Education and Research* 15: 17 – 35
4. Klosterman, R. E. (1990). *Community Analysis and Planning Techniques*. Savage, MD: Rowman and Littlefield.
6. Kruekeberg, D. A., and Silvers, A.L, (1974) *Urban Planning Analysis: Methods and Models*. New York: Wiley.
7. Loretta E. Bass and Rebecca Nees, *Demography* (4th Edition)
8. Nelson A., W. Drummond, and D. Sawicki (1995) *Exurban Industrialization: Implications for Economic Development Policy* *Economic Development Quarterly* Vol. 9 (2): 119 – 133
9. Patton C.V. (1986) *Being Roughly right rather than precisely wrong* *Journal of Planning Education and Research*, Vol. 6 (1): 22-29
10. Patton, Carl V. and David S. Sawicki 1993. *Basic Methods of Policy Analysis and Planning* (second edition). Englewood, NJ; Prentice Hall.

Benchmarking: [Inter-University Europe Center](#)

METODE PENDUGAAN DAMPAK LINGKUNGAN **3 sks**
Methods of Environmental Impact Assessment

Upon completion of this course, students should be able to: (1) Define or describe the concepts, basic methods, and analytical approaches used in

biophysical and socioeconomic impact assessment. (2) Design a basic impact assessment study, usually at the local level; Design appropriate field studies or social research; Design an framework for analyzing relevant data; Report on the study results using accepted environmental impact statement (EIS) formats; Make a presentation of your work at a level suitable for a public forum. (3) Appreciate the importance of the public/social, administrative, regulatory and practitioner contexts in which impact assessment occurs. (4) Understand and critically analyze key factors in the impact assessment area: the ways in which biophysical and social impacts are linked, the role of various actors in impact assessment processes, the work or role of corporate groups or clients and consultants, the place of science in impact assessment, impact assessment as a tool for social change or environmental protection, and the special concerns of Native communities and other social groups.

Setelah selesai mengikuti mata kuliah ini (pada akhir semester) diharapkan mahasiswa juga mampu untuk: (1). Memahami konsep-konsep, indikator dan variabel dampak lingkungan di Indonesia, (2). Menjelaskan kembali beberapa kaidah dan prinsip pendekatan ekonomi dan ekologi dalam pendugaan dampak lingkungan, (3). Melakukan simulai analisis mengenai dampak lingkungan

Pokok bahasan meliputi: Pendahuluan: Terminologi; Peraturan perundangan terkait; AMDAL dan kegunaannya. Dampak Lingkungan dan Risiko Lingkungan: Dampak Fisik dan kimia, Dampak Biologis, Dampak sosial-ekonomi, Dampak sosial-budaya, Risiko lingkungan dan pengelolaannya. Metode pendugaan & penyajian DAL: Teknik dan metode pendugaan, Model kuantitatif dalam pendugaan, Sistem informasi DAL. Variabel dampak lingkungan dan Baku Mutu Lingkungan: Variabel Terrestrial, Variabel Akuatik, Variabel udara, Variabel Human- interface. Pendugaan dampak lingkungan (DAL): Dasar penetapan dampak, Prinsip pendugaan dampak, Lingkup pendugaan, Prosedur pendugaan, Teknik Penyajian. Pendugaan DAL: Metode kuantitatif dan kualitatif pendugaan dampak lingkungan, Langkah-langkah dalam pendugaan dampak, Hal-hal khusus dalam pendugaan, Pendekatan ekonomi-ekologi, Penyajian dampak lingkungan. Analisis ekonomi dalam pendugaan DAL: a. Pembangunan; dampak lingkungan dan peran analisis ekonomi, Aspek ekonomi dampak lingkungan, Teknik-teknik yang dapat digunakan, Metode valuasi yang dapat digunakan, Keterbatasan instrumen-instrumen analisis. Analisis ekologi dalam pendugaan DAL: Pembangunan dampak lingkungan dan peran analisis ekologi, Aspek ekologi dampak lingkungan, Teknik-teknik yang dapat digunakan, Metode valuasi yang dapat digunakan, Keterbatasan instrumen-instrumen analisis. Analisis sosial dalam pendugaan DAL: Pembangunan ,dampak lingkungan dan peran analisis

sosial, Aspek sosial dampak lingkungan, Teknik-teknik yang dapat digunakan, Metode valuasi yang dapat digunakan, Keterbatasan instrumen-instrumen analisis. Alternatif dan rencana pengelolaan: Pengertian dan kedudukan Rencana Pengelolaan Lingkungan (RKL), Sistem pengelolaan. RKL: Pengertian dan batasan, Regulasi RKL, Implementasi pengelolaan. Pemantauan dampak lingkungan: Pengertian dan batasan, Kegunaan pemantauan, Tipe-tipe pemantauan. RPL: Prosedur pemantauan, Lingkup dan pelaksanaan pemantauan.

Dosen: Dr Ir. Arief Rachmansyah
Prof Dr Ir. Diana Arfianti MS.

Referensi:

- 1) Noble, Bram F. 2006. Introduction to Environmental **Impact Assessment**. Don Mills: Oxford University Press.
- 2) Vanclay, F. 2006. Principles for Social **Impact Assessment**: A critical comparison between the international and US documents **Environmental Impact Assessment Review**, Vol. 26, No. 1, 3-14. (Use the UW Library's E-Journals Site to find this: <http://sfx.scholarsportal.info/waterloo/az>)
- 3) Stewart J. M. P. and Sinclair, A.J. 2007. Meaningful Public Participation in Environmental **Assessment**: Perspectives from Canadian participants, proponents, and government. **Journal of Environmental Assessment Policy and Management**. Vol. 9, no. 2, pp. 161-183. (Use the UW Library's E- Journals Site to find this: <http://sfx.scholarsportal.info/waterloo/az>)
- 4) Partidario, M. R. 2000. Elements of an SEA Framework. **Environmental Impact Assessment Review**. Vol. 20, No. 6, 3-14. (Use the UW Library's E-Journals Site to find this: <http://sfx.scholarsportal.info/waterloo/az>)
- 5) Folke, C. Resilience: The emergence of a perspective for social-ecological systems analyses. **Global Environmental Change**. Vol. 16, No. 3, 253-267. (Use the UW Library's E-Journals Site to find this: <http://sfx.scholarsportal.info/waterloo/az>)
- 6) Gibson, R. B. 2006. Sustainability **Assessment**. **Impact Assessment and Project Appraisal**. Vol. 24, No. 3, 170-182. (Use the UW Library's E-Journals Site to find this: <http://sfx.scholarsportal.info/waterloo/az>)
- 7) Stinchcombe, K. and Gibson, R. B. Strategic Environmental **Assessment** as a Means of Pursuing Sustainability. **Journal of**

Environmental **Impact Assessment** and Policy Management. Vol. 3, No. 3, 343-372. (Use the UW Library's E-Journals Site to find this: <http://sfx.scholarsportal.info/waterloo/az>)

Benchmarking: UNIVERSITY OF WATERLOO

METODE PENELITIAN LINGKUNGAN
METHODS OF ENVIRONMENTAL STUDIES

3 sks

Setelah mengikuti kuliah ini mahasiswa dapat membuat usulan penelitian disertai dalam lingkup sumberdaya, lingkungan dan pembangunan, serta dapat membuat karya tulis ilmiah untuk mempublikasikan hasil penelitiannya.

The course is intended to contribute to students' preparation for successfully undertaking their honours thesis project. To this end, the course provides an introduction and overview of systems thinking as a framework for approaching interdisciplinary, environmental research problems. The course also introduces students to a variety of interdisciplinary research methods being employed by lecturers. Throughout the term, lecturers will come in to discuss their research, interdisciplinary research methods they employ and how they involve students in their research. Aside from introducing students to a variety of research methods, this will also introduce students to potential advisors. It should be emphasized that this is not a methods course; the course is an introduction to the variety of methods used in addressing complex, environmental issues. It is the responsibility of the student and their thesis advisor to decide upon what research methods are appropriate for their honours thesis project

Pokok bahasan meliputi: Filsafat ilmu dalam konteks sumberdaya dan lingkungan (ilmu, pengetahuan, logika, berfikir secara deduktif-induktif-verifikatif). Peran penelitian dan pengembangan dalam perkembangan IPTEK dan pembangunan. Pengertian penelitian: ciri-ciri, etika, kualitas, proses pelaksanaan penelitian, dan research setting. Problematik penelitian lingkungan: pengertian research problem; keterkaitannya dengan permasalahan aktual yang dihadapi oleh masyarakat dan pembangunan; identifikasi, deskripsi dan formulasinya. Konsep, teori, indikator, variabel, dan definisi operasionalnya. Hipotesis dan tujuan penelitian. Metode penelitian: eksperimental, survei, dan simulasi. Karya tulis ilmiah: ciri-ciri karangan ilmiah, penulisan ilmiah, penyajian dan komunikasi ilmiah. Pembuatan konsep usulan penelitian tesis dalam lingkup sumberdaya, lingkungan dan

pembangunan. **Assignment** : Systems Description of an Interdisciplinary, Environmental Research; Research Proposal for an Interdisciplinary, Environmental Research

Dosen: Prof.Dr.Ir. Soemarno, M.S.
 Prof Dr Ir Yody Moenandir
 Prof. Dr.Ir. Kliwon Hidayat, M.S.

Referensi:

1. James M. Beard, 1994. *Chemistry, Energy and the Environment*, Wuerz Publishing, Ltd, Winnipeg, Canada.
2. Nigel Bunce, 1994. *Environmental Chemistry, 2nd Edition*, Wuerz Publishing, Winnipeg, Canada.
3. Stewart E. Allen, Editor, 1989. *Chemical Analysis of Ecological Materials, Second Edition*, Blackwell Scientific Publications, Oxford.
4. D. T. E. Hunt and A. L. Wilson, 1990. *The Chemical Analysis of Water, General Principles and Techniques, Second Edition*, Royal Society of England, Cambridge.
5. Lawrence H. Keith, Editor, 1998, *Principles of Environmental Sampling*, American Chemical Society, Washington.
6. Environmental Impact Assessment Methodologies, by Y. Anjaneyulu, B.S. Publication, Sultan Bazar, Hyderabad.
7. Environmental Science and Engineering, by J. Glynn and Gary W. Hein Ke – Prentice Hall Publishers.
8. Environmental Pollution and Control, by Dr H.S. Bhatia – Galgotia Publication (P) Ltd, Delhi.
9. Booth, W. C., G. G. Colomb and J. M. Williams. 2008. *The Craft of Research (Third Addition)*. Chicago: University of Chicago Press

Benchmarking: UNIVERSITY OF WATERLOO

MANAJEMEN KONFLIK

3 sks

Conflict Management

Course Objectives: (1) To analyze conflicts in terms of: Structure and dynamics of conflict episodes, Underlying motivational elements, Escalation /de-escalation behaviors, Integrative and distributive choices and behaviors, Interventionist strategies and techniques, Underlying conflict party

characteristics and organizational structures relevant for increasing the potential for integrative solutions. (2) To apply conflict management concepts, principles, strategies and techniques to one's own workplace conflict. (3). To identify possible integrative 'solution spaces' for collaborative resolution of conflict. (4). To map and apply collaborative strategies and techniques to get to those integrative spaces.

