BUKU KONSULTASI MAHASISWA

PROGRAM STUDI PENDIDIKAN BIOLOGI

NAMA :

NIM :

FAKULTAS KEGURUAN DAN ILMU PENDIDIKAN
UNIVERSITAS MULAWARMAN

KATA PENGANTAR

Puji syukur atas rahmat dan karunia kami panjatkan kepada Tuhan Yang Maha Esa, Program Studi Pendidikan Biologi akhirnya dapat menyelesaikan "Buku konsultasi". Buku konsultasi ini merupakan buku pegangan mahasiswa, yang didalamnya memuat kurikulum, yang dilengkapi dengan: 1) identitas program studi, 2) rumusan Standar Kompetensi Lulusan (SKL) yang dinyatakan dalam capaian pembelajaran lulusan (CPL), 3) matriks sebaran mata kuliah pada tiap semester, yang memuat: a) struktur kurikulum program studi pendidikan biologi, b) pengaturan mengenai beban belajar dan kelulusan, c) sebaran mata kuliah dalam semester, d) format konsultasi ke dosen Wali, dan 4) deskripsi mata kuliah.

Kurikulum Program Studi Pendidikan Biologi disusun berdasarkan Permenristekdikti No. 44 Tahun 2015 yang menjadi standar kompetensi lulusan dan Kerangka Kualifikasi Nasional Indonesia (KKNI). Penyusunan dan rancangan kurikulum program studi pendidikan biologi FKIP Universitas Mulawarman juga mengikuti acuan Capaian Pembelajaran (*Learning Outcome*) yang dihasilkan dari pertemuan Asosiasi Program studi Pendidikan Biologi Indonesia (APSPBI) dan Himpunan Peneliti dan Pendidik Biologi Indonesia (HPPBI) yang selanjutnya disesuaikan pula dengan penciri Perguruan Tinggi berdasarkan kebutuhan dan perubahan serta perkembangan dunia kerja.

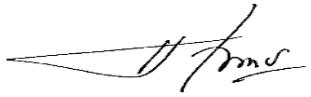
Tujuan Buku Konsultasi ini dibuat untuk mensosialisasikan: 1) Visi dan Misi program studi pendidikan biologi, 2) kurikulum program studi pendidikan biologi, dan 3) sebagai dasar bagi mahasiswa untuk melakukan konsutasi ke dosen wali dalam mengambil mata kuliah di setiap semester.

Pada kesempatan ini kami mengucapkan terimakasih kepada:

1. Prof. Dr. H. Muh. Amir Masruhim M.Kes selaku Dekan FKIP Universitas Mulawarman yang telah memberikan kesempatan dan memfasilitasi program studi Pendidikan Biologi untuk menyusun "Buku Konsultasi ini..
2. Dr. H. Zulkarnaen, M.Si, selaku Pembantu Dekan I, yang telah memberikan Kesempatan Kepada Program Studi Pendidikan Biologi dalam menyusun Kurikulum.
3. Dr. Mukhamad Nurhadi M.Si, selaku Ketua Jurusan Pendidikan MIPA.
4. Kepada seluruh dosen-dosen Pendidikan Biologi yang telah berpartisipasi aktif atas sumbangsih pemikiran dan sarannya bagi penyempurnaan buku konsultasi Program Studi Pendidikan Biologi.

Akhirnya besar harapan kami, "Buku Konsultasi" ini bermanfaat bagi Program Studi Pendidikan Biologi dan mahasiswa yang menempuh studi, tak lupa kritik dan saran yang membangun bagi penyempurnaan buku ini akan kami terima dengan terbuka .

Koordinator Prodi Pendidikan Biologi
FKIP Universitas Mulawarman



Dr. Hj. Herliani, M.Pd
NIP. 19670912 1992 03 2 00

BIODATA

Nama Mahasiswa (lengkap) : ……..

Tempat/tanggal lahir : ……..

NIM : ……..

Jenis Kelamin : ..……

Agama : ……..…..

Alamat Mahasiswa :

a. Samarinda : ……..

b. Daerah : ……..

c. No.HP : ……

FOTO
Mahasiswa
3 X 4

Samarinda,……..

Koordinator Program Studi Pendidikan Biologi

Dr. Hj. Herliani, M.Pd
NIP. 19670912 1992 03 2 002

IDENTITAS PROGRAM STUDI

Perguruan Tinggi	: Universitas Mulawarman
Fakultas	: Keguruan dan Ilmu Pendidikan
Program Studi	: Pendidikan Biologi
SK Berdiri	: SK Dirjen Pendidikan Tinggi Departemen Pendidikan dan Kebudayaan Republik Indonesia No. 102/DIKTI/Kep1985, Tanggal 21 Agustus 1985
Jenjang	: Sarjana
Gelar Lulusan	: Sarjana Pendidikan Biologi (S.Pd)
Akreditasi	: Peringkat Nilai Terakhir A
SK Akreditasi	: BAN PT RI No. 1748/SK/BAN-PT/Akred/S/VII/20.Tanggal 17 Juli 2018
Alamat Kantor	: Jalan Muara Pahu Kampus Gunung Kelua Kota Samarinda
Website	: http://biologi.fkip.unmul.ac.id/admin
Email	: biologi.fkip.unmul.ac.id
Koordinator Program Studi	: Dr. Hj. Herliani, M.Pd

I. VISI DAN MISI PROGRAM STUDI PENDIDIKAN BIOLOGI

Visi Program Studi Pendidikan Biologi Fakultas Keguruan dan Ilmu Pendidikan Universitas Mulawarman sudah relevan dan konsisten dengan Visi Fakultas Keguruan dan Ilmu Pendidikan dan Visi Universitas Mulawarman sebagai lembaga yang menaungi Program Studi Pendidikan Biologi. Relevansi dan konsistensi tersebut dapat dilihat pada Tabel 1.1.

Tabel 1.1. Gambaran Konsistensi Visi Antara Program Studi Pendidikan Biologi dengan Lembaga (Visi Fakultas Keguruan dan Ilmu Pendidikan dan Visi Universitas mulawarman)

Visi	Deskripsi
Visi Universitas Mulawarman	Universitas berstandar internasional yang mampu berperan dalam pembangunan bangsa melalui pendidikan, penelitian, dan pengabdian kepada masyarakat yang bertumpu pada sumber daya alam khususnya hutan tropis lembab (tropical rain forest) dan lingkungannya
Visi Fakultas Keguruan dan Ilmu Pendidikan	Menjadi fakultas kependidikan bereputasi internasional berwawasan hutan tropis lembab yang didukung tatakelola berintegritas.
Visi Keilmuan Program Studi Pendidikan Biologi	Mengembangkan Pendidikan dan pembelajaran biologi berbasis potensi dan kearifan lokal yang bertumpu pada hutan tropis lembab dan lingkungannya".

II. PROFIL LULUSAN DAN TUJUAN PROGRAM STUDI ((Program Educational Objectives/PEO)

1. Profil Lulusan

Program Studi Pendidikan Biologi menetapkan profil kompetensi. Cara memperoleh profil kompetensi adalah hasil analisis *tracer study* alumni, masukan dari *stake holder*, dan informasi dari hasil kebutuhan masyarakat. Berdasarkan penelusuran data alumni Program Studi Pendidikan Biologi diketahui alumni Pendidikan Biologi bekerja sesuai bidangnya di pendidikan biologi, tetapi ada juga alumni yang bekerja di luar bidang pendidikan biologi. Sebagian besar alumni menjadi guru Biologi di SMA, MA, SMK yang sebagian besar tersebar di Provinsi Kalimantan Timur, dan bahkan di berbagai wilayah Indonesia, menjadi dosen di perguruan tinggi negeri maupun swasta, bimbingan belajar, dan banyak

di antaranya yang telah menjadi Kepala Sekolah. Beberapa alumni juga menjadi widyaswara di LPMP dan pusat-pusat pelatihan pendidikan. Tantangan yang telah dihadapi dan dipersiapkan Program Studi Pendidikan Biologi adalah bagaimana alumninya dapat bersaing untuk menjadi guru biologi di sekolah Internasional yang menuntut penguasaan bahasa Inggris aktif maupun pasif. Di luar bidang pendidikan beberapa alumni juga dapat bekerja baik di perbank-kan, PNS di luar instansi pendidikan, dan terjun di dunia kewirausahaan.

Pengembangan kurikulum Program Studi Pendidikan Biologi melakukan penetapan konsep lulusan yang akan termuat dalam visi dan misi institusi. Konsep lulusan tersebut selanjutnya akan terwujud sebagai profil lulusan. Profil lulusan harus ditetapkan dengan mengacu pada rumusan mutu lulusan dan relevansi. Kesemuanya itu akan dicapai melalui suatu rangkaian proses pendidikan yang bermutu, baik untuk pendidikan akademik maupun pendidikan profesi. Profil kompetensi Program Studi Pendidikan Biologi Universitas Mulawarman adalah sebagai berikut:

Tabel 2.1. Profil Lulusan Program Studi Pendidikan Biologi Universitas Mulawarman

Profil	Deskripsi Profil
Calon guru/pendidik bidang Pendidikan Biologi	Guru/pendidik professional yang mampu berperan sebagai fasilisator pembelajaran kreatif, inovatif, menguasai teknologi informasi, mengikuti kemajuan dan perkembangan di bidang Pendidikan Biologi serta mampu bersaing dalam melanjutkan ke jenjang pendidikan yang lebih tinggi
Asisten peneliti Pendidikan Biologi	Mampu merancang dan melaksanakan penelitian, melaporkan dan mengkomunikasikan, mempublikasikan hasil penelitian yang dapat digunakan sebagai alternatif penyelesaian masalah di bidang pendidikan biologi
Wirausahawan di bidang pendidikan Biologi	Mampu menumbuh kembangkan jiwa entertpreunership di bidang Pendidikan Biologi dan bersaing secara global.
Trainer Bidang Pendidikan Biologi	Mampu memiliki kompetensi pengetahuan di bidang biologi dan pendidikan biologi, komitmen, percaya diri, kreatif, kolaborasi, komunikatif, dan berani mengambil resiko serta peduli lingkungan.

Berdasar ketersebaran alumni di masyarakat, maka Program Studi Pendidikan Biologi harus tetap mengedepankan kualitas lulusan, mempersiapkan mereka dengan bekal yang cukup untuk melanjutkan pendidikan profesi guru atau ke S2 Pendidikan biologi dan pendidikan IPA. Program Studi Pendidikan Biologi memiliki keunggulan dalam penguasaan ilmu biologi dan metode pembelajaran biologi yang kreatif dan inovatif didukung keterampilan penggunaan teknologi informasi dan komunikasi.

2. Tujuan Program Studi (Program Educational Objectives/PEO)

Tujuan Program Studi Pendidikan Biologi disusun dengan pernyataan yang secara luas menggambarkan pencapaian karir dan professional yang disiapkan oleh program studi untuk dicapai oleh lulusannya dalam beberapa tahun pertama setelah lulus. Dalam pengembangan kurikulum pendidikan tinggi, dalam hal ini Program Studi Pendidikan Biologi melakukan penetapan konsep lulusan yang akan termuat dalam visi dan misi institusi. Atas dasar visi, misi, profil kualifikasi dan sesuai dengan kebutuhan stakeholder serta tuntutan dunia kerja, maka *tujuan Program Studi Pendidikan Biologi*, adalah:

a. Menghasilkan lulusan yang memiliki penguasaan paedagogik, pengetahuan, dan metodologi di bidang biologi dan dapat berkarir dalam menerapan pembelajaran biologi secara professional.
b. Menghasilkan lulusan yang memiliki kemampuan dan sikap dalam mengembangkan pendidikan, ilmu biologi dan metode ilmiah untuk belajar sepanjang hayat baik formal maupun informal.
c. Menghasilkan lulusan yang menjunjung tinggi nilai kemanusiaan dalam menjalankan tugas berdasarkan moral dan etika, mampu bekerja sama dan memiliki kepekaan sosial, bertanggung jawab serta memiliki jiwa kepemimpinan.