Pokok bahasan meliputi: PENDAHULUAN. PENGERTIAN DAN PANDANGAN ATAS KONFLIK: Sasaran (goals), Nilai (Values), Pikiran (cognition), Perasaan (affect), Perilaku (behavior). DINAMIKA KONFLIK: "Conflict Episode" : Latent Conflict , Percieved Conflict , Felt Conflict , Manifest Conflict , Conflict Aftermath . PEMECAHAN KONFLIK: Bentuk/cara dalam pemecahan konflik, yaitu : Kolaborasi, Kompetisi, Akomodasi, Kompromi, Hindari . MODEL PEMECAHAN KONFLIK: Kompetisi, Kolaborasi, Kompromi, Hindari , Akomodasi . Teknik memecahkan konflik : (1). Kendalikan emosi: Anggap sederajat, Dengarkan dengan baik, Kemukakan pendapat, Ungkapkan perasaan; (2). Pemecahan kolaboratif: Definisikan masalah, Curah pendapat, Pemilihan alternatif terbaik bagi kedua pihak, Rencanakan tindakan, Evaluasi. Keterlibatan pihak ke tiga dalam beberapa bentuk : Arbitrasi, Mediasi, dan Konsultasi antar pihak.

DOSEN: DR. KERTAHADI, M.COM.
DR. SURYADI, M.S.

Referensi:

- Becker, Penny Edgell. 1999. *Congregations in Conflict; Cultural Models of Local Religious Life*. New York, NY: Cambridge University Press,
- Bush, Robert A. and Joseph Folger, 1994. *The Promise of Mediation: Responding to Conflict Through Empowerment and Recognition*. San Francisco, CA: Jossey-Bass.
- Day, Katie. *Difficult Conversations: Taking Risks, Acting with Integrity*. Bethesda, MD: The Alban Institute, 2001.
- Dobson, Edward, Speed B. Leas, and Marshall Shelley. *Mastering Conflict and Controversy*. Portland, Oregon: Multnomah Press, 1992.
- Elmer, Duane. *Cross-Cultural Conflict: Building Relationships for Effective Ministry*. Downers Grove, Ill: InterVarsity Press, 1993.
- Gangel, Kenneth O. and Samuel L. Canine. *Communication and Conflict Mangement*. Nashville, Tennessee: Broadman Press, 1992.

- Goodman, Denis W. *Congregational Fitness: Healthy Practices for Layfolk*. Bethesda, MD: The Alban Institute, 2000.
- Kottler, Jeffrey. *Beyond Blame: A New Way of Resolving Conflicts in Relationships*. San Francisco, CA: Jossey-Bass, 1994.
- Rosenberg, M. B. (2003). *Nonviolent communication: A language of life* (2nd ed.). Encinitas, CA: Puddle Dancer Press.
- Rothman, Jay. *Resolving Identity-Based Conflict in Nations, Organizations, and Communities*. San Francisco, CA: Jossey-Bass, 1997.
- Slaikeu, Karl A. *When Push Comes to Shove: A Practical Guide to Mediating Disputes*. San Francisco, CA: Jossey-Bass, 1995.
- Ury, William L 1993. *Getting Past No: Negotiating Your Way from Confrontation to Cooperation*. New York, NY: Bantam Doubleday,.

Benchmarking: OHIO STATE UNIVERSITY

METODE EKOLOGI KUANTITATIF
QUANTITATIVE COMMUNITY ECOLOGY

3 sks

Course overview: Community ecology is a conceptually complex field that requires understanding of both theoretical and empirical issues. Throughout, there will be much discussion of theory, and you will be expected to become facile with the models and their applications. There will also be several computer labs and directed discussions that are designed to give a more intuitive understanding of the models discussed in lectures. In all classroom activities, including lectures, we expect students to play an active role in classroom learning. This is not a passive science, and there will always be interesting and important issues to be discussed.

Course content: Introduction: Questions and approaches ; opulation growth and dynamics; Interspecific competition; Predation: Consumer-resource models; The ecological niche and mechanistic competition; Modules: apparent competition, mutualism, keystone predation; Stage/size-structured interspecific interactions (Burgett); Food chains and food webs; Incorporating complexities into food webs; Temporal heterogeneity and disturbance; Succession and assembly; Species-area curves and island biogeography (Ryberg); Metacommunities; Spatial heterogeneity and species compositional shifts; Biodiversity and environmental gradients; Species-abundance distributions: Commonness and rarity; Invasive species; Diversity and ecosystem functioning;

Ecology of emerging infectious diseases; Global climate change and biodiversity.

Dosen: Amin Tri Laksono, S.Si, MS, Ph.D.
Dr. Ir. Gatot Mujiono

Referensi:

1. Gotelli 2001. A Primer of Ecology. 3rd edn. Sinauer Associates
2. Morin 1999. Community Ecology. Cambridge University Press
3. Chase and Leibold 2003. Ecological Niches: Linking Classical and Contemporary Approaches. University of Chicago Press

Benchmarking: Dept. of Biology, Washington University

METODE MANAJEMEN BENCANA
DISASTERS MANAGEMENT

3 sks

Concepts of disaster; Types of disaster? Natural and manmade : Cyclone, flood, land slide, land subsidence, fire and earthquake. Issues and concern for various causes of disasters. Disaster management, mitigation, and preparedness; Techniques of monitoring and design against the disasters. Management issues related to disaster; Mitigation through capacity building, legislative responsibilities of disaster management; disaster mapping, assessment, pre-disaster risk & vulnerability reduction, post disaster recovery & rehabilitation; disaster related infrastructure development. Remote-sensing and GIS applications in real time disaster monitoring, prevention and rehabilitation. Risk and Vulnerability Analysis; Evacuation Analysis and Studies.

Natural disaster: [Introduction to Natural Disasters](#); [Earthquake Disasters: Hazards](#); [Tsunami Disasters: Science Monitoring & Mitigation](#) ; [Volcanoes: Introduction](#) ; [Lava Properties & Eruption Types](#); [Monitoring & Mitigation](#); [Landslides & Collapse](#) : [Landslide Types](#) ; [Assessment, Mitigation and Case Studies](#); [Severe Weather: Thunderstorms and Lightning](#) ; [Tornadoes](#) ; [Extreme Heat & Desertification](#); [Hurricanes](#) Mitigation; [Flooding Disasters: Science](#) [Flooding: Monitoring & Mitigation](#); [Wild Fires](#) : [Monitoring & Mitigation](#)

Operations Management (OM), Risk Assessment and Disaster Response, Quantification Techniques, NGO Management, SWOT Analysis based on Design & Formulation Strategies, Insurance & Risk Management,

Role of Financial Institutions in Mitigation Effort, Group Dynamics, Concept of Team Building, Motivation Theories and Applications, School Awareness and Safety Programmes, Psychological and Social Dimensions in Disasters, Trauma and Stress, Emotional Intelligence, Electronic Warning Systems, Recent Trends in Disaster Information Provider, Geo Informatics in Disaster Studies, Cyber Terrorism, Remote Sensing & GIS Technology, Laser Scanning Applications in Disaster Management, Statistical Seismology, Quick Reconstruction Technologies, Role of Media in Disasters, Management of Epidemics, Bio-Terrorism, Forecasting / Management of Casualties.

Dosen: Dr Ir Arief Rachmansyah
Dr Agung Pramana MS

Referensi:

- 1) Schlossberg, M. (2003). GIS, the US Census and Neighborhood Scale Analysis. *Planning, Practice, and Research*. Vol. 18, No. 2-3, pp. 213-217.
- 2) Masozera, M., Bailey, M., and Kerchner, C. (In Press) Distribution of Impacts of Natural Disasters Across Income Groups: Case Study of New Orleans. *Ecological Economics*.
- 3) Haque, C.E. (2003). Perspectives of Natural Disasters in East and South Asia, and the Pacific Island States: Socio-economic Correlates and Needs Assessment. *Natural Hazards*. Vol. 29. No. 3, pp. 465-483.
- 4) Besio, et. al. (1998). Risk maps: theoretical concepts and techniques. *Journal of Hazardous Materials*. Vol. 61, pp. 299-304.
- 5) Chen, K., Blong, R., and Jacobson, C. (2003). Towards an Integrated Approach to Natural Hazards Risk Assessment Using GIS: With Reference to Bushfires. *Environmental Management*. Vol. 31, No. 4, pp. 546-560.
- 6) Ayalew, L. and Yamagishi, H. (2005). The application of GIS-based logistic regression for landslide susceptibility mapping in the Kakuda-Yahiko Mountains, Central Japan. *Geomorphology*. Vol. 65, No. 1-2, pp. 15-31.
- 7) Suzen, M.L., and Duyuran, V. (2004). A comparison of the GIS based landslide susceptibility assessment methods: multivariate versus bivariate. *Environmental Geology*. Vol. 45, No. 5, pp.665-679.

- 8) Church, R. and Cova, T. (2000) Mapping evacuation risk on transportation networks using a spatial optimization model. *Transportation Research Part C*. Vol. 8, pp. 321-336.
- 9) Cova, T.J. and Church, R.L. (1997) Modelling Community Evacuation Vulnerability using GIS. *International Journal of Geographical Information Science*. Vol. 11, No. 8, pp. 763-784.

Benchmarking: AMITY UNIVERSITY, AMITY INSTITUTE OF DISASTER MANAGEMENT.

METODE PENDUGAAN DAMPAK EKONOMI
ECONOMICS IMPACT ASSESSMENT

3 sks

This is an applied analysis course that will be heavy on practice and procedure, medium to heavy on the normative foundations for measuring economic and fiscal activity within a public policy context, medium to light on overall economic theory, and light to only occasionally noticeable on those wondrous and elegant mathematical foundations to much of what we do that delights economists to no end, but me not at all. How to do economic impact analysis (input-output), why to do them, when to do them, and when not to do them.

1. Regional economic analysis and modeling: data, resources, & structures :
 - a. Basic economic concepts as they apply to regional analysis
 - b. Broad types of economic analysis of industries and communities
 - c. Sources of data – scope, detail, and quality
 - d. Usefulness of different kinds of economic data
2. Economic base theory
 - a. In the beginning
 - b. Then there was Keynes
 - c. Total multipliers; sectoral multipliers; multipliers considering marginal change
 - d. Pros and cons of base assumptions
 - e. Economic base simplified
3. The structure of regional industrial accounts
 - a. Industries, commodities, and institutions
 - b. Social accounts matrices

- c. Simple I X I transactions
- 4. The practice of economic impact assessment
 - a. What it is, what it isn't
 - b. The terms, their meanings, and their limits
 - c. Understanding inter-industrial linkages
 - d. Discerning impacts, causality, etc
 - e. Looking at the big picture
 - f. Distinguishing between a good one and a bad one – some cases
- 5. Introduce students to an actual, home-built, spreadsheet-based, (and highly-hyphenated), input-output model.
 - a. This is a practical bridge between the matrix math that is usually taught in these courses and interpreting a set of current I x I accounts.
 - b. Learning to use the **Use** and the **Make** tables for actual analysis and community economic assessment.
 - c. Step-by-step impact assessment through the spreadsheet
 - d. Discussion of the results and the limitations of the analysis
 - e. **Assignment:** Students will take a SAM that I provide and replicate the steps.
- 6. Building a larger impact model to include job impacts
 - a. Getting started
 - b. Choosing a study area
 - c. Specifying an impact scenario
- 7. Special topics:
 - a. Fiscal impact assessment
 - b. Conjoined modeling: Fiscal, labor, and economic impacts – the dynamics of space
 - c. An introduction to benefit – cost considerations and a distinguishing of B/C from economic impact assessment. Economic impacts are not, I repeat not, benefits!
 - d. Other policy considerations: the appropriateness of public spending for private projects

DOSEN : PROF.DR. MARYUNANI, S.E., M.S.
 PROF DR.IR. BUDI SETIAWAN, M.S.

Referensi:

1. Broomhall, David. 1993. The Use of Multipliers in Economic Impact Estimates. [\[www.agcom.purdue.edu/AgCom/Pubs/EC/EC-686.html\]](http://www.agcom.purdue.edu/AgCom/Pubs/EC/EC-686.html). November 1993.
2. Carvalho, Emanuel and Charles Scott. 1996. Local Economic Impact Analysis. Economic Development Bulletin, *New Series* Number Five. Economic Development Program, University of Waterloo.
3. Hemson Consulting, for Ontario Ministry of Agriculture Food and Rural Affairs. "Economic Impact Analysis Software Evaluation" Toronto: Queen's Printer for Ontario, June 2001.
4. Horton, Gary. *Economic Impact Analysis: Glossary of Selected Terminology Relating to Input-Output (I-O) Models and Economic Impact Analysis*. Nevada Division of Water Planning. 2002.
5. Michigan State University. "MITEIM Model, Michigan Tourism Economic Impact Model" [\[www.msu.edu/course/prr/840/econimpact/michigan/MITEIM.htm\]](http://www.msu.edu/course/prr/840/econimpact/michigan/MITEIM.htm). 2001.
6. Schaffer, William. Regional Impact Models. 1999 Regional Research Institute, WVU
7. Stynes, Daniel, J. "Economic Impacts of Tourism". <http://www.msu.edu/course/prr/840/econimpact/pdf/ecimpvol1.pdf>. 1999.

Benchmarking: IOWA STATE UNIVERSITY

METODE PENDUGAAN DAMPAK SOSIAL SOCIAL IMPACT ASSESSMENT (SIA)

3 sks

What is Social Impact Assessment? . The History and Concepts behind the SIA Process. THE SOCIAL IMPACT ASSESSMENT MODEL and THE PLANNING PROCESS. STEPS IN THE PRELIMINARY SOCIAL ASSESSMENT (SCOPING). OBTAINING INFORMATION to measure SIA variables and DELINEATING PROJECT SETTINGS. UNDERSTANDING and MEASURING SOCIAL IMPACT VARIABLES - PART I: POPULATION IMPACTS. Understanding and Measuring Social Impact Variables - PART II: COMMUNITY and INSTITUTIONAL ARRANGEMENTS. PART III: COMMUNITIES in TRANSITION. UNDERSTANDING and MEASURING SOCIAL IMPACT VARIABLES - Part IV: INDIVIDUAL and FAMILY

LEVEL IMPACTS . UNDERSTANDING and MEASURING SOCIAL IMPACT VARIABLES - PART V: COMMUNITY INFRASTRUCTURE NEEDS. Putting it Together: Selecting, TESTING and UNDERSTANDING SIGNIFICANT SOCIAL IMPACTS. MITIGATION and ENHANCEMENT in Social Assessment.

Dosen: Dr. Drs. Suryadi MS
Rachmad Syafaat, SH, MS

Referensi:

1. Rabel Burdge, "The Social Impact Assessment Model and the Planning Process," pp. 31-52, in Rabel Burdge, *A Conceptual Approach to Social Impact Assessment*, 1998
2. Naila Kabeer, Chapter 10, "Triple Roles, Gender Roles, Social Relations: The Political Subtext of Gender Training Frameworks," pp. 264- 305 in *Reversed Realities Hierarchies in Development Thought*,
3. Alan Porter, Frederick Rossini and Stanley Carpernter, "Analysis of Social and Psychological Impacts," pp. 294- 328, in *A Guidebook for Technology Assessment and Impact Analysis*, 1980
4. Edwards, Allan D. and Dorothy G. Jones. 1976. *Community and Community Development*. Chapter 3: "Community: Demographic and Ecological Perspectives," pp. 97-136. The Hague, Netherlands: Mouton & Company.
5. Renkow, Mitch. 2004. "Population, Employment and Mobility in the Rural South," SRDC Policy Series. Mississippi State, MS: Southern Rural Development Center. <http://srdc.msstate.edu/publications/srdcpolicy/renkow.pdf>
6. Hyman, Drew, Larry Gamm, and John Shingler. 1995. "Paradigm Gridlock and the Two Faces of Technology," pp. 85-107 in Lionel J. Beaulieu and David Mulkey (eds.) *Investing in People: The Human Capital Needs of Rural America*. Boulder, CO: Westview Press, Inc.
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Benchmarking: Clemson University

PEMBANGUNAN BERKELANJUTAN
Sustainable Development

3 sks

On completion of the course, students shall have a basic understanding of development problems associated with natural resource management, be able to explain and use basic concepts, such as water and nutrient balances, and to use GIS methods to visualise and analyse spatial data related to natural resource management. Specifically, students shall be able to identify, analyse, and reflect upon basic natural resource problems that affect the development process; identify and understand general and specific uses of natural resources, at present and in the long term, in the light of sustainability theory; analyse relevant development phenomena in connection to resource use employing key concepts and theories learnt during the course and formulate research questions about the effects of natural resource utilisation on development.

Setelah selesai mengikuti mata kuliah ini (pada akhir semester) diharapkan mahasiswa JUGA mampu untuk: (1). Memahami konsep-konsep pembangunan berkelanjutan; (2). Menjelaskan beberapa kaidah dan prinsip pendekatan ekonomi dan ekologi dalam permasalahan pembangunan dan LH; (3). Melakukan analisis kritis terhadap permasalahan dampak lingkungan.

Pokok bahasan meliputi:

- I. SUSTAINABILITY: FROM BRUNDTLAND TO THE RIO SUMMIT.
“Only One Earth.” The 1972 UN Conference on the Human Environment. The World Commission on Environment and Development (1984-87).
- II. DISCOURSES OF DEVELOPMENT.
Reconceptualizing ‘development.’ Interactions and contradictions of state-market-civil society.
- III. EMERGING METHODS FOR ‘SUSTAINABILITY STUDIES’
Methods and models for defining and ‘measuring’ sustainability.
- IV. THE EARTH CHARTER .
The Earth Charter, I: ‘Just ecological integrity.’
- V. SUSTAINABILITY AND GLOBALIZATION .
Sustainability and globalization, I: Pitfalls and challenges of global environmental governance.
- VI. SUSTAINABILITY AND SOCIAL JUSTICE.
- VII. The course covers issues such as the management of land and water resources, environmental and climatological concerns and methods of assessing and handling data related to natural resources in a development context.

Dosen: Prof Dr M. Maryunani SE, MS.
Dr Ir Lily Agustina MS.

Referensi:

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- 2) Edwards, C. A. and D. Pimental. 2002. The future of human populations: Energy, food, and water availability in the twenty-first century. In: Just ecological integrity, pp. 119-39.
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- 6) Elliot, J. 2001. An introduction to sustainable development. London: Routledge.

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- 8) Miller, P. and L. Westra. 2002. Just ecological integrity: The ethics of maintaining planetary life. London: Rowman and Littlefield.
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- 10) Munck, R. and D. O'Hearn, ed. 1999. Critical development theory: Contributions to a new paradigm. London: Zed Books.
- 11) Cech, T. 2002, Principles of water resources: History, development management and policy. Wiley, UK, (ISBN 0471438618), pp 445.
- 12) de Villiers, M., 1999, Water, the fate of our most precious resource, Houghton Mifflin Co., (ISBN 0618030093), pp 352.
- 13) Hillel, D., 1992, Out of the Earth: Civilization and the life of the soil, Aurum/Free Press, (ISBN 0520080807), pp 321.
- 14) Leach, M. and Mearns, R. 1996, The lie of the land, James Currey Ltd, Oxford, (ISBN 0852554095), pp 256.
- 15) Schuurman, N., 2004, GIS – A short introduction, Blackwell Publishers, (ISBN 0631235337), pp 184.
- 16) Shiferaw, B., Freeman, H. A., and Swinton, S. M., 2004, Natural resource management in agriculture: Methods for assessing economic and environmental impacts, Eds. (ISBN 0851998283), pp 384.

Benchmarking: UNIVERSITY OF WASHINGTON

PEMBANGUNAN & DAMPAK LINGKUNGAN
Environment and Development Economics

3 sks

This course provides a unique perspective in analyzing the process of economic development within a framework that integrates economic growth, trade and political economy notions with the environment. In doing this we pay particular attention to market failures and the role of the state in mitigating the negative consequences of such failures for growth, equity and the environment. We start off by reviewing basic theoretical growth models to gain insights on how countries grow over time as well as review the mathematical tools needed to understand and model dynamic problems. By understanding how economies grow, we will be able to analyze how countries can sustain this development through time when pollution and natural resource externalities that occur during growth are also modeled. One problem with standard growth models is their

extreme aggregative nature as well as their reliance on the assumption of perfect labor and capital markets, which subtract from their potential practical applicability especially to developing countries.

Setelah selesai mengikuti mata kuliah ini (pada akhir semester) diharapkan mahasiswa mampu untuk: (1). Memahami konsep-konsep pembangunan ekonomi berkelanjutan; (2). Menjelaskan beberapa kaidah dan prinsip pendekatan ekonomi dan ekologi dalam permasalahan pembangunan dan LH; (3). Melakukan analisis kritis terhadap permasalahan dampak lingkungan

Pokok bahasan meliputi: Pendahuluan: Kecenderungan perhatian atas lingkungan hidup. Pembangunan dan Lingkungan Hidup: Sumberdaya; Produksi dan Konsumsi, Welfare economic, Willingness to pay dan consumer welfare.

Environmental degradation and poverty; Sustainable development; Innovation for sustainable development; Environmental management and innovation strategies; Societal transformations; Institutional theory; Governance for sustainable development; Policy responses to environmental degradation.

Problematik Ekologi: Kestinambungan pembangunan Pembangunan, Ketersediaan sumberdaya, Lingkungan sosial-budaya. Problematik Ekologi Pembangunan: Pengelolaan lingkungan yang adaptif, Pengelolaan proyek pembangunan. Problematik Ekologi Kependudukan: Daya dukung lingkungan dan kepadatan penduduk, Pemandahan penduduk, Kerusakan/gangguan lingkungan, Pencemaran dan penyusutan sumberdaya, pengendalian dan penanggulangan. Problematik Ekologi Kependudukan: Kemiskinan perkotaan, Kerawanan sosial. Problematik Ekologi Pangan: Sumber, Pola dan kerentanan pangan; Diversifikasi pangan; Pangan dan daya dukung lingkungan. Problematik Ekologi Pariwisata: Daya dukung lingkungan dan keanekaragaman, Keindahan alam dan amenitas, Vandalisme (pencemaran dan kerusakan), Dampak sosial-budaya, Zonasi/kawasan sentra pengembangan. Problematik Sumberdaya Energi dan Pembangunan: Peranan dan pemanfaatan energi, Permasalahan energi, Penganeka-ragaman sumber energi. Permasalahan kritis lingkungan hidup: Kasus Industri Petro-kimia. Permasalahan kritis lingkungan hidup: Kasus Agro-Industri

Dosen: Prof Dr.Ir Siti Chuzaemi, M.S
Prof Ir. Sudjito, PhD.