III. RUMUSAN STANDAR KOMPETENSI LULUSAN (SKL) YANG DINYATAKAN DALAM CAPAIAN PEMBELAJARAN LULUSAN (CPL)

Program Studi Pendidikan Biologi menyusun kurikulum berbasis "Kampus Merdeka dan Merdeka Belajar" merujuk pada beberapa Landasan dasar,

sebagai berikut: a) Undang-Undang Republik Indonesia Nomor 20 Tahun 2003 tentang Sistem Pendidikan Nasional; b) Undang-Undang Republik Indonesia Nomor 12 tahun 2012 tentang Pendidikan tinggi; c) Peraturan Presiden Republik Indonesia No.8 tahun 2012 tentang Kerangka Kualifikasi Nasional Indonesia (KKNI); d) Peraturan Menristek dan Pendidikan Tinggi Republik Indonesia nomor 44 tahun 2015 tentang Standar Nasional Pendidikan Tinggi; e) Peraturan Rektor Universitas mulawarman Nomor 6 Tahun 2018 tentang Penyelenggaraan Pendidikan, Penelitian dan Pengabdian Kepada Masyarakat; f) Peraturan menteri Pendidikan dan Kebudayaan Nomor 3 Tahun 2020 Tentang Standar Nasional Pendidikan Tinggi; g) Peraturan Rektor Universitas mulawarman Nomor 17 Tahun 2020 tentang Penyelenggaraan Pendidikan, Penelitian dan Pengabdian Kepada Masyarakat Berbasis Kampus Merdeka dan Merdeka Belajar; h) Kajian hutan hujan tropis dan lingkungannya sebagai PIP Unmul i) Subject Specific Criteria of the Technical Committee 10- Life Sciences for the Accreditation of Bachelor and MasterDegree Programmes in Life Sciences, ASIIN General Criteria for the Accreditation of Degree Programmes 2019; j) Rumusan Naskah Akademik Standar Nasional Berbasis KKNI Sarjana Pendidikan Biologi KPBI (Konsorsium Pendidik Biologi Indonesia) 2019; k) Himpunan Pendidik dan Peneliti Biologi Indonesia (HPPBI) tahun 2014.

Capaian Pembelajaran lulusan program studi adalah rumusan kompetensi yang diharapkan dicapai oleh lulusan program studi yang menjadi Standar Kompetensi Lulusan (Pasal 5 SN Dikti, Permenristekdikti No. 44 Tahun 2015). *Program Learning outcome* Program Studi Pendidikan Biologi diturunkan dari profil yang telah ditetapkan. Berdasarkan masukan dari alumni, *stake holde*r dan Konsorsium Pendidik Biologi Indonesia (KPBI). Team pengembang kurikulum menyusun kompetensi lulusan yang akan dikembangkan disesuaikan dengan berdasarkan SN-Dikti dan diskriptor level 6 kualifikasi KKNI yang mencakup proses menumbuh kembangkan sikap, pengetahuan, keterampilan umum, dan ketrampilan khusus.

Capaian pembelajaran lulusan (CPL) di bidang sikap *(attitude)* adalah seperangkat sikap, perilaku, karakter dan kepribadian yang wajib dimiliki oleh setiap lulusan perguruan tinggi di Indonesia sebagai cerminan karakter bangsa

yang berkebudayaan dan berkepribadian nasional. Capaian pembelajaran lulusan dibidang pengetahuan, menggambarkan seperangkat pengetahuan yang wajib dimiliki oleh lulusan sesuai dengan bidang keahlian program studi sesuai dengan level VI sebagaiman ditetapkan dalam KKNI dan SN Dikti. Capaian pembelajaran lulusan dibidang keterampilan umum dan keterampilan khusus adalah seperangkat keterampilan dalam bentuk *soft skill* dan *hard skill* yang wajib dimiliki oleh lulusan perguruan tinggi karena secara langsung atau tidak langsung akan membantu pelaksanaan tugas-tugasnya dalam bekerja dan berkarya sesuai dengan bidang keahliannya. Capaian pembelajaran lulusan tambahan perlu ditambahkan dan dimiliki oleh lulusan Universitas Mulwarman sebagai penciri atau keunggulan lokal lulusan, disamping mereka memiliki, menguasai, memahami dan berketerampilan sesuai dengan bidang keahlian masing-masing. Capaian pembelajaran lulusan tambahan ini adalah seperangkat sikap, pengetahuan, dan keterampilan berbasis kajian hutan hujan tropis dan lingkungannya. CPL ini dapat membedakan lulusan dari Universitas Mulawarman dengan perguruan tinggi lainnya diindonesia, di Asia Tenggara dan di Internasional. Capaian pembelajaran Program Studi Pendidikan Biologi seperti terlihat pada Tabel 3.1

Tabel 3.1. Capaian Pembelajaran Lulusan (CPL)/ ProgramLearning Outcomes (PLO) Program Studi Pendidikan Biologi

CPL	Kode	Deskripsi
Sikap	S-1 (Sikap 1)	Menjunjung tinggi nilai kemanusiaan berdasarkan agama, moral, dan etika serta memiliki kepekaan sosial terhadap masyarakat dan lingkungan.
	S-2 (Sikap 2)	Bekerja sama dan bertanggung jawab atas pekerjaannya di bidang biologi dan pembelajaran.
Pengetahuan	P-1 (Pengetahuan 1)	Mampu menguasai teori, konsep, prinsip dan prosedur dasar dalam bidang keilmuan biologi dan interaksi organisme dengan Hutan Topis Lembab dan Lingkungannya
	P-2 (Pengetahuan 2)	Mampu mengimplementasikan keilmuan pedagogic dalam pembelajaran Biologi pada Hutan Tropis Lembab dan Lingkungannya

CPL	Kode	Deskripsi
	P-3 (Pengetahuan 3)	Mampu menguasai pengetahuan berkaitan dengan metodologi penelitian biologi dan pembelajaran
Keterampilan	KU-1 (Keterampilan Umum 1)	Mampu mengikuti perkembangan keilmuan biologi dan pembelajarannya, memiliki jiwa entrepreneur serta keterampilan komunikasi yang baik.
	KU-2 (Keterampilan Umum 2)	Mampu menerapkan pemikiran logis, kritis, sistematis, dan inovatif dalam mengambil keputusan strategis dengan menerapkan nilai humaniora pada bidang biologi dan pembelajarannya berdasarkan informasi data yang relevan
	KK-1 (Keterampilan Khusus1)	Mampu Menguasai keterampilan kerja dan managerial pengelolaan laboratorium dengan memanfaatkan IPTEK serta sumber daya alam yang tersedia
	KK-2 (Keterampilan Khusus 2)	Mampu merancang, melaksanakan, mempublikasikan hasil penelitian sehingga dapat digunakan sebagai alternatif penyelesaian masalah pada bidang biologi dan pembelajarannya di Hutan Tropis Lembab dan Lingkungan.
	KK-3 (Keterampilan Khusus3)	Mampu merancang, melaksanakan, mengembangkan instrument evaluasi sesuai dengan konsep pembelajaran di Bidang Biologi.

IV. STRUKTUR DAN KOMPOSISI MATA KULIAH

Sebaran Mata Kuliah terdiri dari 9,1% mata kuliah universitas yang menekankan pada mata kuliah yang bersifat umum, 10,4% mata kuliah wajib fakultas keguruan dan ilmu pendidikan yang memuat mata kuliah pendidikan dan 80,5% mata kuliah program studi yang memuat mata kuliah pembelajaran biologi, ata kuliah dasar, mata kuliah biologi dan mata kuliah penunjang dengan rincian sebagai berikut:

a. Kelompok mata kuliah wajib universitas = 14 SKS = 22,26 ECTS
b. Kelompok mata kuliah wajib fakultas = 16 SKS = 25,44 ECTS
c. Kelompok mata kuliah program studi = 124 SKS (197,16 ECTS),

yang terdiri dari:

- Mata kuliah pembelajaran biologi = 18 SKS = 28,62 ECTS
- Mata kuliah dasar = 12 SKS = 19,08 ECTS
- Mata kuliah biologi = 85 SKS = 135,15 ECTS
- Mata kuliah penunjang = 9 SKS = 14,31 ECTS

d. Kelompok mata kuliah Wajib 134 SKS (213,06 ECTS) dan mata kuliah pilihan yang disajikan 20 SKS (31,8 ECTS) (minimal diambil 10 SKS = 15,9 ECTS).

Jumlah SKS Matakuliah Wajib : 134 SKS (213,6 ECTS)
Jumlah SKS Matakuliah Pilihan yang tersedia : 20 SKS (31,8 ECTS)

Mahasiswa dinyatakan lulus apabila telah menempuh minimal 144 SKS (228,96) dengan komposisi:
Jumlah SKS Matakuliah wajib : 134 SKS (213,06 ECTS)
Jumlah SKS Matakuliah Pilihan minimal : 10 SKS (15,9 ECTS)

Mata kuliah Program Studi Pendidikan Biologi disusun berdasarkan Capaian Pembelajaran Lulusan (CPL) yang dibebankan pada mata kuliah dan bahan kajian yang sesuai dengan CPL tsb. Penyusunan mata kuliah Program Studi Pendidikan Biologi berdasarkan Permenristekdikti No.44 Tahun 2015 pasal 15:

1. Beban belajar mahasiswa sebagaimana dimaksud dalam Pasal 10 ayat (2) huruf d, dinyatakan dalam besaran satuan kredit semester (SKS).
2. Satu SKS setara dengan 170 (seratus enam puluh) menit kegiatan belajar per minggu per semester (setara dg 2,83 jam, atau dibulatkan 3 jam).
3. Setiap mata kuliah paling sedikit memiliki bobot 1 SKS.
4. Semester merupakan satuan waktu kegiatan pembelajaran efektif selama 16 (enam belas) minggu. Pengertian SKS pada dasarnya tetap berkaitan dengan satuan waktu.
5. Satu SKS mata kuliah yang dilakukan dengan tiga macam kegiatan, yaitu: kegiatan tatap muka selama 50 menit/minggu/semester, kegiatan belajar terstruktur selama 60 menit/minggu/semester, dan kegiatan belajar mandiri selama 60 menit, semuanya dalam satuan perminggu, per semester.

6. Perkiraan besarnya SKS sebuah mata kuliah atau suatu pengalaman belajar yang direncanakan dilakukan dengan menganalisis secara simultan variabel:
   a. Tingkat kemampuan/ kompetensi yang hendak dicapai;
   b. Tingkat keluasan dan kedalaman bahan kajian yang dipelajari;
   c. Strategi pembelajaran yang akan diterapkan;
   d. Posisi (letak semester) suatu kegiatan pembelajaran dilakukan;
   e. Perbandingan terhadap keseluruhan beban studi di satu semester, pengertian SKS, satuan waktu yang dibutuhkan oleh mahasiswa untuk mencapai capaian pembelajaran tertentu melalui suatu bentuk pembelajaran dan bahan kajian tertentu. Satu SKS seminar atau bentuk pembelajaran lain yang sejenis, yaitu: kegiatan tatap muka selama 100 menit/minggu/semester dan belajar manri 70 menit/minggu/semester. Praktikum, praktek lapangan, penelitian, pengabdian masyarakat atau bentuk pembelajaran lain 1 SKS yang setara yaitu 170 menit/minggu/semester.

Dalam delapan semester, mahasiswa diharapkan dapat menyelesaikan seluruh mata kuliah yang ditawarkan. Adapun tabel struktur dan komposisi matakuliah persemester dapat dilihat pada Tabel 4.1

Tabel 4.1. Struktur dan Komposisi Matakuliah

No	Matakuliah		Sifat	Semester	Jumlah SKS	ECTS
	Kode	Nama				
1	MU0000602W004	Bahasa Indonesia	W	1	3	4,77
2	19050163W001	Biologi Umum	W	1	3	4.77
3	19050163W002	Fisika dasar	W	1	3	4,77
4	MU0000603W001	Pendidikan Pancasila	W	1	2	3,18
5	19050163W003	Matematika dasar	W	1	3	4,77
6	19050163W004	Kimia dasar	W	1	3	4.77
7	MU0000603W001	Pendidikan Agama	W	1	3	4,77
8	MU0000602W006	Ilmu Sosial Budaya Dasar	W	1	2	3,18
9	19050162W006	Bahasa Inggris (English For Biology)	W	2	2	3,18
10	MU0000602W003	Kewarganegaraan	W	2	2	3,18

No	Matakuliah		Sifat	Semester	Jumlah SKS	ECTS
	Kode	Nama				
11	19050162W010	Biologi Sel (Prasyarat Biologi Umum C)	W	2	2	3,18
12	19050162W012	Ilmu Lingkungan	P	2	2	3,18
13	19050162W005	Pengantar Ilmu Pendidikan	W	2	3	4,77
14	19050162P011	Mikroteknik Hewan	P	2	2	3,18
15	19050163W008	Morfologi Tumbuhan (Prasyarat Bio Umum C)	W	2	3	4,77
16	19050163W007	Invertebrata	W	2	3	4,77
17	19050162W009	Alat-alat dan Pengelolaan Laboratorium (Prasyarat Biologi Umum, Fisika dasar dan Kimia dasar C)	W	2	2	3,18
18	19050063W003	Perkembangan Peserta Didik	W	3	3	4,77
19	19050163W020	Anatomi Tumbuhan (Prasyarat Mortum C)	W	3	3	4,77
20	19050163W023	Biokimia (Prasyarat Kimia Dasar C)	W	3	3	4,77
21	19050063W002	Belajar Pembelajaran	W	3	3	4.77
22	19050163W022	Anatomi Manusia (Prasyarat Biologi Umum C)	W	3	3	4,77
23	19050163W021	Anatomi Hewan (Prasyarat Invertebrata dan vertebrata C)	W	3	3	4,77
24	19050163W019	Vertebrata (Prasyarat Invertebrata C)	W	3	3	4.77
25	19050062W004	Profesi Kependidikan	W	3	3	4,77
26	19050163W032	Strategi Pembelajaran Biologi	W	4	3	4,77
27	19050162P031	Media Pembelajaran	P	4	2	3,18