Referensi:

- 1) Forsyth, Tim, and Melissa Leach (1998) Poverty and environment: Priorities for research and policy. An overview study, Institute of Development Studies.
- 2) Markandya, A. (2005) Poverty Alleviation, Environment and Sustainable Development: Implications for the management of natural capital, in M. Basili, M. Franzini and A. Vercelli (eds.) Environment, Inequality and Collective Action, London and New York, Routledge.
- 3) Dasgupta, P. (2002) Economic development, environmental degradation and the persistence of deprivation in poor countries, mimeo.
- 4) Tiffen, M. and Mortimore, M. with F. Gichuki (1994) More people, less erosion? Environmental recovery in Kenya, Chichester: John Wiley.
- 5) Common, Michael, and Sigrid Stagle (2005) Ecological Economics. An Introduction, Cambridge, Cambridge University Press.
- 6) Harris, J.M. (2004) Basic Principles for Sustainable Development, Global Development and Environment Institute, working paper 00-04. Available at:
http://ase.tufts.edu/gdae/publications/Working_Papers/Sustainable%20Development.PDF
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- 8) Hjorth, P. and A. Bagheri (2006) Navigating towards Sustainable Development: A System Dynamics Approach, Futures 38: 74-92.
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- 10) López, R., G. Anríquez and S. Gulati (2007). "Structural Change and Sustainable Development". Journal of Environmental Economics and Management, 53, pp 307-322.
- 11) López, R. and M. Toman (2006). Economic Development and Environmental Sustainability. Oxford University Press, New York.
- 12) Brock, W. A. and M. Scott Taylor. (2004). "Economic Growth and the Environment: A Review of Theory and Empirics." NBER working paper w10854. Available at: <http://www.nber.org/papers/>.

- 13) _____. (2004). "The Green Solow Model." NBER working paper w10557. Available at: <http://www.nber.org/papers/>.
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- 15) Bovenberg, A. and A. Smulders (1995). "Environmental Policy and Pollution Augmenting Technological Change in a Two-Sector Endogenous Growth Model," *Journal of Public Economics* 57, pp. 369-91.
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- 17) John, A. and R. Pecchenino (1994). "An Overlapping Generations Model of Growth and the Environment," *The Economic Journal*, pp. 1393-410.

Benchmarking: United Nation University

PENGELOLAAN SBDAYA ALAM & LINGKUNGAN 3 sks
Economics and Natural Resources Management

This course is designed to give you a better understanding of and appreciation for the role economics plays in the management, use, and protection of natural resources. Its focus is to develop your capacity to understand and apply economic decision-making criteria in the management of natural resources. The course emphasizes the practical application of economic principles and concepts to natural resource management problems. It also expands your understanding of and appreciation for: (1) the fundamental interdependency of humans and natural resources for a variety of uses and values; (2) strategies for sustainable natural resource management; and (3) alternative perspectives on these strategies.

Specific objectives of the course are to develop an understanding of: (1) The fundamental interdependency of humans and natural resources; (2) The role of natural systems in the production and consumption of market- and amenity-based natural resources goods and services; (3) The role and importance of natural resources in society, and the role of economics in the management of natural resources; (4) Consumption preferences and utility theory; (5) How producers determine an economically-efficient level of production; (6) Price elasticity of supply and demand and factors influencing

changes in supply and demand; (7) Supply and demand interactions to determine market price, causes of market disequilibrium, and market adjustments to disequilibrium; (8) Why markets fail and market failures commonly associated with natural resources; (9) Property rights and land tenure arrangement affecting natural resource management; (10) Policy tools used by government to correct market failures in natural resource management; (11) The time value of money and its influence on natural resource management decisions; (12) Methods for conducting financial/economic analyses of natural resource projects and/or policies; use of economic tools for evaluating project efficiency; (13) Non-market goods and services associated with natural and environmental resources, and methods for estimating the value of these goods and services; (14) Methods for valuing natural resource lands and how real estate financing arrangements influence willingness to pay for natural resource lands; (15) Basic economic concepts, principles, decision-making criteria, and issues associated with sustainably managing renewable natural resources (e.g., forests, wildlife, fisheries, recreation resources); (16) How economic principles and concepts help explain your own personal observations about the management, use, and protection of natural resources.

Course content: Introduction: natural resources & society; Sumberdaya; Pembangunan dan Lingkungan; Ekosistem sumberdaya alam. Pengelolaan SAD-LH: Teori; Prinsip-prinsip; Teknik dan Metode Pengelolaan; Sumberdaya: Energi; Komoditas; Pangan; Hutan; Air. Pengelolaan Lingkungan: Alternatif Pemanfaatan Lingkungan Alam, Efek perubahan teknologi, Baku mutu/standar kualitas lingkungan. Indeks kualitas lingkungan: Struktur indeks lingkungan, Indeks polusi udara, Indeks pencemaran air. Indeks kualitas lingkungan: Indeks mutu hidup & indeks biologis, Indeks kualitas lahan, Indeks estetika, Indeks lingkungan lainnya. Ekologi Pencemaran Lingkungan: Pencemaran air, Pencemaran udara/Polusi, Pencemaran lahan, Limbah dan polutan/pencemar. Fungsi kerusakan lingkungan: Fungsi kerusakan univariat, Fungsi kerusakan multi-variat. Proteksi/Perlindungan Lingkungan: Faktor kualitas dalam perlindungan lingkungan, Epidemiologi lingkungan, Limbah & gangguan lingkungan dan penanganan limbah, Vector Control, Foods Protection. Pengembangan Program Pengelolaan SDA & LH: Teknik dan Metode perencanaan, Dampak lingkungan, RPL dan RKL

Dosen: Prof Dr Ir Soemarno, M.S.
 Dr Bagio Yanuwadi, M.AgrSc.
 Dr Ir Rini Dwi Astuti MS

Referensi:

- 1) Bockstael, N.E., A.M. Freeman, R.J. Kopp, P. R. Portney, and V.K. Smith. 2000. On measuring the economic values for nature. *Environmental Science and Technology* 34(8): 1384-1389.
<http://pubs.acs.org/cgi-bin/article.cgi/esthag/2000/34/i08/pdf/es990673l.pdf>
- 2) Kilgore, M.A., J.L. Greene, M.G. Jacobson, T.J. Straka, and S.E. Daniels. The influence of financial incentive programs in promoting sustainable forestry on the nation's family forests. *Journal of Forestry* 105(4): 184-191.
<http://saf.publisher.ingentaconnect.com/content/saf/jof/2007/00000105/00000004/art00010>
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- 4) Kilgore, M.A., S.A. Snyder, J.M. Schertz, and S.J. Taff. 2008. The cost of acquiring public hunting access on family forests lands. *Human Dimensions of Wildlife* 13(3): 175-186.
<http://www.informaworld.com/smpp/content~content=a793183468~db=all~order=page>
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<http://www.springerlink.com/content/8plwa3gy98tl00ux/fulltext.pdf>
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<http://web.ebscohost.com/ehost/pdf?vid=3&hid=104&sid=09e6c807-ee2f-4943-87c3-d0d5627bcfc8%40sessionmgr104>
- 7) Sanchirico, J. and R. Newell. 2003. Catching market efficiencies: quota-based fisheries management. *Resources For the Future*. *Resources*: Spring 2003. 8-11.
<http://www.rff.org/Documents/RFF-Resources-150-catchmarket.pdf>

- 8) Powell, I., A. White, and N. Landell-Mills. 2002. Developing markets for the ecosystem services of forests. *Forest Trends*, Washington, D.C. ISBN 0-9713606-3-4 12 p.
http://test.earthscope.org/p1/ES16904/ecosys_market.pdf

Benchmarking: University of Minnesota

PEMBERD. MASY. & PENGUATAN KELEMBAGAAN 3 sks
COMMUNITY DEVELOPMENT

The purpose of this course is to explore the notion of community development in general, and the notion of sustainable community development more specifically. The course is not designed to give you the answer on how to achieve sustainable community development, but rather to expose you to a variety of elements and viewpoints about it. As future planners, part of the skill set you are learning is the capacity to integrate and synthesize a multitude of perspectives into a coherent idea - this class is ideally suited to push you in that direction. This class will hopefully enlarge student's conception about what community development is and how it is pursued, as well as push you to look inward, challenge your assumptions and stereotypes about the world, and leave you with a richer (if not more confused) notion of how the world works and what can be done to make things better.

Course content: Konsep pemberdayaan (empowerment) sebagai kecenderungan dalam konsep pembangunan berkelanjutan berwawasan lingkungan. Pokok-pokok pikiran (teoritik dan ideologis) yang mendasari timbulnya konsep pemberdayaan masyarakat dalam studi lingkungan hidup, hubungan kemitraan & partisipasi antara pemerintah dan masyarakat sipil, makna dan peran strategis pemberdayaan masyarakat dalam proses transformasi sosial (lokal, regional, global). Strategi pengembangan pemberdayaan masyarakat kawasan lindung, hutan, pesisir, pertanian, DAS, kota.

Community development: Understanding basic concepts - community, development, sustainability, neighborhood. Community development - who does it? Community needs and assets. Community Development Issues – Environment. Community Development Issues – Housing. Community Development Issues – Jobs. Community Development Issues – Transportation. Community Development Issues – Sustainability Community Development Models. Institutional roles. Community organizing - models & approaches. Community organizing - working together. Social capital. Measurement and evaluation - community indicators. Community-based GIS.

DOSEN: PROF. DR. IR. KEPPI SUKESI, M.S.
DR. IR BUDI SETIAWAN MS

Referensi:

- 1) Green, G. P. and A. Haines (2002). *Asset building & community development*. Thousand Oaks, Calif., Sage Publications.
- 2) Kretzmann, J. P., J. McKnight, et al. (1993). *Building communities from the inside out : a path toward finding and mobilizing a community's assets*, Center for Urban Affairs and Policy Research Neighborhood Innovations Network Northwestern University. Introduction
- 3) Connor, Joseph A. and Stephanie Kadel-Taras (2000). *The Community Support Organization: Linking Not-for-Profits to Community Impact*. The Not-for-Profit CEO Monthly Letter (Vol. 7, No. 8).
- 4) Portes, Alejandro and Patricia Landolt (1996). *Unsolved Mysteries: The Tocqueville Files II, The Downside of Social Capital*. *American Prospect* 7(26).

Benchmarking: UNIVERSITY OF OREGON

PENATAAN RUANG BERWAWASAN LINGKUNGAN 3 sks
Sustainable Regional Development

"Sustainable regional development" we mean economic development that can be sustained over time because it is aimed not only at building wealth but also at creating wider opportunity to contribute to and participate in the benefits of economic growth. Sustainable development focuses on both the pace and the quality of job creation. It plans thoughtfully for regional approaches to housing, transportation, skill development, technological innovation, capitol formation, and land use policies that promote good jobs and strong neighborhoods. It does not compartmentalize development issues away from these other issues into narrow job creation incentive programs. Sustainable regional development requires the active engagement of the business community and it demands strong partnerships among community-based organizations, local governments and regional development agencies.

Setelah selesai mengikuti mata kuliah ini (pada akhir semester) diharapkan mahasiswa mampu untuk: (1). Memahami konsep-konsep penataan-ruang; (2). Menjelaskan beberapa kaidah dan prinsip pendekatan ekonomi dan ekologi dalam tata-ruang; (3). Melakukan simulai penataan ruang wilayah kecamatan.