No	Matakuliah		Sifat	Semester	Jumlah SKS	ECTS
	Kode	Nama				
28	19050162W027	Botani Tingkat Rendah	W	4	2	3,18
29	19050163W026	Genetika	W	4	3	4,77
30	19050163W030	Telaah Kurikulum Biologi Sekolah Menengah dan Buku Teks	W	4	3	4.77
31	19050162W025	Histologi	W	4	3	4,77
32	19050162W033	Statistik Dasar	W	4	2	3,18
33	19050162P024	Pendidikan Karakter	P	4	2	3,18
34	19050162W028	Evolusi	W	4	2	3,18
35	19050162W029	Entomologi	W	4	2	3,18
36	19050163W040	Perencanaan Pembelajaran Biologi dan Mikroteaching (Prasyarat Strategi Pembelajaran C)	W	5	3	4,77
37	19050163W037	Fisiologi Manusia (Prasyarat Biologi Umum, Anatomi Manusia, Biokimia)	W	5	3	4.77
38	19050163W039	Evaluasi Proses Dan Hasil Pem Bio	W	5	3	4,77
39	19050163W036	Fisiologi Hewan (Prasyarat Biologi Umum, Anatomi Hewan, Biokimia C)	W	5	3	4,77
40	1905062W038	Protista	P	5	2	3,18
41	19050163W035	Fisiologi Tumbuhan (Prasyarat Biologi Umum, Antum, Mortum, Biokimia C)	W	5	3	4,77
42	19050162P034	Ilmu Kesehatan	P	5	2	3,18
43	19050162P042	Konservasi Sumber Daya Alam (P)	P	5	2	3,18
44	19050162W041	Statistik Lanjutan (Prasyarat	W	5	2	3,18

No	Matakuliah		Sifat	Semester	Jumlah SKS	ECTS
	Kode	Nama				
		Statistik Dasar C)				
45	19050163W049	Embriologi	W	6	3	4,77
46	19050163W044	Botani Tingkat Tinggi (Prasyarat BTR C)	W	6	3	4.77
47	19050163W047	Ekologi Hewan (Prasyarat Anatomi Hewan C)	W	6	3	4,77
48	19050163W047	Ekologi Manusia	W	6	2	3,18
49	19050163W046	Ekologi Tumbuhan	W	6	3	4,77
50	19050162P050	Pembelajaran terintegrasi	P	6	2	3,18
51	19050162W045	Bakteriologi (Prasyarat Protista C)	W	6	2	3,18
52	19050162W043	Kewirausahaan	W	6	2	3,18
53	19050163W051	Metodologi Penelitian Pendidikan Biologi	W	6	3	4,77
54	19050162P054	Bioteknologi	P	7	2	3,18
55	19050162P053	Pencemaran lingkungan	P	7	2	3,18
56	05015355	KKN	W	7	3	4,77
57	0501534DEF	Pengenalan Lapangan Persekolahan 1	W	7	2	3,18
58	05015348	Pengenalan Lapangan Persekolahan 2	W	7	2	3,18
59	19050162W052	Seminar Biologi	W	7	2	3,18
60	19050166W055	Skripsi	W	8	6	9,54

Lulusan Program Studi Pendidikan Biologi harus mampu mengkaji implikasi pengembangan atau implementasi ilmu pengetahuan teknologi yang memperhatikan dan menerapkan nilai humaniora sesuai dengan keahliannya berdasarkan kaidah, tata cara dan etika ilmiah dalam rangka menghasilkan solusi, gagasan, desain atau kritik seni, menyusun deskripsi saintifik hasil kajiannya serta mempublikasikannya.

V. SEBARAN MATA KULIAH DALAM SEMESTER

Semester I

No.	Kode Mata Kuliah	Mata Kuliah	SKS
1.	MU0000602W004	Bahasa Indonesia	2.00
2.	19050163W001	Biologi Umum	3.00
3.	19050163W002	Fisika dasar	3.00
4.	MU0000603W001	Pendidikan Pancasila	2.00
5.	19050163W003	Matematika dasar	3.00
6.	19050163W004	Kimia dasar	3.00
7.	MU0000603W001	Pendidikan Agama	3.00
8	MU0000602W006	Ilmu Sosial Budaya Dasar	2.00
JUMLAH			**21.00**

Semester 2

No.	Kode Mata Kuliah	Mata Kuliah	SKS
1.	19050162W006	Bahasa Inggris (English For Biology)	2.00
2.	MU0000602W003	Kewarganegaraan	2.00
3.	19050162W010	Biologi Sel (Prasyarat Biologi Umum C)	2.00
4.	19050162W012	Ilmu Lingkungan	2.00
5.	19050162W005	Pengantar Ilmu Pendidikan	3.00
6.	19050162P011	Mikroteknik Hewan (P)	2.00
7.	19050163W008	Morfologi Tumbuhan (Prasyarat Bio Umum C)	3.00
8.	19050163W007	Invertebrata	3.00
9.	19050162W009	Alat-alat dan Pengelolaan Laboratorium (Prasyarat Biologi Umum, Fisika dasar dan Kimia dasar C)	2.00
JUMLAH			**21.00**

Semester 3

No.	Kode Mata Kuliah	Mata Kuliah	SKS
1.	19050063W003	Perkembangan Peserta Didik	3.00
2.	19050163W020	Anatomi Tumbuhan (Prasyarat Mortum C)	3.00
3.	19050163W023	Biokimia (Prasyarat Kimia Dasar C)	3.00
4.	19050063W002	Belajar Pembelajaran	3.00
5.	19050163W022	Anatomi Manusia (Prasyarat Biologi Umum C)	3.00
6.	19050163W021	Anatomi Hewan (Prasyarat Invertebrata dan vertebrata C)	3.00
7.	19050163W019	Vertebrata (Prasyarat Invertebrata C)	3.00
8.	19050062W004	Profesi Kependidikan (Magang I)	3.00
Jumlah			**24.00**

Semester 4

No.	Kode Mata Kuliah	Mata Kuliah	SKS
1.	19050163W032	Strategi Pembelajaran Biologi	3.00
2.	19050162P031	Media Pembelajaran (P)	2.00
3.	19050162W027	Botani Tingkat Rendah	2.00
4.	19050163W026	Genetika	3.00
5.	19050163W030	Telaah Kurikulum Biologi Sekolah Menengah dan Buku Teks	3.00
6.	19050162W025	Histologi	2.00
7.	19050162W033	Statistik Dasar	2.00
8.	19050162P024	Pendidikan Karakter (P)	2.00
9.	19050162W028	Evolusi	2.00
10.	19050162W029	Entomologi	2.00
JUMLAH			**23.00**

Semester 5

No.	Kode Mata Kuliah	Mata Kuliah	SKS
1.	19050163W040	Perencanaan Pembelajaran Biologi (Prasyarat Strategi Pembelajaran C)	3.00
2.	19050163W037	Fisiologi Manusia (Prasyarat Biologi Umum, Anatomi Manusia, Biokimia)	3.00
3.	19050163W039	Evaluasi Proses Dan Hasil Pem Bio (Magang II)	3.00
4.	19050163W036	Fisiologi Hewan (Prasyarat Biologi Umum, Anatomi Hewan, Biokimia C)	3.00
5.	19050162W038	Protista	2.00
6.	19050163W035	Fisiologi Tumbuhan (Prasyarat Biologi Umum, Antum, Mortum, Biokimia C)	3.00
7.	19050162P034	Ilmu Kesehatan (P)	2.00
8.	19050162P042	Konservasi Sumber Daya Alam (P)	2.00
9.	19050162W041	Statistik Lanjutan (Prasyarat Statistik Dasar C)	2.00
JUMLAH			**23.00**

Semester 6

No.	Kode Mata Kuliah	Mata Kuliah	SKS
1.	19050163W049	Embriologi	3.00
2.	19050163W044	Botani Tingkat Tinggi (Prasyarat BTR C)	3.00
3.	19050163W047	Ekologi Hewan (Prasyarat Anatomi Hewan C)	3.00
4.	19050163W047	Ekologi Manusia	2.00
5.	19050163W046	Ekologi Tumbuhan	3.00
6.	19050162P050	Pembelajaran terintegrasi	2.00
7.	19050162W045	Bakteriologi (Prasyarat Protista C)	2.00
8.	19050162W043	Kewirausahaan	2.00
9.	19050163W051	Metodologi Penelitian Pendidikan Biologi	3.00
JUMLAH			**23.00**

Semester 7

No.	Kode Mata Kuliah	Mata Kuliah	SKS
1.	19050162P054	Bioteknologi	2
2.	19050162P053	Pencemaran lingkungan	2
3	19050162W052	Seminar Biologi	2
4.	0501534DEF	Pengenalan Lapangan Persekolahan 1	1
5.	05015348	Pengenalan Lapangan Persekolahan 2	3
6.	05015355	KKN	3
Jumlah			**13.00**

Semester 8

No.	Kode Mata Kuliah	Mata Kuliah	SKS
1.	19050166W055	Skripsi/Pendadaran (Sudah mengikuti dan lulus kuliah penelitian pengajaran bidang studi, kuliah pengembangan program pengajaran bidang studi atau kuliah-kuliah yang setara)	6.00
Jumlah			**6.00**

VI. LEMBAR KONSULTASI MAHASISWA KE PENASEHAT AKADEMIK (PA)

a. Kartu Hasil Studi Semester 1

Tahun Akademik:……....

No.	Kode MK	Mata Kuliah	SKS	Bobot	Hasil	Ket
1.	MU0000602W004	Bahasa Indonesia	2.00			
2.	19050163W001	Biologi Umum	3.00			
3.	19050163W002	Fisika dasar	3.00			
4.	MU0000603W001	Pendidikan Pancasila	2.00			
5.	19050163W003	Matematika dasar	3.00			
6.	19050163W004	Kimia dasar	3.00			
7.	MU0000603W001	Pendidikan Agama	3.00			
8	MU0000602W006	Ilmu Sosial Budaya	2.00			

		Dasar				
Jumlah			21			

$$\text{Indeks Prestasi} = \frac{\sum \text{Hasil}}{\sum \text{SKS}}$$

Indeks Prestasi Kumulatif = ……

Samarinda, …….
Mengetahui,
Dosen Penasehat Akademik

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NIP.

Materi Konsultasi

Hari/ Tanggal	Materi Konsultasi	Saran	Paraf PA

b. Kartu Hasil Studi Semester 2

Tahun Akademik:……...

No.	Kode MK	Mata Kuliah	SKS	Bobot	Hasil	Ket
1.	19050162W006	Bahasa Inggris (English For Biology)	2.00			
2.	MU0000602W003	Kewarganegaraan	2.00			
3.	19050162W010	Biologi Sel (Prasyarat Biologi Umum C)	2.00			
4.	19050162W012	Ilmu Lingkungan	2.00			
5.	19050162W005	Pengantar Ilmu Pendidikan	3.00			
6.	9050162P011	Mikroteknik Hewan (P)	2.00			
7.	19050163W008	Morfologi Tumbuhan (Prasyarat Bio Umum C)	3.00			
8.	19050163W007	Invertebrata	3.00			
9.	19050162W009	Alat-alat dan Pengelolaan Laboratorium (Prasyarat Biologi Umum, Fisika dasar dan Kimia dasar C)	2.00			
Jumlah			**21**			

Indeks Prestasi $= \frac{\sum \text{Hasil}}{\sum \text{SKS}}$

Indeks Prestasi Kumulatif = ……

Samarinda, ……
Mengetahui,
Dosen Penasehat Akademik

NIP.

Materi Konsultasi

Hari/ Tanggal	Materi Konsultasi	Saran	Paraf PA

c. Kartu Hasil Studi Semester 3

Tahun Akademik:……...

No.	Kode MK	Mata Kuliah	SKS	Bobot	Hasil	Ket
1.	19050063W003	Perkembangan Peserta Didik	3.00			
2.	19050163W020	Anatomi Tumbuhan (Prasyarat Mortum C)	3.00			
3.	19050163W023	Biokimia (Prasyarat Kimia Dasar C)	3.00			
4.	19050063W002	Belajar Pembelajaran	3.00			
5.	19050163W022	Anatomi Manusia (Prasyarat Biologi Umum C)	3.00			
6.	19050163W021	Anatomi Hewan (Prasyarat Invertebrata dan vertebrata C)	3.00			
7.	19050163W019	Vertebrata (Prasyarat Invertebrata C)	3.00			
8.	19050062W004	Profesi Kependidikan	3.00			
Jumlah			**24**			

Indeks Prestasi $= \frac{\sum \text{Hasil}}{\sum \text{SKS}}$

Indeks Prestasi Kumulatif = ……

Samarinda, ……
Mengetahui,
Dosen Penasehat Akademik

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NIP.

Materi Konsultasi

Hari/ Tanggal	Materi Konsultasi	Saran	Paraf PA

d. Kartu Hasil Studi Semester 4

Tahun Akademik:…….

No.	Kode MK	Mata Kuliah	SKS	Bobot	Hasil	Ket
1.	19050163W032	Strategi Pembelajaran Biologi	3.00			
2.	19050162P031	Media Pembelajaran (P)	2.00			
3.	19050162W027	Botani Tingkat Rendah	2.00			
4.	19050163W026	Genetika	3.00			
5.	19050163W030	Telaah Kurikulum Biologi Sekolah Menengah dan Buku Teks	3.00			
6.	19050162W025	Histologi	2.00			
7.	19050162W033	Statistik Dasar	2.00			
8.	19050162P024	Pendidikan Karakter (P)	2.00			
9.	19050162W028	Evolusi	2.00			
10.	19050162W029	Entomologi	2.00			
Jumlah			**23**			

Indeks Prestasi $= \frac{\sum \text{Hasil}}{\sum \text{SKS}}$

Indeks Prestasi Kumulatif = ……

Samarinda, …….
Mengetahui,
Dosen Penasehat Akademik

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NIP.

Materi Konsultasi

Hari/ Tanggal	Materi Konsultasi	Saran	Paraf PA

e. Kartu Hasil Studi Semester 5

Tahun Akademik:…….

No.	Kode MK	Mata Kuliah	SKS	Bobot	Hasil	Ket
1.	19050163W040	Perencanaan Pembelajaran Biologi (Prasyarat Strategi Pembelajaran C)	3.00			
2.	19050163W037	Fisiologi Manusia (Prasyarat Biologi Umum, Anatomi Manusia, Biokimia)	3.00			
3.	19050163W039	Evaluasi Proses Dan Hasil Pem Bio (Magang II)	3.00			
4.	19050163W036	Fisiologi Hewan (Prasyarat Biologi Umum, Anatomi Hewan, Biokimia C)	3.00			
5.	19050162W038	Protista	2.00			
6.	19050163W035	Fisiologi Tumbuhan (Prasyarat Biologi Umum, Antum, Mortum, Biokimia C)	3.00			
7.	19050162P034	Ilmu Kesehatan (P)	2.00			
8.	19050162P042	Konservasi Sumber Daya Alam (P)	2.00			
9.	19050162W041	Statistik Lanjutan (Prasyarat Statistik Dasar C)	2.00			
10.						
Jumlah			**23**			

Indeks Prestasi $= \dfrac{\sum \text{Hasil}}{\sum \text{SKS}}$

Indeks Prestasi Kumulatif = ……

Samarinda, …….
Mengetahui,
Dosen Penasehat Akademik

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NIP.

Materi Konsultasi

Hari/ Tanggal	Materi Konsultasi	Saran	Paraf PA

f. Kartu Hasil Studi Semester 6

Tahun Akademik:…….

No.	Kode MK	Mata Kuliah	SKS	Bobot	Hasil	Ket
1.	19050163W049	Embriologi	3.00			
2.	19050163W044	Botani Tingkat Tinggi (Prasyarat BTR C)	3.00			
3.	19050163W047	Ekologi Hewan (Prasyarat Anatomi Hewan C)	3.00			
4.	19050163W047	Ekologi Manusia	2.00			
5.	19050163W046	Ekologi Tumbuhan	3.00			
6.	19050162P050	Pembelajaran terintegrasi	2.00			
7.	19050162W045	Bakteriologi (Prasyarat Protista C)	2.00			
8.	19050162W043	Kewirausahaan	2.00			
9.	19050163W051	Metodologi Penelitian Pendidikan Biologi	3.00			
Jumlah			**23**			

$$\text{Indeks Prestasi} = \frac{\sum \text{Hasil}}{\sum \text{SKS}}$$

Indeks Prestasi Kumulatif = ……

Samarinda, …….
Mengetahui,
Dosen Penasehat Akademik

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NIP.

Materi Konsultasi

Hari/ Tanggal	Materi Konsultasi	Saran	Paraf PA

g. Kartu Hasil Studi Semester 7

Tahun Akademik:…….

No.	Kode MK	Mata Kuliah	SKS	Bobot	Hasil	Ket
1.	19050162P054	Bioteknologi	2			
2.	19050162P053	Pencemaran lingkungan	2			
3.	19050162W052	Seminar Biologi	2			
4.	0501534DEF	Pengenalan Lapangan Persekolahan 1	1			
5.	05015348	Pengenalan Lapangan Persekolahan 2	3			
6.	05015355	KKN	3			
Jumlah			**13**			

$$\text{Indeks Prestasi} = \frac{\sum \text{Hasil}}{\sum \text{SKS}}$$

Indeks Prestasi Kumulatif = ……

Samarinda, …….
Mengetahui,
Dosen Penasehat Akademik

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NIP.

Materi Konsultasi

Hari/ Tanggal	Materi Konsultasi	Saran	Paraf PA

h. Kartu Hasil Studi Semester 8

Tahun Akademik:…….

No.	Kode MK	Mata Kuliah	SKS	Bobot	Hasil	Ket
1.	19050166W055	Skripsi/Pendadaran (Sudah mengikuti dan lulus kuliah penelitian pengajaran bidang studi, kuliah pengembangan program pengajaran bidang studi atau kuliah-kuliah yang setara)	6.00			
Jumlah			**13**			

$$\text{Indeks Prestasi} = \frac{\sum \text{Hasil}}{\sum \text{SKS}}$$

Indeks Prestasi Kumulatif = ……

Samarinda, …….
Mengetahui,
Dosen Penasehat Akademik

NIP.

Materi Konsultasi

Hari/ Tanggal	Materi Konsultasi	Saran	Paraf PA

d. Identitas Mata Kuliah

Identitas mata kuliah Program Studi Pendidikan Biologi, ditunjukkan sebagai berikut:

MU0000602W004 - **BAHASA**

1. Course Identity:

Course	**:** Bahasa
Course Code	**:** MU0000602W004
Lecturer(s)	: TEAM
Prerequisite Courses	**: -**

2. **Learning goals/competencies**:

Able to follow the Scientific development of biology and learning, have an entrepreneurial spirit and good communication skills related to basic knowledge in Bahasa such as compiling paragraphs of academic writing essays and presenting them accurately and rhymes

3. Course Description:

Bahasa courses create teaching materials to improve student's ability to use good and correct Bahasa both orally and in writing, especially in compiling paragraphs of academic writing essays and presenting them accurately and rhymes

4. Reference:

1. Ahmad, M. Rusydi. 2020. "Mata kuliah Bahasa Indonesia untuk Mahasiswa Non-Jurusan Bahasa". Samarinda, FKIP Universitas Mulawarman.
2. Pusat MPK-LP3M Universitas Mulawarman. 2020. *Bahasa Indonesia Akademik*. Samarinda: Universitas Mulawarman
3. Departemen Pendidikan dan Kebudayaan. 1988. *Tata Bahasa Baku Bahasa Indonesia*. Jakarta: Balai Pustaka.
4. Departemen Pendidikan dan Kebudayaan. 2016. *Pedoman Umum Ejaaan Bahasa Indonesia*. Jakarta: Pusat Pembinaan dan Pengembangan Bahasa.
5. Hs. Widjono. *Bahasa Indonesia Mata Kuliah Pengembangan Kepribadian di Perguruan Tinggi.* Jakarta: PT. Grasindo, 2008.

19050163W001 - **GENERAL BIOLOGY**

1. **Course Identity:**

Course	**:** General Biology
Credits	**:** 3
Course Code	**:** 19050163W001
Lecturer(s)	:**TEAM**
Prerequisite Courses	**: -**

2. **Learning goals/competencies**:

   a. Able to apply logical, critical, systematic, and innovative thinking in making strategic decisions by applying humanities values in the field of biology and learning based on relevant information anddata
   b. Able to master basic theories, concepts, principles and procedures in the scientific field of biology and the interaction of organisms with Tropical Rain

3. **Course Description:**

Introducing students to general biology studies so that students are ableto understand biology as a science and scientific method, the concept of life, the cell as the basic unit of life, the chemical composition of theorganism's body, biodiversity, metabolism, reproduction and development in living things, heredity, the interaction of living things with its environment, as well as the foundations of evolution.

4. **Reference:**

1. Audesirk, Teresa; Audesirk, Gerald & Byers, Bruce E. 2008. *Biology: Life on Earth with Physiology*. Eight Edition. London: Pearson Education, Inc
2. Campbell, Neil A. and Reece, Jane B. 2005. *Biology 7th Edition*. San Fransisco: Pearson Education.
3. Campbell, Neil A.; Reece, Jane B.; Taylor, Martha R. & Simon, Eric J. 2006. *Biology: Concepts and Connection*. Fifth San Fransisco: Pearson Education.
4. Claude A. Wile, dkk., 1988. *Zoologi Umum (terjemahan)*, Erlangga, Jakarta
5. Kimball, J.W,, 1988. *Biology {terjemahan)*, Erlangga, Jilid 2,3, Jakarta.
6. Kimball, John W. 1983. *Biology, Fifth Edition*. Addison-Wesley Publisihing Company, Inc
7. Weisz, P.B., 1992. *Elements of Biology*. Mc.GrawHil. Tokyo.
8. Lumowa, SVT. 2015. *Biologi Sel.* Malang: UMM Press.
9. Reece, J.B., Urry, L.A., Cain, M.L., Wasserman, S.A., Minorsky, P.V., & Jackson, R.B. 2011. *Campbell Biology Ninth Edition*. San Franscisco: Pearson Education, Inc

10. Raven, P.H., Johnson, G.B., Mason, K.a., Losos, J.B., & Singer., S.R. 2017. *Biology, Eleventh Edition.* New York: McGraw Hill Education.

19050163W002 - **INTRODUCTION TO PHYSICS**

1. Course Identity:

Course	**: Introduction to Physics**
Credits	**: 3**
Course Code	**:** 19050163W002
Lecturer(s)	:**TEAM**
Prerequisite Courses	**: -**

2. Learning goals/competencies:

a. Able to apply logical, critical, systematic, and innovative thinkingin making strategic decisions by applying humanities values in the field of physics and learning based on relevant information and data
b. Able to master basic theories, concepts, principles and procedures in the scientific field of physics

3. Course Description:

This course is a group of study program expertise courses in the S-1 Physics Education Study Program with the status of a compulsory subject. This course is given to semester 1 students with a subject weight of 2 credits. After attending this course, students are expected to be able to analyze basic physics concepts related to (1) kinematics, (2) mechanics, (3) Simple Harmonic Vibration, (4) Waves, (5) Electricity in various physical situations and natural phenomena.

4. Reference:

1. Young, H.D., & Freedman, R. A. (2014). Sears and Zemansky's University Physics with Modern Physics Technology Update, Thirtenth Edition. Pearson Education Limited.
2. Giancoli, D. C. (2016). Physics: Principles with Applications. Boston: Pearson. Hewitt, P. G. (2014). Conceptual Physics GE. Pearson Australia Pty Limited.

MU0000603W001 - **PANCASILA EDUCATION**

1. Course Identity:

Course	**:** Pancasila Education
Credits	**: 2**
Course Code	**:** MU0000603W001
Lecturer(s)	:**TEAM**
Prerequisite Courses	**: -**

2. **Learning goals/competencies**:

Able to Upholding human values based on religion, morals, ethics and having social sensitivity as well as care for the community and the environment especially Pancasila in the study of the history of the Indonesian nation (pre-independence era, independence era, old order era, new order era and reformation era), Pancasila as the State Foundation, Pancasila as the State Ideology, Pancasila as a Philosophical System, Pancasila as a System Ethics, Pancasila as the basis for the development of science.

3. Course Description:

This course presents a discussion of Pancasila in the study of the history of the Indonesian nation (pre-independence era, independence era, old order era, new order era and reformation era), Pancasila as the State Foundation, Pancasila as the State Ideology, Pancasila as a Philosophical System, Pancasila as a System Ethics, Pancasila as the basis for the development of science.