Pokok bahasan meliputi: Pendahuluan: Penataan ruang , alokasi SDA dan kelestarian Lingkungan. Ruang dan Tata Ruang: a. Ruang: Makna geografis dan makna sosial-ekonomis, b. Ruang sebagai Lingkungan Hidup, c. Ruang sebagai sumberdaya ekonomi. Metode; Teknik dan Prosedur Penataan-Ruang : Prinsip dasar dan kaidah-kaidah Penataan-Ruang: Peraturan perundangan , Persyaratan legal, Persyaratan teknis, Persyaratan sosial-ekonomi, Teknik perencanaan, Metode perencanaan, Prosedur penataan, Penyajian hasil. Model dan Metode Lokasional: Model-model Struktur Lokasional, Metode-metode Analisis Lokasional, Penerapan Secara Regional: a. Sentra pengembangan, b. Kawasan pengembangan, c. Wilayah pengembangan. Kebijakan Tata Ruang di Indonesia : a. UU, b. PP, c. Departemen/Sektor. Analisis Tataruang Regional Propinsi Jawa Timur, Analisis tataruang Daerah Dati II Kab Malang, Analisis tata ruang Wilayah Kecamatan Tumpang, Analisis tata ruang kota Studi Kasus: Kota Batu. Penerapan Konsep Ekosistem dalam Pengelolaan Lingkungan Industri: Usaha perikanan sebagai suatu SISTEM, Identifikasi & deskripsi sistem, Flow-charting sistem, Pemodelan sistem: I-P-O. Feed-back loop

DOSEN : IR SURYONO, M.ENG., PHD.
PROF. DR. M. BISRI, MT

Referensi:

- 1) Durwood Zaelke, Matthew Stilwell, & Oran Young, What Reason Demands: Making Law Work for Sustainable Development (2005), in Making Law Work: Environmental Compliance & Sustainable Development 29 – 36 (Zaelke et al, eds 2005) [7pp]
- 2) Jared Diamond, GUNS GERMS AND STEEL: A SHORT HISTORY OF EVRYBODY FOR THE LAST 13,000 YEARS, Prologue, Yali's Question, 13-26 (1998) [13pp]
- 3) Vitousek et al. (1997), Human domination of earth's ecosystems, Science 277 (25 July): 494-499 [6pp]
- 4) Eakins (1991) The Sustainable Consumer Society: A Contradiction in International Environmental Law and Policy, Chapter 2, Section II.A, p. 47-54 [8pp]

- 5) Magali Delmas, 2006. "An Institutional Perspective on the Diffusion of International Management Standards: The Case of the Environmental Management Standard ISO 14001,".
- 6) Anne-Marie Slaughter, 2004. A NEW WORLD ORDER, Introduction (2004)
- 7) Meadows, D.H., Meadows D.L. and J. Randers. Beyond the Limits: Confronting Global Collapse - Envisioning a Sustainable Future. White River Junction, VT: Chelsea Green Publishing Company, 1992.
- 8) Van Vuuren, D.P. and J.A. Bakkes. Agenda 21 Interim Balance. Global Dynamics and Sustainable Development Program. Global Report Series No. 19. Bilthoven, the Netherlands: [Netherlands Institute for Public Health and the Environment](#) (RIVM), 1997 (one copy will be available for short-term loan in the NRI office).
- 9) Bossel, H. "Understanding dynamics." (Chapter 3). In *20/20 Vision: Explorations of sustainable futures*. Kassel: Center for Environmental Systems Research, University of Kassel, Germany, 1996, pp. 3.1-3.16.

Benchmarking: **SAN JOSE STATE UNIVERSITY, DEPARTMENT OF URBAN AND REGIONAL PLANNING**

PENGELOLAAN LIMBAH
SOLID WASTES MANAGEMENT

3 sks

Upon completion of this course, the student will be able to: Identify and discuss the public health, regulatory, planning, technical, and economic principles that influence the solid waste management system; Describe appropriate methods to minimize the impact to the public's health from solid waste related activities; Analyze the importance of an integrated solid waste handling system – including source reduction, recycling and reuse, composting, landfilling and combustion; Develop a more informed opinion on a variety of solid waste related issues.

Course content: Introduction; EH/Public Importance; Integrated SW Management concepts; and SW Management Team ; Laws and Regulations; SW Planning & Characterization; Source Reduction & Reuse; Collection and Transfer; and Recycling and resource recovery. Solid **Waste** Regulations ; **Waste** Generation ; **Waste** Characterization; The Physical Properties of

Waste ; Waste Separation and Processing ; Recycling ; Composting Landfills ; Incineration

Suggested Paper Topics: Construction Recycling “Green Building Programs”/Sustainable building; Composting; ‘Take it back’ electronic recycling programs; E-waste – non-recycling impacts; Gas to Energy projects; Recycled tire products; Community Litter Clean-up Programs; Bio-solids application; Biodiesel production/use; Recycled Earth Products; Disaster-related SW Disposal Issues; War time SW disposal issues; Food waste recycling; Incandescent vs. compact florescent light bulbs

Dosen: Dr Ir Sudiarmo MS
Dr Ir Wignyanto MS

Referensi:

1. Aarne Vesilind P., William Worrell, and Debra Reinhart, Solid Waste Engineering, Brooks/Cole, 2002
2. George Tchobanoglous, Hilary Theisen, and Samuel Vigil, Integrated Solid Waste Management - Engineering Principles and Management Issues, McGraw-Hill Book Co., 1992
3. Hickman, Lanier H. Principles of Integrated Solid Waste Management, ISBN 1-883767-26-1, 1999.

Benchmarking: Washington State University

PENGEMBANGAN WILAYAH ALIRAN SUNGAI **3 sks**
Watershed Development

COURSE CONTENT: Watershed Functions and Watershed Development: Waterscape ecology ; Land-water ecotonal coupling: solar/wind energy ; nutrients ; particulates; dissolved organics. Anthropogenic influences : eutrophication , lakeshore development capacity.

Watershed Management and Design: Stormwater runoff : quantity & quality problems , index of biotic integrity biomonitoring. Water sensitive planning and design: best management practices , low impact development . Watershed Management .

Wetland Land-Use Planning and Design: **Watershed** land-use planning: primary principles , planning guidelines , practical applications , case studies in brief. Site-specific landscape architecture : design guidelines , practical applications, Stormwater wetland park case studies: form meets function.

Dosen: Prof Dr Ir Sahri Muhammad, MS.
Dr Ir Ruslin Anwar, MS

Referensi:

- 1) Azous, A.L. and R.R. Horner. 2001. Wetlands and urbanization: Implications for the future. CRC Press.
- 2) Campbell, C.S. and M.H. Ogden. 1999. Constructed wetlands in the sustainable landscape. John Wiley & Sons.
- 3) Dramsad, W.E., J.D. Olson and R.T.T. Forman. 1996. Landscape ecology principles in landscape architecture and land-use planning. Island Press.
- 4) France, R.L. (Ed.) 2005. Facilitating **watershed** management: Fostering awareness and stewardship. Rowman & Littlefield. (pers. copy)
- 5) France, R.L. (Ed.) Manuscript. Healing natures, repairing relationships: Restoring ecological spaces and consciousness.
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- 7) France, R.L. 2006. Introduction to **watershed development**: Understanding and managing sprawl. Rowman & Littlefield. (pers. copy)
- 8) Johnson, B.R. and K. Hill. 2002. Ecology and design: Frameworks for learning. Island Press.

Benchmarking: Harvard State University

PENGEMBANGAN WILAYAH

3 sks

Rural Resource and Community Development

Course Objectives: (1) Increased students understanding and awareness of economic conditions for rural areas and communities in Indonesia; (2) Further develop student understanding of the basic concepts of economic theory; (3) Introduce student to regional growth theory and concepts of space in economic analysis as related to rural areas and communities; (4) Introduce student to factors that influence firm location decisions as related to rural areas and communities; (5) Introduce student to problems of and prospects for rural communities in the provision of public services; (6) Develop the ability of students to critically evaluate public policy issues concerning rural

communities, agriculture and natural resource use; (7) Develop student familiarity with computer based analytical techniques and software.

Course content: Communities and Rural Areas: What is a community? ; What is development? What is a rural area?. *Sustainable Agriculture and Rural Development* : The Implications of Sustainable Agriculture for Rural Economic Development; Sustainable Rural Community Development. Growth of Rural Regions : Basic concept in the growth of rural areas. Introduction to Input-Output Analysis: Basics of Input-Output (I-O) Analysis; Introduction to IMPLAN ; Forward and Backward Linkages in an I-O. Income, product, and resource flows in an economy. Concept of a Multiplier and Impact Analysis: Input-Output Analysis; Economic Base Theory: Understanding Your Community's Economy. An Application of Export Base Theory to Measure the Economic Impact Tourism in Rural areas. Shift-Share Analysis. Why Rural Regions and Communities Grow or Decline: General Theories: Neoclassical Growth Theory . Concepts of Economic Space: Location Theory with an Emphasis on Agribusiness; Spatial Markets from the input side; Spatial Markets from the output side. Location of the Agricultural Processing Plant: A Simulation Approach. Central Place Theory : Retail Trade Patterns of Rural East Java. c. Product cycle Theory: Theoretical Explanation of Economic Structure of Rural areas. Role of government : Justification for Providing Public Services in Rural Areas : Public Goods Theory, Externalities, Distributional Concerns. Problems in the Provision of Public Services in Rural Areas.

Dosen: Ir. Yeny Ernawati, MSP. PhD
Prof Dr Ir Kliwon Hidayat MS

Referensi:

1. Bardhan, P. and C. Udry, "Technological Progress and Learning." Chapter 12 of *Development Microeconomics*. Oxford University Press: New York. (1999).
2. Harberger, A. C. "Three Basic Postulates for Applied Welfare Economics: An Interpretive Essay." *Journal of Economic Literature*, 9 (September 1971): 785-97.
3. Harberger, A., "A Vision of the Growth Process." *American Economic Review*, 88:1 (March 1998), 1-32.
4. Harberger, A.C. "Basic Needs versus Distributional Weights in Social Cost-Benefit Analysis." *Economic Development and Cultural Change*. 3:3 (1984): 455-474.

5. McCombie, J. S.L., "A Synoptic View of Regional Growth and Unemployment: I - The Neoclassical Theory." *Urban Studies*, 25 (1988): 267-281. (ECONLIT)
6. Romer, Paul M., "The Origins of Endogenous Growth." *Journal of Economic Perspectives*, 8: 1 (Winter 1994), 3 -22. (JSTOR)
7. Solow, Robert M., "A Contribution to the Theory of Economic Growth." *Quarterly Journal of Economics*, 70:1 (February 1956): 65-94. (JSTOR)
8. Thorbecke, E. "Conceptual and Measurement Issues in Poverty Analysis." UNU-WIDER Discussion Paper No. 2004/04. <http://www.wider.unu.edu/publications/dps/dps2004/dp2004-004.pdf>
9. van Kooten, G.C. "The Theory of Welfare Measurement." *Chapter 3 - Land Resource Economics and Sustainable Development*. University of British Columbia Press:Vancouver. (1993).

Benchmarking: Louisiana State University

PENGEMBANGAN WILAYAH PESISIR & LAUTAN 3 sks *Coastal Resources Management*

Pengelolaan pembangunan wilayah pesisir : dirancang untuk memahami konsep, definisi, pengelolaan sumberdaya wilayah pesisir, serta memahami karakteristik, struktur dan dinamika ekosistem pesisir. Memahami tentang potensi dan permasalahan : degradasi SD, lingkungan, elemen dan proses pengelolaan wilayah pesisir. Memahami teknik perancangan pembangunan yang berdimensi ekologis, sosial ekonomi, sosial politis, hukum dan etika. Memahami tentang pengembangan kelembagaan dalam perencanaan dan pengelolaan serta pengembangan sistem informasi IPTEK dan SDM untuk menunjang pengelolaan pesisir secara terpadu. Penggalangan dukungan , partisipasi dan kemitraan semua stakeholders pembangunan di kawasan pesisir untuk keberhasilan pembangunan dan konservasi lingkungannya.

DOSEN: PROF. DR IR. S. MUHAMMAD, MS
DR.IR. NUDDIN HARAHAP, M.S.

Referensi:

1. [Coastal Management](#) Journal. Published by Taylor & Francis Inc
ISSN Print 0892-0753 ISSN Online 1521-0421

2. The Journal of Environment & Development. Bren School of Environmental Science and Management, University of California, Santa Barbara.

**Benchmarking: Center for Coastal Resources Management
Virginia Institute of Marine Science**

PENCEMARAN LINGKUNGAN & PENGENDALIANNYA 3 sks
ENVIRONMENTAL POLLUTION AND ITS CONTROL

Setelah selesai mengikuti mata kuliah ini (pada akhir semester) diharapkan mahasiswa mampu untuk: (1). Memahami konsep-konsep dan teknologi pengendalian pencemaran/Polusi LH; (2). Menjelaskan kembali beberapa kaidah dan prinsip pendekatan ekonomi dan ekologi dalam pengendalian limbah dan pencemaran LH; (3). Melakukan simulasi analisis pengendalian pencemaran ekosistem.

Pokok bahasan meliputi: Pendahuluan : Pembangunan dan DAL, Limbah dan pembuangan limbah, Gangguan lingkungan. Pencemaran lingkungan: Apa itu pencemar dan kerusakan akibat pencemar, Proses dan fenomena pencemaran: Bio-fisik, Geo-kimia, Sosial-ekonomi, Sosial budaya, Dampak akibat pencemaran.

Definition PL: Causes, effects and control measures of : a. Air pollution; b. Water pollution; c. Soil pollution; d. Marine pollution; e. Noise pollution; f. Thermal pollution; g. Nuclear pollution; Solid waste management: Causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution. Pollution case studies: Disaster management: floods, earthquake, cyclone and landslides.

Daya dukung lingkungan: Karakteristik dan perilaku ekosistem lingkungan hidup, Konsep daya dukung dan pengukurannya, Reversibilitas daya dukung. Lingkungan dan Ekonomi: Model neraca bahan / material, Aliran material dalam ekonomi, Lingkungan sebagai sumberdaya, Pilihan pengendalian pencemaran/polusi. Estimasi kerusakan akibat polusi/pencemaran: Tujuan dan metode, Respon terhadap polusi, Strategi dan analisis , Beberapa instrumen pendugaan gangguan /kerusakan lingkungan, Problematik pengukuran biaya kerusakan, Problematik kelangkaan informasi. Pendekatan

sosio-teknologi atas gangguan/ kerusakan lingkungan: Social discount rate dan biaya lingkungan, Risk dan uncertainty. Market Systems dan Polusi: Market system, Market failure, Property rights, Public goods. Prinsip-prinsip ekonomi dalam pengendalian pencemaran: Optimum level pengendalian polusi/pencemaran. Model pengendalian: a. Ekonomi baku mutu lingkungan, b. Teknologi baku mutu, c. Regulasi baku mutu, d. Strategi pengendalian, e. Enforcement pengendalian. Strategi minimisasi Limbah berbahaya : Biaya privat dan biaya sosial, Eksternalitas : teknis dan ekonomis, Problematik pengendalian biaya sosial, Instrumen pengendalian, Karakteristik limbah berbahaya, Perilaku di alam, Irreversibilitas dan optimal uses barang/jasa lingkungan

DOSEN : PROF DR. IR. CANDRAWATI CH, M.S.
DR. IR. RINI DWI ASTUTI, M.S.

Referensi:

1. Alley, E.R, Stevens, L.B., and Cleland, W. L., Air Quality Control Handbook. McGraw-Hill, 1998. ISBN: 0-07-001411-6.
2. Bagchi, A., Design, Construction, and Monitoring of Landfills, (2nd Ed). Wiley Interscience, 1994. ISBN: 0-471-30681-9.
3. Bagchi, A., Design, Construction, and Monitoring of Landfills, (2nd Ed). Wiley Interscience 1994. ISBN: 0-471-30681-9.
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5. Bellandi, R. (ed), Hazardous Waste Site Remediation: The Engineer's Perspective. Wiley Interscience, 1995. ISBN: 0471286931.
6. Bishop, P., Pollution Prevention: Fundamentals and Practice. McGraw Hill, 2000. ISBN: 0073661473
7. Buonicore, A.J. (ed) and W.T. Davis (ed), Air Pollution Engineering Manual. Air & Waste Management Association. Wiley-Interscience, 1992. ISBN: 0-471-28441-6.
8. Canter, L., Environmental Impact Assessment. McGraw Hill, 1996. ISBN: 0070097674
9. Casey, T.J., Unit Processes in Water and Wastewater Engineering. Wiley Interscience, 1997. ISBN: 0471966932
10. Cookson, J.T., Jr., Bioremediation Engineering - Design and Application. McGraw-Hill, New York, NY, 1995.
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12. Ewels, J., Bioremediation Principles. McGraw Hill, 1998. ISBN: 0070577323
13. Furman, A., Yenigün, O., “The Environmental Dimension: Introduction to Ecology and Environmental Problems”, 2nd Ed., Istanbul. Boğaziçi University, Institute of Environmental Sciences, 1998. QH541.F87.
14. Guyer, H.H., Industrial Processes and Waste Stream Management. Wiley Interscience, 1998. ISBN: 0471299847.
15. Lerch, I. And Paleologos, E., Environmental Risk Analysis. McGraw Hill, 2001. ISBN: 0071372660
16. McCarty, P., and Rittmann, B., Environmental Biotechnology: Principles and Applications. McGraw Hill, 2000. ISBN: 0072345535
17. Metcalf & Eddy, Inc., Wastewater Engineering: Collection and Pumping of Wastewater. McGraw-Hill, 1981. ISBN: 007041680X
18. Reed, S.C. and Crites, R.W., Natural Systems for Waste Management and Treatment. McGraw Hill, 1996. ISBN: 0071346627
19. Sharma, H.D., and Lewis, S.P., Waste Containment Systems, Waste Stabilization, and Landfills: Design and Evaluation. Wiley Interscience, 1994. ISBN: 0471575364.
20. Sharma, H.D., and Lewis, S.P., Waste Containment Systems, Waste Stabilization, and Landfills: Design and Evaluation. Wiley Interscience, 1994. ISBN: 0471575364.
21. Turk, A., Turk, J., and Wittes, J.T., “Ecology Pollution, Environment”, Saunders, 1972
22. Unger, P.W., Managing Agricultural Residues. Lewis Pub., 1994. ISBN: 0-873-71730-9.
23. Veissman, W. and Hammer, M., Water Supply and Pollution Control (6th Ed.) Addison Wesley, 1998. ISBN: 032101460X
24. Vesilind, P.A., Pierce, J.J., Weiner, R.F., “Environmental Pollution and Control”, 3rd Ed., Butterworth – Heinemann, 1990.
25. Ward, R.C., Loftis, J.C. and McBride, G.B., Design of Water Quality Monitoring Systems. Wiley Interscience, 1990. ISBN: 0471283886

Benchmarking: The Association of Professional Engineers and Geoscientists of British Columbia (APEGBC)

PENYULUHAN & KOMUNIKASI LINGKUNGAN
ENVIRONMENTAL COMMUNICATION

3 sks

At the conclusion of this course the student will have acquired the following knowledge and skills: (1) an understanding of environmental and other science issues that need media attention because of their impact on humans today, including indicators of living systems decline as well as social indicators, and the root causes of unsustainability; (2) an understanding of system sustainability principles, including ecological integrity, economic security, democracy and community, and an introduction to The Natural Step; (3) ability to survey sources available for acquiring information on environmental and other science issues; (4) an understanding of the various media channels available for dissemination of information to the general public; (5) effective writing and/or communication skills for each of the media channels; (6) effective and persuasive speaking skills for a variety of communication situations; (7) a sense of responsible media ethics and environmental ethics and learn techniques for influencing others to adopt an environmental ethic of sustainability.

Course content:

Environmental Issues including Indicators of Living Systems Decline and Social Indicators: Human Population Growth and resulting Social and Economic Impacts, Resource Depletion, Pollution, and other Unsustainable Trends. Sustainability Principles including Ecological Integrity, Economic Security, Democracy and Community, and an introduction to The Natural Step. Sources of Information and Research Techniques. Risk Perception and Risk Realities. Mass Media Channels available for communicating environmental issues including newspaper reporting and writing and magazine feature writing as well as visual and electronic reporting. Environmental Public Relations and Advertising Campaigns. Organizations and Environmental Sustainability. Speaking for the Environment. Environmental Persuading and Negotiating, including lobbying and letter-writing campaigns. Environmental Ethics for a Sustainable Future, including Environmental Justice issues. Special Topics

Dosen : Prof Dr Ir Soegijanto MS
Dr Ir. Y. Yuliati, MS

Referensi:

1. The handbook "ENVIRONMENTAL COMMUNICATION: Messages, Media & Methods" , 1997 Edition, by Lea J. Parker
2. Environmental Economics, by Ian Hodge, St. Martin's Press, New York 1995

3. *Beyond Limits, Confronting Global Collapse, Envisioning a Sustainable Future*, by D.H. and D.L. Meadows and J. Randers, Chelsea Green Publishing Co., Post Mills, Vermont
4. "Educating a Nation: The Natural Step," by Karl-Henrik Robert, from *In Context*, No. 28, p. 10-15, Spring 1991
5. *The Ecology of Commerce*, by Paul Hawkin, Harper Business, 1993
6. "The Economics of Sustainability: Challenges," by Stephen Viederman, Jessie Smith Noyes Foundation, 16 East 34th St., New York, N.Y. 10017, 1994
7. "Eco-Societal Restoration: Re-examining Human Society's Relationship with Natural Systems," distinguished lecture by Dr. John Cairns, Jr., Center for Environmental and Hazardous Studies, Virginia Polytechnic Institute and State University, 1994
8. "Harvesting One Hundredfold: Key Concepts and Case Studies in Environmental Education," by Donella H. Meadows, United States Environment Program, 1989

Benchmarking: Northern Arizona University

PERENCANAAN LINGKUNGAN

3 sks

Environmental Planning

This course is designed as an overview of environmental planning and introduces students to the myriad of topics associated with this diverse field. By the end of the semester, students will be familiar with the major environmental challenges facing planners, as well as some of the tools used to address these challenges. Major topics that we will cover during the semester include: history of the environmental movement and environmental policymaking ; environmental ethics; environmental justice; regulatory issues related to environmental planning; water quality & supply; air quality, including climate change and AB32; transportation and the environment; natural hazard planning; sustainable development; and collaborative planning.

Course content: Introduction To Environmental Planning – Managing Human-Nature Interactions. Managing Human-Nature Interactions. Planning for Wildlife Habitat; Habitat Conservation Planning. Planning for Sustainable Air Quality; Transportation Planning and the Environment. Planning for Energy – Climate Change and the Role for Planning; AB32/SB375 and California Cities; Planning for Natural Hazards and Natural Disasters. Planning for

Sustainable Water Quality; Planning for Sustainable Water Supply; Planning for a Sustainable Built Environment. Planning for the Built Environment: Greenfield Development and Site Design; Ecological Footprint and Planning

Dosen: Dr. Imam Hanafi, M.S.
Ir. Suryono, MSP., PhD.

Referensi:

1. Brown, Lester A. 2001. Eco-economy: Building an economy for the earth. Earth Policy Institute. <http://www.earth-policy.org/Books/Eco_contents.htm> (not necessary to purchase, open access online):
2. Chang-Hee, Christine Bae. "Transportation and the Environment." In *The Geography of Urban Transportation* 3rd ed., eds. Susan Hanson and Genevieve Giuliano, 356-381. New York: Guilford Press, 2004.
3. Jabareen, Yosef Rafeq. "Sustainable Urban Forms: Their Typologies, Models, and Concepts." *Journal of Planning Education and Research* 26 (2006): 38-52
4. Jepson, Edward J. Jr. "The Adoption of Sustainable Development Policies and Techniques in U.S. Cities: How Wide, How Deep, and What Role for Planners?" *Journal of Planning Education and Research* 23 (2004): 229-241.
5. Loew, Brian. "Multiple Species Habitat Conservation Planning: Goals and Strategies of Local Governments." *Environmental Management* 26, Supplement 1 (2000): S15-S21.
7. Randolph, John. "Managing Human-Nature Interactions." In *Environmental Land Use Planning and Management*, 3-15. Washington, D.C.: Island Press, 2004.
8. Tom Daniels and Katherine Daniels, 2003. *The Environmental Planning Handbook*, Planners Press (ISBN 978-1884829666).
9. Wackernagle, Mathis, and William Rees. "What Is an Ecological Footprint?" In *The Sustainable Urban Development Reader*, ed. Stephen M. Wheeler and Timothy Beatley, 211-219. New York: Routledge, 2004.