4. Reference:

1. AMW. Pranrka, 1985, *Sejarah Pemikiran tentang Pancasila,* CSIS Jakarta. AT. Soegito, dkk, 2000, *Pendidikan Pancasila*, UNNES Semarang Press.
2. Dardji Darmodihardjo, dkk, 1978, *Santiaji Pancasila*, Usaha Nasional Surabaya.
3. Ending Daroesni, 1983, *Pancasila Dalam eberaoa Persektif,* Aries Lima, Jakarta.
4. Asdi, 1985, *Memahami Pancasila*, PD Lukman, Yogyakarta.
5. Fasisal Ismail, 1999, *Ideologi Hegemoni dan Otoritas Agama*, Tiara Wacana, Yogyakarta. Francisco Budi
6. Fatwa, A.F. 2010. Pancasila Karya Bersama Milik Bangsa, Jakarta, the Fatwa Center.
7. Hardiman, 1990, *Kritik Ideologi*, Kanisus Yogyakarta.
8. Herqutanto Sosronegoro, 1990, *Beberapa Ideologi dan Implementasinya dalam Kehidupan Kenegaraan*. Kaelan, 1992, *Pancasila Yuridis Kenegaraan*, Fakultas Filsafat UGM.
9. Laboratorium Pancasila UNNES Malang, 1979, *Pokok-pokok Pembahasan Pancasila Dasar Filsafat Negara RI,* Usaha Nasional, Surabaya.
10. Kaelan, 2013. Negara Kebangsaan Pancasila (History, Kultur, Filosofis, Yuridis, dan Aktualisasinya)., Yogyakarta, Paradigma.
11. Materi Ajar Matakuliah Pendidikan Pancasila, Direktorat Pembelajaran dan Mahasiswa, Dirjen Dikti Depdiknas, Kementrian Pendidikan dan Kebudayaan RI.
12. Moerdiono dkk, 1996, *Pancasila Sebagai Ideologi*, BP-7 Pusat, Jakarta.
13. M. Taopan, 1992, *Keunggulan Pancasila Sebagai Filsafat Kenegaraan*, Citra Aditya Bakti, Bandung.
14. Marsilam Simanjuntak, 1994, *Pandangan Negara Integralistik*, Pustaka Utama Grafiti.

15. Mohammad Noor Syam, 1984, *Filsafat Pendidikan dan Dasar Filsafat Pendidikan Pancasila*, Usaha Nasional, Surabaya. Muzayin AR, 1992, *Idologi Pancasila*, golden Trayon Press, Jakarta.
16. Notonagoro, 1982, *Beberapa Hal Mengenai Fasafah Pancasila*, Pantjuran Tudjuh, Jakarta.
17. Nugroho Notosusanto, 1983, *Naskah Proklamasi Yang Otentik dan Rumusan Pancasila Yang Otentik*, PN Balai Pustaka, Jakarta.
18. Tim ICCE UIN, 2000, Demokrasi, Hak Asasi Manusia dan Masyarakat Madani, Jakarta. ICCE UIN.
19. TIM MPK, 2016. Pendidikan Pancasila (Revitalisasi Pengembagan Karakter Kebangsaan dan Ideologi Pancasila)., Semarang, Academika.
20. Ubaedillah., A. & Abdul Rozak, 2012. Pancasila Demokrasi, HAM dan Masyarakat Madani,Jakrta, Kencana Prenada Media Group.

19050163W003 - **INTRODUCTION TO MATH**

1. Course Identity:

Course	**: Introduction to Math**
Credits	**: 3**
Course Code	**:** 19050163W003
Lecturer(s)	:**TEAM**
Prerequisite Courses	**: -**

2. **Learning goals/competencies**:

a. Able to apply logical, critical, systematic, and innovative thinking in making strategic decisions by applying humanities values in the field of Introduction to Math and learning based on relevant information and data
b. Able to master basic theories, concepts, principles and procedures in the scientific field of Introduction to Math

3. Course Description:

This course studies the real number system, set operations, one-variable linear inequalities, function concepts, matrix concepts, limits and continuity, derivative concepts, and integral concepts.

4. Reference:

1. Yahya, Yusuf. dkk, Matematika Dasar Perguruan Tinggi, Ghalia Indonesia, Jakarta 2004
2. D. Mursita. Matematika Dasar untuk Perguruan Tinggi. Rekayasa Sains. 2006 Dumairy, Matematika Terapan untuk ilmu Biologi, BPFE, Yogyakarta, 2012

19050163W004 - **INTRODUCTION TO CHEMISTRY**

1. Course Identity:

Course	**: Introduction to Chemistry**
Credits	**:** 3
Course Code	**:** 19050163W004
Lecturer(s)	:**TEAM**
Prerequisite Courses	**: -**

2. Learning goals/competencies:

a. Able to apply logical, critical, systematic, and innovative thinkingin making strategic decisions by applying humanities values in the field of Introduction Chemistry and learning based on relevant information and data

b. Able to master basic theories, concepts, principles and procedures in the scientific field of Introduction Chemistry

3. Course Description:

This course studies equilibrium theory, acids and bases, buffer solutions, salt hydrolysis, solubility and solubility products, thermochemistry, colligative properties of solutions, organic chemistry and macromolecules.

4. Reference:

1. Keenan, C.W., Kleinfelter, D.C., Wood, J.H., 1979, Kimia Untuk Universitas Jilid 1, Edisi Ke Enam, Erlangga, Jakarta, Indonesia.
2. Burdge, J., Overby, J., 2016, Chemistry: Atom First, Second Edition, Mc Graw-Hill Education, New York, USA.

MU0000603W001 - **RELIGION**

1. Course Identity:

Course	**:** Religious Education (Islam)
Credits	**: 2**
Course Code	**:** MU0000603W001
Lecturer(s)	:**TEAM**
Prerequisite Courses	**: -**

2. Learning goals/competencies:

Able to Upholding human values based on religion, morals, ethics and having social sensitivity as well as care for the community and the environment especially the main points of Islamic teachings in the form of creed, shari'ah and morals in realizing a faithful and pious human being who is actualized in everyday life such as in the fields of economy, culture, social, politics, and insight. Islam in Indonesia.

3. Course Description:

This course examines the nature of humans and religion as well as the main points of Islamic teachings in the form of creed, shari'ah and morals in realizing a faithful and pious human being who is actualized in everyday life such as in the fields of economy, culture, social, politics, and insight. Islam in Indonesia.

4. Reference:

1. Amir Syarifuddin. 1997. *Ushul Fiqh I.* Jakarta: Logos Wacana Ilmu
2. Ali Daud. 1998. *Sistem Ekonomi Islam, Zakat dan Wakaf.* Jakarta: UT Press
3. Asmaran AS. 1994. *Pengantar Studi Akhlak*. Jakarta: Rajawali Press
4. Cholid Fadhullah. 1993. *Mengenal Hukum ZIS dan Pengamalannya di DKI Jakarta*. Jakarta: Bazis DKI
5. Diperta Islam Depag RI. 2004. "Materi Instruksional Pendidikan Agama Islam di Perguruan Tinggi Umum" Diktat
6. Depag RI. 1988. *Al-Qur'an dan terjemahnya.* Jakarta: Toha Putra Semarang
7. Eddy Rasyid. 1999. *Sistem Ekonomi Membangun Masyarakat Madani*. Padang: Universitas Andalas
8. Effaf al-Sharqawi. 1986. *Filsafat Kebudayaan Islam*. Bandung: Pustaka
9. Endang Syaifuddin Ansyari.1986. *Wawasan Islam*. Jakarta: Rajawali
10. M. Quraish Shihab. 1999. *Wawasan al-Qur'an*. Bandung: Mizan
11. Toto Suryana. 1996. *Pendidikan Agama Islam*. Bandung: Tiga Mutiara
12. Zakiah Derajat. dkk. 1986. *Dasar-dasar Agama Islam*. Jakarta: UT Press

MU0000602W006 - **BASIC HUMANITIES**

1. Course Identity:

Course	**:** Basic Humanities
Credits	**: 2**
Course Code	**:** MU0000602W006
Lecturer(s)	:**TEAM**
Prerequisite Courses	**: -**

2. **Learning goals/competencies**:

Able to Upholding human values based on religion, morals, ethics and having social sensitivity as well as care for the community and the environment especially in the field of Basic Humanities such as Introduction to Basic Humanities; Humans as cultural creatures; Humans as individuals and social beings; Man and civilization; People, diversity and equality; People, values, morals and laws; Humans, science, technology and the environment.

3. Course Description:

Introduction to Basic Humanities; Humans as cultural creatures; Humans as individuals and social beings; Man and civilization; People, diversity and equality; People, values, morals and laws; Humans, science, technology and the environment.

4. Reference:

1. Ahmadi, H. Abu.(1997). *Ilmu Sosial Dasar.* Jakarta: Reneka Cipta
2. Anh, To Ti. (1974). *Nilai Budaya Timur dan Barat.* Jakarta: Gramedia
3. Danandjaja, Andreas A (1986).*Sistem Nilai Manajer Indonesia.* Jakarta:PPM.
4. Koentjaraningrat. (1994). *Kebudayaan, Mentalitas dan Pembangunan.* Jakarta: PT Gramedia Pustaka Utama.

- ENGLISH (ENGLISH FOR BIOLOGY)

1. Course Identity:

Course	**:** English (English For Biology)
Credits	**: 2**
Course Code	**:** 19050162W006
Lecturer(s)	:**TEAM**
Prerequisite Courses	**: -**

2. Learning goals/competencies:

Able to follow the Scientific development of biology and learning, have an entrepreneurial spirit and good communication skills related to basic knowledge in English such as singular plural nouns, Tenses (Present Tense, Past Tense, Future tense, continuous tense, Perfect tense), Active and Passive Voice, Comparative and Superlative, Articles (a, an, the), Vocabulary in Biology, Practice Biology teaching with English.

3. Course Description:

This English course provides undergraduate students of biology education with basic knowledge in English, such as singular plural nouns, Tenses (Present Tense, Past Tense, Future tense, continuous tense, Perfect tense), Active and Passive Voice, Comparative and Superlative, Articles (a, an, the), Vocabulary in Biology, Practice Biology teaching with English.

4. Reference:

1. Fromkin, V and Rordman R, 1993. An Introduction to Language, New York: Holt Rinehart and Winston
2. *One stop english*.com

MU0000602W003 - **CIVIC EDUCATION**

1. Course Identity:

Course	**:** Civic Education
Credits	**:** 2
Course Code	**:** MU0000602W003
Lecturer(s)	:TEAM
Prerequisite Courses	**: -**

2. **Learning goals/competencies**:

Able to Upholding human values based on religion, morals, ethics and having social sensitivity as well as care for the community and the environment especially the contextual issues of civics.

3. Course Description:

This course discusses the contextual issues of Civics, developing positive attitudes and displaying behaviors that support the spirit of nationalism and love for the homeland, contextual problems of Civics, developing positive attitudes and displaying behaviors that support civilized democracy, and contextual problems of Civics, developing positive attitudes and displaying behaviors that supports legal awareness and diversity

4. Reference:

1. Achmad Sanusi. 2006. "Memberdayakan Pilar Demokrasi" dalam*Pendidikan Nilai Moral dalam DimensiPendidikan Kewarganegaraan*. Bandung: Laboratorium PKn UPI
2. Asshiddiqie, Jimly. 2010. *Pengantar Ilmu Hukum Tata Negara*. Jakarta: Raja Grafindo Persada.
3. Direktorat Jenderal Pembelajaran dan Kemahasiswaan. 2016. Pendidikan Kewarganegaraan Untuk Perguruan Tinggi Cetakan I. Ristekdikti.
4. Kaelan. 2007. Pendidikan Kewaarganegaraan. Yogyakarta: Paradigma.
5. Kennedy; Brunold. 2016. Regional context and Citizenship Education In Asia and Europe. New York: Routledge
6. Majid, Novita. 2019. Penguatan Karakter Melalui Kearifan Lokal sebagai Wujud Civic Disposition. Makassar: Cendekia Indonesia.
7. Setiawan, Deny. 2014. Kapita Selekta Kewarganegaraan. Cahaya Ilmu Press
8. UUD 1945 Negara Republik Indonesia
9. Winataputra, Udin Sariipudin. 2012. Pendidikan Kewarganegaraan dalam Perspektif Pendidikan Untuk Mencerdaskan Kehidupan Bangsa.

19050162W010 - CELL BIOLOGY

1. **Course Identity:**

Course	**:** Cell Biology
Credits	**:** 2
Course Code	**:** 19050162W010
Lecturer(s)	:TEAM
Prerequisite Courses	**:** -

2. **Learning goals/competencies**:

a. Able to master basic theories, concepts, principles and procedures in the fieldof biology Tropical Rain Forests and their Environment.
b. Able to follow scientific developments and develop an entrepreneurial spirit related to the field of cell biology science and learning, especially those from tropical rain forests and their environment.
c. Able to master work skills and laboratory management by utilizing science and technology and available natural resources from tropical rain forests and their environment.

3. **Course Description:**

This course discusses: the history of cell discovery, cell size, cell shapes, cell age, prokaryotic cells, eukaryotic cells, unicellular, multicellular, techniques for studying plant and animal cells, plant and animal cell organelles, reproduction cells by mitosis, meiosis, cell physical properties, cell chemistry, cell life, cell differentiation, living in tropical rain forest and their environment. The learning strategy applied allows students to work independently, collaborate with other students, find data, and present their findings to other students. This course is closely related to the courses: Bacteriology, Protists, Biochemistry, Genetics, and Animal Microtechnics.