Benchmarking: IOWA STATE UNIVERSITY

PROSES KEBIJAKAN & IMPLEMENTASINYA

3 sks

Setelah selesai mengikuti mata kuliah ini (pada akhir semester) diharapkan mahasiswa mampu untuk: (1). Memahami konsep-konsep kebijakan pengelolaan LH ; (2). Menjelaskan kaidah, prinsip dan paradigma kebijakan pengelolaan LH; (3). Melakukan simulasi analisis kebijakan pengelolaan LH

Pokok bahasan meliputi: Kebijakan Pengelolaan LH di Indonesia: Perkembangan, Kebijakan Nasional, Kebijakan sektoral. Analisis Kebijakan lingkungan: Kriteria analisis evaluasi, Kebijakan desentralisasi lingkungan: Liability law; Property Rights. Analisis Kebijakan: Ekonomi baku mutu/standar kualitas lingkungan, Kebijakan berbasis insentif. Kebijakan Publik Pengendalian Pencemaran air: Benefit dan Cost perbaikan kualitas air, Baku mutu dengan biaya terendah, Subsidi; Regulasi/enforcement; Assessment Pencemaran air, Kecenderungan mutakhir. Kebijakan Publik pengendalian polusi udara: Benefit dan Cost perbaikan kualitas udara, Kebijakan formal dan kendala yang dihadapi, Automobil. Problem khusus pengendalian polusi udara: polutan apa yang terpenting; tanggung-jawab perawatan; mengeliminir Pb, Polutan taxes. Beberapa isu penting manajemen lingkungan: Biaya pengendalian pencemaran/polusi, Teknik dan metode valuasinya, Indikator dan parameter. Equity dan Pollution control: Benefit; Cost; Cost subsidies; Assistance. Isu- isu penting manajemen lingkungan: Perkembangan teknologi dan polusi/Pencemaran, Identifikasi & deskripsi. Populasi; pertumbuhan ekonomi dan lingkungan, Perlindungan kelangkaan. Issue- isu penting manajemen lingkungan: Politik Polusi, Persepsi dan peranserta masyarakat, Dampak sosial. Kebijakan tingkat daerah: Baku mutu regional, BAPPEDALDA, Pemanfaatan SDA-LH daerah. Peraturan perundangan Lingkungan Hidup: UULH, Peraturan Pemerintah, Kebijakan departemen teknis

Dosen: Prof.Dr. Yuli Andi Gani, MS
Dr.Drs. Imam Hanafi, MS

Referensi:

1. Graham K. Wilson. "Globalization and Environmental Regulation," in Maryann P. Feldman and Albert N. Link, eds., *Innovation Based Policy in the Knowledge Based Economy* (Boston: Kluwer, 2001).
2. Uday Desai, "Institutions and **Environmental Policy** in Developed Countries" in *Environmental Politics and Policy in Industrialized Countries* (Cambridge: MIT Press, 2004).

3. Vogel, David, "Representing Diffuse Interests in Environmental Policymaking," in R. Kent Weaver and Bert A. Rockman, eds. *Do Institutions Matter?* (Washington, D.C.: Brookings Institution, 1993).
4. Janicke, M., "The Political System's Capacity for **Environmental Policy**," in M. Janicke and H. Weidner, eds, *Capacity Building in National **Environmental Policy***, (Berlin: Springer-Verlag, 2002).
5. Quan Li and Rafael Reuveny. "Democracy and Environmental Degradation." *International Studies Quarterly*, Vol. 50, pp. 935–956.
6. Robin Eckersley, "The Greening of the Democratic State" in *The Green State: Rethinking Democracy and Sovereignty* (Cambridge: MIT Press, 2004).
7. Daniel J. Fiorino, *The New Environmental Regulation* (Cambridge: MIT Press, 2006),
8. Kathryn Hochstetler, Kathryn Sikkink and Margaret E. Keck. *Greening Brazil: Environmental Activism in State and Society* (Durham, NC: Duke University Press, 2007), Chapters 1 and 2.
9. J. Jacobs, "Community Participation, the Environment, and Democracy: Brazil in Comparative Perspective," *Latin American Politics & Society*, 44 (Winter 2002): 59-88.
10. Michael R. Reich and B. Bowonder, "**Environmental Policy** in India: Strategies for Better **Implementation**," *Policy Studies Journal*, Vol. 20, Issue 4 (2005): 643 – 661.
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13. Redclift, Michael and Ted Benton (eds) 1994. *Social theory and the global environment*. New York: Routledge.
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16. Food and Agriculture Organization of the United Nations. 1982. "Policy and Planning." Chapter 4 in *Forestry in China*. FAO forestry paper 35. Rome: FAO. Pp.105-115, 121.
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Benchmarking: SOUTHERN OREGON UNIVERSITY

**SANITASI LINGKUNGAN
ENVIRONMENTAL SANITATION**

3 sks

Emergency water supply & environmental sanitation – Given the frequency of displaced populations as a consequence of conflict and the inevitable occurrence of natural disasters, there is a need for a basic knowledge in the provision of safe water supply and introduction of environmental sanitation under difficult circumstances.

Coarse content: *Sanitation*: Dwellers sanitation; Code of practice for adequate environmental facilities in a infrastructure- Building: Space, lighting, air movement and circulation, temperature control, plumbing facilities, ventilation and air conditioning Principles of excreta disposal, water borne and water sanitation related diseases; Different sanitation options; Sanitation practices in Bangladesh

Solid Waste Management: Sources and characteristics of Solid waste; Solid waste generation; Collection and transportation (Community and Municipality); Volume reduction; sorting; Stabilization; Incineration; Resource recovery and recycling; Land filling; Composting; General aspects of solid waste management; Community mobilization in solid waste management; Milk and food sanitation; Hospital sanitation. *Environmental Health*: Disease description, mode of transmission of diseases, clean water, sanitation, health, nutrition, application of engineering principles to the control of communicable diseases; Vectors control; Insecticides and bactericides, occupational health; *Hygiene Education and Community Participation*: Scope and methodology for hygiene education; Development of hygiene education program; Social mobilization in hygiene education; Participatory management and planning in WSS, Gender aspects in WSS, Cost recovery and sustainability of water supply and sanitation services.

Dosen : Prof Dr.dr.M Mulyohadi Ali, MS., SpF
Prof Dr A. L. Abadi, MS

Referensi:

1. Calow, P. Handbook of ecotoxicology, Blackwell Scientific Publications, 1994, 478 p.
2. FLu, .C. Basic toxicology: fundamentals, target organs, and risk assessment (3rd edition), Taylor and Francis, 1996, 358p.
3. Kawata, K. (1963), "Environmental Sanitation in India", Lucknow Publishing House.
4. Minor, L.J. (1983) "Sanitation, Safety and Environmental Standards" AVI Publishing Co. Westport, Connecticut.
5. Rand, d. Fundamentals of aquatic toxicology, Taylor & Francis, 1995, 1125 p.
6. Rittmann B.E. & P.L. McCarty, Eds. Environmental Biotechnology - Principles and Applications. McGraw-Hill International Editions, Biological Sciences Series, 754 p. ISBN 0-07-118184-9.
7. Timbrell, J. Principles of biochemical toxicology (3rd edition), Taylor and Francis, 2000, 394p.
8. Timbrell, J.A. Introduction to toxicology (2nd edition), Taylor & Francis, 1995, 167p.
9. Van Leeuwen en C., J. Hermens, Risk assessment of chemicals: an introduction, Kluwer Academic Publs., 1995, 374 p.

Benchmarking: GHENT UNIVERSITY**[Master of Environmental Sanitation and Management](#)****SISTEM INFORMASI LINGKUNGAN****3 sks***Environmental Information System*

Setelah mengikuti matakuliah ini mahasiswa dapat menyusun konsep manajemen sistem informasi untuk meningkatkan kinerja dan daya saing perusahaan/ organisasi agribisnis.

Pokok bahasan meliputi: Prinsip-prinsip manajemen fungsi sistem dalam perusahaan, teknik-teknik analisa kebutuhan organisasi akan informasi (Organizational Information Reqrutment Analysis), perencanaan sistem informasi manajemen, pengorganisasian fungsi sistem informasi manajemen, personalia sistem informasi manajemen, pengendalian atas fungsi sistem informasi manajemen.

Arti penting sistem informasi manajemen dalam organisasi, sistem pemrosesan data, teknologi informasi dan dampaknya atas pengembangan sistem informasi manajemen dalam organisasi, konsep file dan database, relevansi sistem informasi manajemen dalam organisasi atas pengambilan keputusan, kerangka manajemen sistem informasi serta gambaran sistem informasi fungsional yang ada dalam suatu organisasi.

DOSEN : EKO GANIS S, SE. M.COM (HONS), PH.D.
Ir Agus Suharyanto M.Eng, Ph.D.

Referensi:

1. Anderson, Virginia and Lauren Johnson. 1997. [Systems Thinking Basics: From Concepts to Causal Loops](#). Pegasus Communications; Bk&CD-Rom edition.
2. Breman, Joe. Ed. 2002. *Marine Geography: GIS for the Oceans and Seas*. ESRI Press.
3. Campbell, James B. 2002. [Introduction to Remote Sensing](#). (3rd Edition). The Guilford Press.
4. Craig, William J. and Trevor M. Harris, Daniel Weiner. 2002. [Community Participation and Geographical Information Systems](#). CRC Press.
5. Cuomo, Andrew. 2000. [Mapping Your Community: Using Geographic Information to Strengthen Community Initiatives](#). Diane Pub Co; Reprint edition.
6. Dochain D. and Vanrolleghem P.A. (2001) Dynamical Modelling and Estimation in Wastewater Treatment Processes. IWA Publishing, London, UK. ISBN 1- 900222-50-7. pp. 342.
7. Few, Arthur. 1996. *System Behavior and System Modeling Using Stella*. University Science Books.
8. Ford, Andrew. 1999. [Modeling the Environment](#) Island Press. See: Chapter 1. [Overview](#) - [Exercises](#) - [Models and Cases](#) ([Amazon](#) listing).
9. Foresman, Timothy W. et al.1998. *History of Geographic Information Systems: Perspectives from the Pioneers*. , Editor. Prentice Hall, 1998.
10. Isee Systems. 2004. [Introduction to Systems Thinking with STELLA Guide \(Win\)](#).
11. Jankowski, Piotr, and Timothy L. Nyerges. 2001. [GIS for Group Decision Making](#). CRC Press.

12. Kofi Asante-Duah D. (1998) Risk assessment in environmental management. J. Wiley, New York, ISBN 0-471-98147-8. pp. 515.
13. Loomis, J. and Helfand, J. (2001) Environmental policy analysis for decision making. Dordrecht, Kluwer Academic Publishers, ISBN 0-7923-6500-3.
14. Spencer, John, Brian G. Frizzelle, Phillip H. Page, John B. Vogler 2003. [Global Positioning System: A Field Guide for the Social Sciences](#). Blackwell Publishers.
15. Turyatunga, Frank R. 2004 . [DISCUSSION PAPER: Tools for Local-Level Rural Development Planning: Combining use of Participatory Rural Appraisal and Geographic Information Systems in Uganda](#). WRI (World Resources Institute).
16. Wrisberg N. and H.A. Udo de Haes (2002) Analytical tools for environmental design and management in a systems perspective. Dordrecht, Kluwer Academic Publishers, ISBN 0-4020-0626-8, p275.