4. **Reference:**

1. Lumowa, SVT. 2015. Cell Biology. Malang: UMM Press.
2. Orphan Wild. 1992. Cell Biology. Bandung: Tarsito.
3. Reece, JB, Urry, LA, Cain, ML, Wasserman, SA, Minorsky, PV, & Jackson, RB 2011. Campbell Biology Ninth Edition. San Francisco: Pearson Education, Inc. (Translation: Volume 1)
4. Gunning, BES. & Steer, MW 1996. Plant Cell Biology: Structure and Function. Boston: Jones and Bartlett.
5. Raven, PH, Johnson, GB, Mason, Ka, Losos, JB, & Singer., SR 2017. Biology, Eleventh Edition. New York: McGraw Hill Education.

19050162W012 - **ENVIRONMENTAL SCIENCE**

1. Course Identity:

Course	**:** Environmental Science
Credits	**:** 2
Course Code	**:** 19050162W012
Lecturer(s)	:TEAM
Prerequisite Courses	**:** -

2. **Learning goals/competencies**:

a. Able to Collaborate and take responsibility for work in their fields of Environmental Science courses
b. Able to master basic theories, concepts, principles and procedures in the scientific field of Environmental Science courses.
c. Able to apply logical, critical, systematic, and innovative thinking in making strategic decisions by applying humanities values in the field of Environmental Science courses

3. Course Description:

Studies in the course include: (1) environmental science concepts, (2) various environmental problems, (3) basic concepts of ecology and environmental science, (4) 14 principles of environmental science, (5) land resources, (6) natural resources. forest and minerals, (7) environmental ethics, (8) environmental pollution, (9) environmental health, (10) food sanitation, (11) water and settlement sanitation, (12) environmental policy strategies, (13) environmentally sound development and environmental impact analysis. Lecturers, in managing learning, apply student-centered learning, with a problem-based learning model

4. Reference:

1. Istamar Samsyuri, 1999. Environmental Knowledge
2. Anderson H. Stanley, Ronald EB & Waltow, 1993, Environmental Science, New York: Mc. Millan Publishing
3. Company Miller GY,2000, Living in the Environment , Principles, connection & Solution, 9th edition, California: Wadsworth Publishing Company
4. Soemarwoto, O., 1985, Environmental Ecology and Development, Jakarta: Djambatan Publisher.
5. July Soemirat Slamet. Environmental Health. Gadjah Mada University Press.

19050162W005 - **INTRODUCTION TO PEDAGOGY**

1. **Course Identity:**

Course	**:** Introduction To Pedagogy
Credits	**: 3**
Course Code	**:** 19050162W005
Lecturer(s)	:**TEAM**
Prerequisite Courses	**: -**

2. **Learning goals/competencies**:

a. Able to demonstrate a collaborate and take responsible for work attending in the field of understanding and elements of education, educational foundations and principles, prediction and anticipation of future society, functions and types of educational environment, educational streams, educational problems, national education system, education and development and implementation independently.

b. Able to implement pedagogical science in learning Biology in the field of the understanding and elements of education, educational foundations and principles, estimates and anticipations of future society, functions and types of educational environment, educational streams, educational problems, national education system, education and development and their application independently in Learning Biology in Tropical Rain Forests and Their Environment.

c. Able to design, implement, develop evaluation instruments in accordance with the concept of learning in the field of the understanding and elements of education, educational foundations and principles, estimates and anticipations of future society, functions and types of environment education, educational streams, educational problems, the national education system, education and development and its application independently in the field of biology and learning based on relevant information and data

3. **Course Description:**

Human nature and its development. Understanding and elements of education, foundations and principles of education. Estimates and anticipation of future society, functions and types of educational environment, educational streams, educational problems, national education system, education and development and their application.

4. Reference:

1. Pirdata. M. 2007. Educational Foundation for Indonesian-Style Educational Stimulus. Jakarta: Rineka CiptA.
2. Tirtarahardja, U and La Suro SL 2008. Introduction to Education. Jakarta: Rineka Cipta

19050162P011 - **ANIMAL MICROTECHNIC**

1. Course Identity:

Course	**:** Animal Microtechnic
Credits	**:** 2
Course Code	**:** 19050162P011
Lecturer(s)	: TEAM
Prerequisite Courses	**: -**

2. Learning goals/competencies:

a. Able to master basic theories, concepts, principles and procedures in the fieldof biology Tropical Rain Forests and its environment.
b. Able to master work skills and laboratory management by utilizing science and technology and available natural resources from tropical rain forests and its environment.

3. Course Description:

The Animal Microtechnic course discusses material on the definition and concept of microtechnics, the benefits of microtechnics for scientific development, the development of today's microtechnics, types of histological structure preparations in animals/humans, methods of making animal preparations, animal microtechnical methods, procedures for making tissue slices. animals by smear method and paraffin method, measurement of cells and tissues using a microscope.

4. Reference:

1. Jailani, et al. 2010. Lecture Material for Laboratory Management Tools, FKIP Unmul, Samarinda
2. Hendri Santoro. 1983. Histological and Histochemical Staining Methods. Jakarta: Bhratara Karya Aksara, Jakarta.
3. Gesner. 1994. Histology Textbook. Translated Gunawijaya. Jakarta: Literacy Development.

19050163W008 - **PLANT MORPHOLOGY**

1. Course Identity:

Course	**:** Plant Morphology
Credits	**:** 3
Course Code	**:** 19050163W008
Lecturer(s)	: TEAM
Prerequisite Courses	**: -**

2. Learning goals/competencies:

a. Able to demonstrate a collaborate and take responsible for workattending plant morphology
b. Able to master basic theories, concepts, principles andprocedures in the field of plant morphology
c. Able to master work skills in the field of plant morphology byutilizing science and technology

3. Course Description:

This course examines and analyzes the morphological structure of plants. Beginning with an explanation of the definition of plant morphology, cormus and parts thereof, nutrient apparatus (organum nutritivum) consisting of leaves (folium), stems (caulis), roots (radix), and other parts of plants, metamorphosis of roots, stems , and Leaves; Reproductive organs (organum reproductivum) include flowers (flos), fruit (fructus), and seeds (cement); Application of Morphology and Its Terms in Mencandra Plants.

4. Reference:

1. Bell, A. D. 1991. *Plant Form.* Oxford: Oxford University Press.
2. Gembong Tjitrosoepomo. 2007. *Morfologi Tumbuhan.* Yogyakarta: Gadjah Mada University Press.
3. Hardjosuwarno, S & Wiryohardjo, S. 1979. *Petunjuk Praktikum Morfologi Tumbuhan.* Laboratorium Taksonomi Tumbuhan Fakultas Biologi UGM, Yogyakarta.
4. Lawrence, G. H. M. 1959. *Taxonomy of Vascular Plants.* The Macmillan Company, New York.
5. Hartman, H. T. & D. E. Kester. 1983. *Plant Propagation: Principle and Practices*. New Jersey: 4th edition. Prantice-Hall Inc. Engle Wood Cliffs.

19050163W007 - **INVERTEBRATE**

1. **Course Identity:**

Course	**:** Invertebrate
Credits	**:** 3
Course Code	**:** 19050163W007
Lecturer(s)	: TEAM
Prerequisite Courses	**:** -

2. **Learning goals/competencies**:

   a. Able to collaborate and take responsibility for work in their fields of invertebrate courses
   b. Able to master basic theories, concepts, principles and procedures in the fieldof biology tropical rain forests and its Environment.
   c. Able to master work skills and laboratory management by utilizing science and technology and available natural resources from tropical rain forests and its environment.

3. **Course Description:**

   In this invertebrate course students can understand the basic principles of taxonomy and classification of invertebrate animals, so that at the end of this lecture students have skills in grouping invertebrate animals in the surrounding environment.

4. **Reference:**

1. Irwin W, Sherman & ViHaG. Sherman, 1986. The Invertebrates: Function and Form, Mac Milan Publish Co. Inc. New York.
2. Maskoeri Jasin, 1992. Invertebrate Zoology. Vijaya Light. Surabaya
3. Robert D. Barner, 1987. Invertebrate Zoology. Saunders College Publishing, Philadelphia.
4. Freeman, WH & Brian Bracegirdie, 1985. Inverbrate Structuer. Linemann Educational Book, London.

19050162W009 - **LABORATORY TOOLS & MANAGEMENT**

1. **Course Identity:**

Course	**:** Laboratory Tools & Management
Credits	**:** 2
Course Code	**:** 19050162W009
Lecturer(s)	: TEAM
Prerequisite Courses	**:** -

2. Learning goals/competencies:

a. Able to master basic theories, concepts, principles and procedures in the scientific field of biology and the interaction of organisms with Tropical Rain Forest and its Environment.
b. Able to master work skills and laboratory management byutilizing science and technology and available natural resources

3. Course Description:

This course discusses: the definition of a laboratory, the benefits of a laboratory, the management of security and work safety in the laboratory, uses: working principles and how to use basic equipment and special equipment used in biology experiments and teaching, equipment for observation: preparation, measurement and analysis samples from humid tropical rain forests, planning for procurement of tools and materials. Practicum in this course is carried out on the introduction of laboratory equipment, administration of general biology laboratory facilities, grouping and storage of tools, grouping and storage of materials, maintenance and storage of microscopes, weighing and dilution. The learning process applies learning models that allow students to work independently, interact with other studentsin doing assignments in class, and share findings with other students. This course is related to courses practiced in biology education laboratories, such as: general biology, bacteriology, animal microtechnics, high behavioral botany, cell biology.

4. Reference:

1. Jailani, et al. 2010. Lecture Material for Laboratory Management Tools, FKIP Unmul, Samarinda
2. Department of Biology, Bandung Institute of Technology. 1988. Guide to the Use of Biological Equipment.
3. Nur, MA, Rukmini, H. and Adijuwana, H. 1989. Laboratory Engineering for Biology and Chemistry. Bogor: PAU IPB.
4. Wirjosoemarto, K., Adisendjaja, YH, Supriatno, B., and Riandi. 2004. Laboratory Engineering. Bandung: Department of Biology Education, FMIPA UPI - IMSTEP JICA
5. Mukono. 2000. Basic Principles of Environmental Health.Surabaya: Airlangga University Press.
6. Riandi. (Without Year). Laboratory Management.http://file.upi.edu/Directory/FPMIPA/JUR._PEND._BIOLOGI/196305011988031-RIANDI/Bahan_Kuliah/Pengelolaan_Laboratorium.pdf
7. Vendamawan, R. (2015). Chemical Laboratory Management. *Methane*, Vol. 11 No. 02, p. 41 - 46 .

19050063W003 - **LEARNER DEVELOPMENT**

1. **Course Identity:**

Course	**:** Learner Development
Credits	**:** 3
Course Code	**:** 19050063W003
Lecturer(s)	: TEAM
Prerequisite Courses	**:** -

2. **Learning goals/competencies**:

a. Able to implement pedagogical science in learning Biology in the field of individual characteristics and differences, developmental theory and measurement, as well as student growth and development.
b. Able to apply logical, critical, systematic, and innovative thinking in making strategic decisions by paying attention to and applying humanities values related to educators, individual characteristics and differences, theory of development and measurement, as well as growth and development of students based on relevant information and data

3. **Course Description:**

The Student Development course learns about teachers as educators, individual characteristics and differences, theory of development and measurement, growth and development of students: physical, intellectual, social and language aspects of children as well as playing time, adolescence, early adulthood, middle adulthood, and adulthood final, effective development, development of personal life, education and career, family life, adolescent adjustment, characteristics of children with special needs and developmental disorders, implications of growth and development in adolescents for the learning process of science/biology, study of developmental problems of students and their solutions.

4. **Reference:**

1. Sunarto & Hartono, NY. BA 2008. Student Development. Jakarta: Rineka Cipta.
2. Hurlock EB 1990. Developmental Psychology An Approach throughout the Life Span. Jakarta: Glora Aksara Pratama.
3. Suwarno. SW 1991. Adolescent Psychology. Jakarta: Rajawali Press. Wardani. 1997. Student Development. Jakarta: Rineka Cipta

05015324 - **PLANT ANATOMY**

1. **Course Identity:**

Course	**:** Plant Anatomy
Credits	**:** 3
Course Code	**:** 05015324
Lecturer(s)	: TEAM
Prerequisite Courses	**: -**

2. **Learning goals/competencies**:

   a. Able to demonstrate a collaborate and take responsible for work attending Plant Anatomy lectures
   b. Able to master basic theories, concepts, principles and procedures in the field of Plant Anatomy
   c. Able to master work skills in the field of Plan Anatomy

3. **Course Description:**

The course studies include: Concepts of plant anatomy discussing cytology andhistology/cells and tissues; Cells and protoplasm; Objects in cells that are nonprotoplasmic; Non-protoplasmic cell membrane; Amitotic division, mitosis and meiosis in cells; Chromosomes and polyploidy; tissue and its properties (definition, young tissue (meristem tissue) and its properties, primary and secondary young tissue, theory of the structure of growing points) parenchymal tissue); Protective tissue (epidermal and cork tissue, characteristics of the epidermis, stomata in the epidermis, history of stomata formation, cork tissue: exodermis, endodermis, periderm, phelogen, phellem, pheloderm, monogenous cork, poigen cork, commercial cork, lenti cells; Mechanical tissue (collenchyma tissue and sclerenchyma tissue), Xylem, phloem, and other transport tissues;

4. **Reference:**

1. Arlina. 2017. Anatomical Structure of Water Hyacinth (Eichhornia crassipes(Mart) Solm) Vegetative Organs in Lake Review. Thesis. Biology Education STKIP PGRI West Sumatra Culter,
2. D., Botha, T and Stevenson, D. 2007. Plant Anatomy. USA: BlackwellPublishing Ltd
3. Haryanti, S. 2010. The number and distribution of stomata on the leaves of several species of dicots and *monocots. ANATOMY PHYSIOLOGY*,18(2), 21-28
4. Nugroho, L., Evert, RF 2006. Esau's Plant Anatomy, 3rdn. Meristems,cells and tissues of the plant body-their *structure functions and development.* Wiley-Intercience, New Jersey.