Benchmarking: GHENT UNIVERSITY

Master of Environmental Sanitation and Management

SISTEM PRODUKSI BERSIH

3 sks

Clean Production Systems

Produksi Bersih : dirancang untuk memahami pengertian, tujuan, manfaat serta peraturan dan kebijakan yang berlaku dalam melaksanakan program produksi bersih.

Pengertian produksi bersih. Prinsip-prinsip produksi bersih, khususnya dalam rangka pengelolaan kegiatan-kegiatan produksi agribisnis. Pengelolaan limbah, pemanfaatan limbah, minimisasi limbah dan audit limbah. Keterkaitan antara komponen-komponen lingkungan dengan konsep produksi bersih (serta teknologi bersih), faktor-faktor yang mempengaruhi kegagalan dan keberhasilan dalam implementasi program produksi bersih di lapangan sebagai upaya efisiensi operasi. Strategi Bapedal dalam pelaksanaan Produksi Bersih. Petunjuk Pencegahan dan Penanggulangan Pencemaran Limbah Padat dan Cair Industri. Sertifikasi ISO 14.001.Sistem Pengelolaan Lingkungan. Produksi dan Teknologi Bersih. Peraturan Pemerintah No. 18. 1978: Pengelolaan Limbah B3.

Prinsip-prinsip produksi bersih, khususnya dalam rangka pengelolaan kegiatan-kegiatan industri, pertanian, penyusunan AMDAL dll. yang akrab lingkungan termasuk teknik –teknik melakukan minimisasi timbulan limbah. Keterkaitan antara komponen-komponen lingkungan dengan konsep produksi

bersih(serta teknologi bersih), juga faktor-faktor yang mempengaruhi kegagalan dan keberhasilan dalam implementasi program produksi bersih di lapangan sebagai upaya efisiensi operasi.

DOSEN: PROF.DR.IR. CANDRAWATI CAHYANI, MSC.
DR.IR. LILY AGUSTINA MS

Referensi:

1. Freeman H., et. al., (1987) Environmental High-Technology from Finland, pp. 186. Kirjapaino R. Lunkka Ky, Helsinki, Finland.
2. Freeman, H., et. al., (1980) Waste Minimization Opportunity Assessment manual. The United States EPA, Hazardous Waste Engineering Research Laboratory, Office of Research and Development, Cincinnati, Ohio, U.S.A.
3. Freeman, H.M., (1990) Hazardous waste minimization. Mc Graw Hill, Inc., New York, NY., U.S.A., pp. 343.
4. Huisingh, D., Bailey, V., (1982) Making Pollution Prevention Pay: Ecology with Economy as Policy. Donald Huisingh and Vicki Bailey, Pergamon Press, New York, NY. USA., pp. 156.
5. Huisingh, D., Martin, L., Hilger, H., Seldman, N., (1986) Proven Profits from Pollution Prevention: Case Studies in Resource Conservation and Waste Reduction. Institute for Local Self-Reliance, Washington, D.C., pp. 316.
6. Korhonen, M., (Ed.) (1989) Non waste Technology, Vol.II. Technical Research Centre of Finland, pp. 372. Espoo, Finland.
7. Korhonen, M., (Ed.) (1989) Non-Waste Technology, Vol.I. Technical Research Centre of Finland, pp.457. Espoo, Finland.
8. van Weenen, J.C., (1990) Waste prevention, theory and practice (a Ph.D. Thesis). J.C. Van Weenen, Castricum, The Netherlands, pp. 418.

Benchmarking:

**Erasmus Center for Environmental Studies, Erasmus University,
The Netherlands.**

SOSIOLOGI LINGKUNGAN DAN PEMBANGUNAN
Environmental Sociology

3 sks

The goal of this course is to achieve a deeper understanding, both theoretical and practical, of the interactions and interdependencies between human societies and the ecosystems that surround us. We will examine current ecological crises and opportunities from as they are expressed in agro-food studies. We will examine political economy of food production and the environment, cultural sociologies of food, environment and risk, and agro-food networks. The course will take a macrosociological approach to analysis of agro-food ecology by focusing on varied patterns of society and nature interactions in particular contexts of economy, ecology, and the exercise of power.

Pokok bahasan: How ecology, technology, politics, economics, and culture intersect. By analyzing key contemporary environmental debates, students develop skills necessary for investigating any sophisticated social issue. Topics we cover: the environmental movement (is it effective?); the sustainable development debate (the tension between environmental protection and the plight of developing nations); capitalism and technology (friends or foes of the environment?); global warming (where science, economics, and politics collide).

Dosen : Dr. Drs Suryadi, M.S.
Prof Dr Ir K. Hidayat, M.S.

Referensi:

1. Allan Schnaiberg (1994) "The Political Economy of Environmental Problems and Policies: Consciousness, Conflict and Control Capacity." *Advances in Human Ecology* 3: 23-64.
2. Busch, Lawrence and Arunas Juska. 1997. "Beyond Political Economy: Actor Networks and the Globalization of Agriculture." *Review of International Political Economy*, 4(4), pp. 688-708.
3. Buttel, Frederic. "Environmental and Resource Sociology: Theoretical issues and Opportunities for Synthesis." In *Rural Sociology*, 1996, vol 61(1), pp. 56-75.
4. Diamond, Jared M. 1997. *Guns, Germs, and Steel: The Fates of Human Societies*. New York: W.W. Norton.
6. Frederick H. Buttel (1978) "Environmental Sociology: A New Paradigm?" *American Sociologist* 13(4): 252-256.
7. Frederick H. Buttel (1987) "New Directions in Environmental Sociology." [Annual Review of Sociology](#) 13: 465-488.

8. Michael Goldman and Rachel A. Schurman (2000) "Closing the 'Great Divide': New Social Theory on Society and Nature." [Annual Review of Sociology](#) 26: 563-584.
9. Robert Gramling and William R. Freudenburg (1996) "Environmental Sociology: Toward a Paradigm for the 21st Century." *Sociological Spectrum* 16(4): 347-370.
10. William R. Catton, Jr. and Riley E. Dunlap (1978) "Environmental Sociology: A New Paradigm." *American Sociologist* 13(1): 41-49.
11. Murray Bookchin (1986[1971]) "Post-Scarcity Anarchism." Pp. 11-76 in *Post-Scarcity Anarchism*, 2nd Ed. Black Rose.
12. Murray Bookchin (1986) "What is Social Ecology?" Pp. 49-76 in *The Modern Crisis*. New Society.
13. Douglas H. Boucher, Sam Jones, and Kathleen H. Keeler (1982) "The Ecology of Mutualism." [Annual Review of Ecology and Systematics](#) 13: 315-347.
14. Andrew Light and Alan Rudy (1996) "Social Ecology and Social Labor: A Consideration and Critique of Murray Bookchin." Pp. 318-342 in D. Macauley (ed.) *Minding Nature: The Philosophers of Ecology*. Guilford Press.

Benchmarking: MICHIGAN STATE UNIVERSITY

TQM PENGELOLAAN LINGKUNGAN *Environmental Quality Management*

3 sks

The objectives of the course are to: (1) introduce students to the major environmental concepts and issues confronting managers working in corporations, businesses, government, industries, and non-profit groups; (2) provide students with strategic and operational approaches to environmental management that can be taken by business and society; and (3) introduce students to the concept of environmental management systems and to ISO 14001, the international environmental management system standard.

Course content: Development of Environmental Concerns; Concepts & Principles of Ecology. Examination of the impact of environmental issues on organizational structure and operations from a management perspective with a focus on how environmental concerns create threats opportunities and affect organizational strategic management. Discussion of current environmental issues involving research and development legislation regulatory policies and technological advances in environmental management and examination of the new "corporate culture" that integrates environmental considerations into

organizational design. A special emphasis will be placed on public perceptions of environmental issues and how they affect business strategy. Management Practice & the Environment; Toward a Sustainable Society. Introduction to ISO 14001 & Other Environmental Management Systems. ISO 14001 Standard Document, Sections 4.1 and 4.2; Environmental Management Executive Order. ISO 14001: Planning. ISO 14001 Standard Document. ISO 14001: Implementation and Operation. ISO 14001: Checking and Corrective Action.

Dosen: Prof. Armanu Thoyib SE, MSc PhD.

Referensi:

1. James R. Evans and William B. Lindsay, *The Management and Control of Quality*, 5th ed. (Minneapolis: West Publishing Company, 2002).
2. *Principles of Environmental Management; The Greening of Business*; by Rogene A. Buchholz; Second Edition, Prentice Hall, 1998 (Required).
3. *ISO 14001 Implementation Manual*; by Gayle Woodside, Patrick Aurricchio, and Jeanne Yturri; McGraw Hill, 1998 (Optional)

Benchmarking: University of New Orleans.

**TOKSIKOLOGI LINGKUNGAN:
ENVIRONMENTAL TOXICOLOGY**

3 sks

Introduction to Environmental Toxicology: Definition, classification, origin and general nature of toxicants in environment, factors affecting toxicity, nutritional and non nutritional food supplements and their effects, mutagenesis, teratogenesis, carcinogens, hallucinogens, phytotoxins and animal toxins. Systematic and Eco-toxicology : Toxic response of different body systems likes respiratory, gastro-intestinal tract, Liver, kidney, immune system, reproductive system. Problems and approach, Environmental distribution of chemicals in air, water, sediments, soil and biota; Effects of toxicants on ecosystem, Detoxification of toxicants in resistant biota. Experimental methods for measuring toxicity; Types of bioassays (Ames test, bioluminescence, algal toxicity, gene induction etc.), the interaction of chemicals with ecosystems; Methods for assessing the impacts of chemicals on ecosystems (toxicity tests, field assessment, special analyses such as biomarkers, bioaccumulation, mesocosm and microcosm studies). Biotransformation, bioaccumulation and bio-magnification of toxicants ,Toxicants absorption and distribution of

toxicants in animal body, Bio-transformation of toxicants,antidotes treatment and their detoxification of toxicants, Bio-accumulation, Biomagnification.

Environment and health and environmental stress : Basic principles of environmental health, community health, impact of changing environment on biota, effect of stress on environment, adaptations and tolerance level of various organisms and stress factors, micro-organisms of extreme environment. Occupational health hazards : Stress, man, machine and environment, ergonomics and occupational physiology and Hazards of working environment safety management of occupational hazards. Ecological risk assessment process and evaluation of human exposure; Case studies related to accidental discharge of pollutants and their impacts on the ecology and inhabitants of the surrounding areas.

Dosen: Prof Dr Ir A. Latif Abadi, M.S.
Dr Ir Zaenal Kusuma, M.S.

Referensi:

1. Toxicology on the Web. A variety of course materials, such as this syllabus, old examinations, reading assignments, case-studies, and examination schedule, is at <http://toxicology.usu.edu/540/540.htm>.
2. *Cassarett and Doull's Toxicology: The Basic Science of Poisons*, C.D. Klaassen (ed.), 7th Edition, 2008, McGraw-Hill, New York (ISBN 978-0-07-147051-3).
3. INTRODUCTION TO ENVIRONMENTAL TOXICOLOGY. BY **WAYNE G. LANDIS, MING-HO YU**
4. Basic Environmental Toxicology - by LG Cockerham, Barbara S Shane - 646 pages.

Benchmarking: Utah State University, Interdepartmental Graduate Toxicology Program.