5. Haryanti, S. 2010. The number and distribution of stomata on the leaves of several species of dicots and tanaman *monocots.PHYSIOLOGICAL ANATOMY*,18(2), 21-28.
6. Hidayat, E. 1990. Fundamentals of Plant Structure and Development. Bandung: ITB
7. Hidayat, E. 1995. Anatomy of Seed Plants. Bandung: ITBKartasapoetra, AG 1988. Introduction to Anatomy Plants (About Cells and Tissues). Jakarta: Literacy Development
8. Purnomo., Issirep S. 2006. Plant Structure and Development. Jakarta: Self-Help Spreader
Nurmawati, S., & Sulistiana, S. (2007). Study of Epidermis structureof Dasymaschalon blumei leaves Finet & Ganep. (Annonaceae) INJAVA AND SUMATERA. Journal of Mathematics Science and Technology, 8(1), 62-70
10. Artasapietra. 1991. Introduction to the Anatomy of Plants (About Cells and Tissues). Jakarta: Rineka Cipta.
11. Kusumaningrum, Rachma. 2017. "The Role of Xylem And Phloem In Plant Growth And Development". Proceedings of the National Seminaron Biology and Biology Education Department of Biology Education, Faculty of Mathematics and Natural Sciences. Yogyakarta State University 2017:123-130.
12. Blue, Wahyu. 2017. Structure and Function of Tissues in Plants. Solo: Azka Pressindo.

19050163W023 - **BIOCHEMISTRY**

1. Course Identity:

Course	**: Biochemistry**
Credits	**:** 3
Course Code	**:** 19050163W023
Lecturer(s)	: TEAM
Prerequisite Courses	**:** -

2. Learning goals/competencies:

a. Able to master basic theories, concepts, principles and procedures in the fieldof biology Tropical Rain Forests and their Environment.
b. Able to follow scientific developments and develop an entrepreneurial spirit related to the field of genetics science and learning, especially those from tropical rain forests and their environment.
c. Able to master work skills and laboratory management by utilizing science and technology and available natural resources from tropical rain forests and their environment.

3. Course Description:

The studies carried out in the course include: the fine structure of cells and their functions, carbohydrates, proteins, fats, nucleic acids, enzymology, biological oxidation and biochemical energy; metabolism (catabolism and anabolism): carbohydrates, proteins, fats; abnormalities in metabolism: carbohydrates, proteins, and fats; hormones and metabolism. Technical lectures in the course are face-to-face meetings in class, and practical activities in the laboratory by utilizing samples obtained from the tropical rain forest environment. The practicum program is carried out with studies on factors that affect enzyme activity, biological oxidation, blood analysis, urine analysis. This course is closely related to the following courses: General Biology, Cell Biology, Human Physiology, Animal Physiology, Plant Physiology.

4. Reference:

1. Arbianto, P. 1993. Biochemistry, Basic Concepts. Jakarta: Ministry of National Education Dikti.
2. Girinda, A. 1987. Biochemistry 1. Jakarta: Gramedia Pustaka Utama.
3. Alexander. 1984. Biochemistry Part 1. Jakarta: Dharma Graha Foundation.
4. Martoharsono, S. 1984. Biochemistry Volume I. Yogyakarta: Gadjah Mada University Press.
5. Poedjianti, A. 1994. Fundamentals of Biochemistry. Yogyakarta: Gadjah Mada University Press.

19050063W002 - LEARNING AND PEDAGOGY

1. Course Identity:

Course	**:** Learning and Pedagogy
Credits	**:** 3
Course Code	**:** 19050063W002
Lecturer(s)	: TEAM
Prerequisite Courses	**:** -

2. Learning goals/competencies:

a. Able to implement pedagogical science in learning Biology in the field of implement the meaning of learning and learning; factors that affect student learning; learning and pedagogy problems; learning approaches; process skills approach in learning; confidence in self-ability and self-regulation skills; learning theory: descriptive perspective, behavioristic, cognitivistic, humanistic, constructivist in learning biology in Humid Tropical Forest and its Environment.

b. Able to apply logical, critical, systematic, and innovative thinking in making strategic decisions by paying attention to and applying

humanities values in the field of learning and pedagogy biology based on relevant information and data

3. Course Description:

This course examines: understanding of learning and pedagogy; factors that affect student learning; learning and pedagogy problems; learning approaches; process skills approach in learning; confidence in self-ability and self-regulation skills; learning theory: descriptive perspective, behavioristic, cognitivistic, humanistic, constructivist.

4. Reference:

1. Baharuddin, Wahyuni. 2010. Learning and pedagogy Theory. Yogyakarta: Ar-Ruzz Media.
2. Darsono, Max, et al. 2000. Learning and Learning. Semarang: IKIP Semarang Press.
3. Fathurrohman, Pupuh and Sutikno, Sobry. 2007. Teaching and Learning Strategy through Planting General Concepts & Islamic Concepts. cet. II, Bandung: Refika Aditama.
4. Gulö, W. 2002. Teaching and Learning Strategies. Jakarta: Grasindo.
5. Knight, George R. 1982. Issues and Alternatives in Educational Philosophy. cet. XII, Michigan: Andrews University Press.
6. Naim, Ngainun and Patoni, Achmad. 2007. Materials for the Preparation of Islamic Religious Education Learning Designs (MPDP-PAI). Yogyakarta: Student Library.
7. Roziqin, Muhammad Zainur. 2007. Moral Education in the Global Era; Shifting Teacher-Student Interaction Patterns in the Global Era. Malang: Averroes Press.
8. Sukmadinata, Nana Syaodih. 2007. Psychological Foundations of the Educational Process. cet. IV, Bandung: Rosdakarya Youth.
9. Suryosubroto, B. 1997. Teaching and Learning Process in Schools. Jakarta: Rineka Cipta.
10. Tilaar, HAR 2002. Education. Indonesian Culture and Civil Society; National Education Reform Strategy. cet. III, Bandung: Youth Rosdakarya.
11. Personal, Benny.A , 2010, Learning System Design Model, Jakarta: Dian Rakyar
12. Suparman, Atwi, 2012, Modern Instructional Design, Jakarta: Erlangga
13. Silberman, Melvin, L, 2011, Active Learning, Bandung: Nusa Media
14. Zubaedi, 2012. Character Education Design, Jakarata: Kencana Prenada Group
15. Mulyasa, E. 2007. Education Unit Level Curriculum. Bandung: PT Pemuda Rosdakarya.Sanjaya. 2006.
16. Mulyasa, E. 2006. Improved Curriculum, Development of Competency Standards and Basic Competencies. Jakarta: PT Gramedia Widiasarana Indonesia

19050163W022 - **HUMAN ANATOMY**

1. Course Identity:

Course	**:** Human Anatomy
Credits	**:** 3
Course Code	**:** 19050163W022
Lecturer(s)	: TEAM
Prerequisite Courses	**: -**

2. Learning goals/competencies:

a. Able to demonstrate a collaborate and take responsible for work attending Human Anatomy lectures
b. Able to master basic theories, concepts, principles and procedures in the field of Human Anatomy
c. Able to master work skills in the field of Human Anatomy by utilizing science and technology

3. Course Description:

This Human Anatomy course provides undergraduate students of biology education with knowledge of the anatomical structures thatmake up the human body in the Integumentary System, Skeletal System, Muscular System, Circulatory System, Digestive System, Respiratory System, Urinary System, Nervous System, Reproductive System, System Senses and Endocrine System.

4. Reference:

1.Evelyn CP, Anatomi dan Fisiologi Manusia. , Jakarta :Gramedia Pustaka Utama
2.Tortora, GJ & NP Anagnostakos. 1990. Principles of Anatomy & Physiology. Harper International Edition –Australian Edition

19050163W021 - **ANIMAL ANATOMY**

1. Course Identity:

Course	**:** Animal Anatomy
Credits	**: 3**
Course Code	**:** 19050163W021
Lecturer(s)	:**TEAM**
Prerequisite Courses	**: -**

2. Learning goals/competencies:

a. Able to Collaborate and take responsibility for work in their fields of of animal anatomy lectures and practical animal anatomy structures
b. Able to master basic theories, concepts, principles and procedures in the scientific field of animal anatomy and the interaction of organisms with Tropical Rain Forest and its Environment
c. Able to master work skills and laboratory management by utilizing science and technology and available natural resources especially in the field of animal anatomy

3. Course Description:

Through this learning, students are expected to understand the anatomical structure of the integument system, the movement system includes bones and muscles, the digestive system includes the digestive tract and digestive glands, the respiratory system, the circulatory system includes the heart and blood vessels and lymphatic vessels, the reproductive system, the excretory system, and the nervous system. and the senses and the endocrine or hormonal system.

4. Reference:

1. Sugiyono, H., 2007, Animal Anatomy Lecture, Surakarta, Independent Work
2. Susilo, H., 1987, Animal Anatomy, Jakarta, Karunika
3. Tatang, D., 1981, Introduction to the Comparative Anatomy of Vertebrates, Bandung, Armico
4. George C Kent. 1983. Comparative Anatomy of the Vertebrates. The CVMosby Company. London.
5. Milton He'debrand. 1974. Structural analysis of vertebrates. John Wiley & Sons. New York.
6. Weichert CK and Presch W. 1984. Element of Chordate Anatomy. New Delhi : Tata McGrawHill Publishing Company Limited.

19050163W019 - **VERTEBRATE**

1. Course Identity:

Course	**:** Vertebrate
Credits	**:** 3
Course Code	**:** 19050163W019
Lecturer(s)	: **TEAM**
Prerequisite Courses	**: -**

2. Learning goals/competencies:

1. Able to collaborate and take responsibility for work in their fields of vertebrate courses

2. Able to master basic theories, concepts, principles and procedures in the fieldof biology Tropical Rain Forests and their Environment.
3. Able to master work skills and laboratory management by utilizing science and technology and available natural resources from tropical rain forests and their environment.

3. Course Description:

Introducing the study of vertebrates so that students understand basic tissues and their derivatives, phylum chordates, hemichordata, urochordata, cephalochordates, classes agnatha, chorndrichthyes, osteichthyes, amphibians, reptiles, aves and mammals

4. Reference:

1. Sukiya. 2000. Vertebrate Biology. Yogyakarta: Jurdik Biology FPMIPA. Yogyakarta State University
2. Campbell, NA, Mitchell, LG, Reece, JB 2000. Concepts and Connections. 3th ed. Sanfrancisco: Addison Wesley Longman Inc.
3. Hildebrand, M. 1995. Analysis of Vertebrate Structure. 4th ed. New York: John Wiley & Sons, Inc.
4. Hicman, CP, Robert, LS and Larson, A. 1998. Biology of Animals. Boston : The McGraw-Hill Co., Inc.
5. F. Kardong, KV 1998. Vertebrates: Comparativa, Anatomy, Function, Evolution. 2nd ed. Boston: The McGraw-Hill Co., Inc.
6. Jason's Mask. 1992. Vertebrate Zoology. Vijaya Light. Surabaya
7. Radiosaputro. 1983. Zoology. Erlangga Jakarta

19050062W004 - **EDUCATION PROFESSION**

1. Course Identity:

Course	**:** Education Profession
Credits	**: 3**
Course Code	**:** 19050062W004
Lecturer(s)	:**TEAM**
Prerequisite Courses	**: -**

2. Learning goals/competencies:

a. Able to implement pedagogical science in field of the role of education administration, in terms of School Management; teacher's role as education administrator, vertical organizational structure of the department of education and culture); on Tropical Rain Forests and Its Environment

b. Able to apply logical, critical, systematic, and innovative thinking in making strategic decisions by applying humanities values in the field of the role of education administration, in terms of School Management; teacher's role as education administrator, vertical organizational structure of the department of education and culture) based on relevant information and data

3. Course Description:

This course examines: Teacher concept (understanding of profession and professional requirements, code of ethics, professional organization); the teaching profession and the requirements that must be possessed by teachers; Teacher competence (kTeacher competency, learning theory and learning principles): Counseling at school and the role of the teacher in its implementation; fieldAdministration in the teaching profession (Education administration, Education Administration function; School Management Administration; Teacher's role in Education Administration, Vertical Organizational structure of the Ministry of Education and Culture); The role of teachers in high school administration (curriculum administration, student administration, personnel administration, facilities and infrastructure administration, school and community relations administration); School organizational system and structure (understanding of school organizational system and structure, elements in the organizational structure of the department of education and culture, educational staff education institutions); Educational supervision (understanding of educational supervision, goals and objectives of supervision, principles of supervision, function of supervision, types of supervision, types of supervision techniques, mechanisms for implementing supervision.

4. Reference:

1. Mudjirahardjo. 2010. Professional Development of teachers
2. Purwanto. M. Ngalim. 2004. Educational Psychology. Bandung: PT Pemuda Rosdikarya.
3. Sanusi Ahmad. 1991. Study on the Development of Professional Educational Capital for Education Personnel. Bandung: IKIP Bandung.
4. Usman, Moh Uzer. 1990. Becoming a Professional Teacher. Bandung: Rosdakarya Teenagers

19050163W032 - **BIOLOGY LEARNING STRATEGY**

1. **Course Identity:**

Course	**:** Biology Learning Strategy
Credits	**:** 3
Course Code	**:** 19050163W032
Lecturer(s)	: TEAM
Prerequisite Courses	**:** -

2. **Learning goals/competencies**:

   a. Able to implement pedagogical science in field of learning process so that active, effective, efficient and meaningful learning occurs to achieve optimal learning outcomes which are part of the learning strategy including approaches to learning, learning models, learning methods, concept maps, and basic teaching skills in Tropical Rain Forests and their Environment

   b. Able to apply logical, critical, systematic, and innovative thinking in making strategic decisions by paying attention to and applying humanities values that are in accordance with the field of pedagogic science in learning process so that active, effective, efficient and meaningful learning occurs to achieve optimal learning outcomes which is part of the learning strategy based on relevant information and data

3. **Course Description:**

This course examines and analyzes various way to organize the components of the learning process so that active, effective, efficient and meaningful learning occurs to achieve optimal learning outcomes. This course discusses: 1) Explanation of learning strategies: types of learning strategies, teaching and learning presentation techniques, the nature of learning strategies, implications of learning systems in education, 2) Introduction to learning and teaching, Creating a framework for learning; 3) Introduction of teachers in achieving the standard of the educational process; 4) The learning system in the standard of the education process; 5) Learning approach: Scientific approach: 6) *Contextual Teaching and Learning* (CTL); 7) a problem solving approach; 8) constructivism approach; 9) open-ended approach; 10) approach to science process skills; 11) learning models; 12) Teaching methods; 13) concept map; 14) Basic teaching skills

4. **Reference:**

1. Agustina, N. 2016. Teachers in Achieving Educational Standards.http://psd216.weblog.esaunggul.ac.id
2. Anita Lie. 2000. Cooperative Learning Practicing Cooperative Learning in Classrooms. Jakarta. Grasindo.

3. Bobbi De Porter and Mike Hernacki. 2007. Quantum Learning Makes Learning Comfortable and Fun. Bandung: Mizan Pustaka.
4. Fatkhan Amirul Huda. 2017. Science Process Skills. https://fatkhan.web.id/pengertian-keterampilan-proses-sains-kps/#
5. Hisham Zaini, Bermawy Munthe and Sekar Ayu Aryani. 2008. Active Learning Strategy. Yogyakarta. CTSD.
6. Johnson, Elaine B. 2007. Contextual Teaching and Learning Makes Teaching and Learning Activities Fun and Meaningful. Bandung: Mizan Learning Center.
7. Latif, MA. 2012. Learning Systems in the Educational Process
8. Longman. 2008. Science Process Skills Form 1-5. Selangor Darus Ehsan, Malaysia.
9. Martinis Yamin. 2007. Educational Unit-Based Learning Design. Jakarta. Echo Persada.
10. Muijs, Daniel and David Reynolds. 2008. Effective Teaching Theory and Application. Yogyakarta: Student Library
11. Roestiyah. 1990. Teaching and Learning Strategy. Rineka Cipta, Jakarta
12. Slavin, Robert E. 2010. Cooperative Learning Theory, Research, and Practice. Bandung: Nusa Media.
13. Satria. 2016. Definition of Learning Approach According to Experts. https://www.materiallearning.id/2016/06/5-pengertian-approach-pembelajaran.html
14. Zakky. 2020. Understanding learning strategies according to experts. https://www.zonareferensi.com/pengertian-strategi-pembelajaran/
15. Wina Sanjaya. 2008. Educational Process Standard Oriented Learning Strategy. Jakarta: Kencana Prenada Media Group.

19050162P031 - **LEARNING MEDIA**

1. Course Identity:

Course	**:** Learning Media
Credits	**:** 2
Course Code	**:** 19050162P031
Lecturer(s)	: TEAM
Prerequisite Courses	**:** -

2. Learning goals/competencies:

a. Able to Collaborate and take responsibility for work in their fields of learning media.
b. Able to implement pedagogical science in learning media for Biology Learning in the context of Tropical Rain Forest and its Environment
c. Able to apply logical, critical, systematic, and innovative thinking in making strategic decisions by paying attention to and applying humanities values in the field of learning media biology based on relevant information and data

3. **Course Description:**

The Learning Media Course studies (1) the understanding and basic principles of learning media; (2) the role and function of learning media; (3) the benefits of learning media; (4) types of media; (5) the criteria for selecting learning media and factors influencing the selection of learning media; (6) take advantage of the natural wealth of the humid tropical rain forest and the environment as a medium for learning biology; (8) designing and creating learning media that are suitable for the industrial revolution 4.0 era and the 5.0 social revolution era. The learning process is carried out through discussion, practice, and project-based learning.

4. **Reference:**

1. Nurdyansyah. 2019. Media Pembelajaran Inovatif. Sidoarjo: Umsida Press.
2. Riyana, Cepi. 2012. Media Pembelajaran. Jakarta: Dirjen Pendidikan Islam Kementerian Agama Republik Indonesia.
3. Sumiharsono, Rudi & Hasanah, Hisbiyatul. 2017. Media Pembelajran. Jember: CV. Pustaka Abadi.
4. Ramli, Muhammad. 2012. Media dan Teknologi Pembelajaran. Banjarmasin: IAIN Antasari Press.
5. Supandi, M., & Senam, S. (2020). Development of science learning media-based local wisdom Batui to improve critical thinking ability. *Jurnal Pendidikan dan Pengajaran, 52*(3), 163-171. doi:http://dx.doi.org/10.23887/jpp.v52i3.18149

19050162W027 - **BOTANY OF LOWER PLANT**

1. **Course Identity:**

Course	**:** Botany of Lower Plant
Credits	**:** 3
Course Code	**:** 19050162W027
Lecturer(s)	: TEAM
Prerequisite Courses	**: -**

2. **Learning goals/competencies**:

a. Able to master basic theories, concepts, principles and procedures in the fieldof biology Tropical Rain Forests and their Environment.
b. Able to master work skills and laboratory management by utilizing science and technology and available natural resources from tropical rain forests and their environment.

3. **Course Description:**

Introducing students to plant diversity. Taxonomy of plants (basic principles of taxonomy, aspects of taxonomy, classical taxonomy, biosystematics,

numerics and chemistry, basics of taxonomy). Taxonomic relations with other branches of science, classification of lower plants, structure and properties of bacteria (reproduction and the basis of life), structure and characteristics of algae (reproduction and the basis of life), classification of algae, structure and characteristics of fungi (reproduction and the basis of life), classification of mosses, structure and properties of ferns (reproduction and the basis of life), classification of ferns.

4. Reference:

1. Inge brisham. 1980. Botai low plants. Bandung. Department of Biology FMIPA. ITB.
2. INSAR, Arbain. 2010. Botany of lower plant. Jakarta: Gramedia Widiasarana Indonesia.
3. Pelczar, MJ 2006. Fundamentals of Microbiology. Jakarta: UI Press.
4. Soetarmi. 1983. General Botany 4. Bandung: Space.
5. Vashishta. 1996. 1996. Botany for Degree Student: Bryophyta. New Delhi. 4. Ed. S.Cand & Co. PVP LLTD Ram Nagar

19050163W026 - **GENETICS**

1. Course Identity:

Course	**:** Genetics
Credits	**:** 3
Course Code	**:** 19050163W026
Lecturer(s)	: TEAM
Prerequisite Courses	**:** -

2. **Learning goals/competencies**:

a. Able to master basic theories, concepts, principles and procedures in the fieldof biology Tropical Rain Forests and their Environment.
b. Able to follow scientific developments and develop an entrepreneurial spirit related to the field of genetics science and learning, especially those from tropical rain forests and their environment.
c. Able to master work skills and laboratory management by utilizing science and technology and available natural resources from tropical rain forests and their environment.

3. Course Description:

This course discusses: mendelism, heredity, genetic material, gene expression, variation in the number of chromosomes, variations and modifications, lethal genes, gene interactions, probability theory, sex determination, sex sequence,

multiplication and crossing over, multiple alleles, biochemical genetics, population genetics, mating and polygenic systems, especially in living things in humid tropical forests and their environment.

4. Reference:

1. Suryo, 1990, Genetics, Gadjah Mada University Press, Yogyakarta.
2. Orphans, W. 1987, Genetics, Tarsito Bandung
3. Gardner, EJ and DP Snusad, 1984, Principles of Genetics, seven edition, John Wiley & Sons, New York
4. Thomson and Thomson, 1986. Genetics In Medicine, Fourth Edition, WB Saunders Company, West Washington Square

19050163W030 - **STUDY OF BIOLOGY CURRICULUM**

1. Course Identity:

Course	**:** Study of Biology Curriculum
Credits	**:** 3
Course Code	**:** 19050163W030
Lecturer(s)	: TEAM
Prerequisite Courses	**: -**

2. Learning goals/competencies:

a. Able to demonstrate a collaborate and take responsible for work attending in study of Biology Curriculum.
b. Able to implement pedagogical science in the learning process so that active, effective, efficient and meaningful learning occurs to achieve optimal learning outcomes which are part of the Curriculum: Preparation of Syllabus, Lesson Plan, Worksheet, (Competency Standards, Basic Competencies, Learning Indicators, Subject Matters/ Sub-topics, Teaching Materials, Time Estimation, and Evaluation in Tropical Rain Forests and Its Environment
c. Able to apply logical, critical, systematic, and innovative thinking in making strategic decisions by paying attention to and applying humanities values that are in accordance with the field of pedagogic science in the learning process so that active, effective, efficient and meaningful learning occurs to achieve optimal learning outcomes which are part of the learning process. from curriculum review based on relevant information and data

3. Course Description:

The Biology Curriculum Review course describes Curriculum Concepts, Curriculum Development Principles, 2013 Curriculum Basic Framework, Examining the Contents of Curriculum Structure, Program Structure,

Studying and Developing Syllabus, Biology Lesson Plan, Biology Worksheet, Teaching materials, and Evaluation, in Middle Schools. Determine the Scope and Depth of Content of Each Subject. Describe the material of each subject into a number of sub-topics. Implementation in Preparation of Syllabus, Lesson Plan, Worksheet (Competency Standards, Basic Competencies, Learning Indicators, Subjects / Sub-Points of Discussion, Teaching Materials, Time Estimation, and Evaluation, Preparing Semester Programs.

4. Reference:

1. AK, et al, 1998, The School Curriculum, Boston
2. Ansyar & Nurtain (1993) Curriculum Development and Innovation. Ministry of National Education.
3. Ansar, Moh. (1989) Fundamentals of Curriculum Development. Ministry of National Education.
4. Ministry of National Education and Directorate General of Primary and Secondary Education, 2003, Jakarta: Ellis Competency-Based Curriculum.
5. Hasan, S. Hamid. (1988). Curriculum Evaluation. Jakarta: Depdikbud, Dikti, Development Project for Educational Personnel Education Institutions.
6. Ibrahim and Karyadi, Beny. (1990). Main Material: Innovation and Curriculum Development. Jakarta: Ministry of Education and Culture.
7. Ibrahim and Syaodih, Nana S. (1993) Teaching Planning. Jakarta: Ministry of Education and Culture, Higher Education, Education Personnel Development Project.
8. McNeil, John D. (1990). Curriculum: Comprehensive Introduction. London.
9. Miller, John P & Seller, Wayne. (1985). Curriculum Perspectives and Practice. London: Longman.
10. 10.Mulyasa, E. (2003). Competency-Based Curriculum: Concepts, Characteristics, and Implementation. Bandung: Rosdakarya Youth.
11. Nasution. (1991). Curriculum Development. Bandung: Image of Aditya Bakti.
12. Nasution. (1995). Curriculum Principles. Jakarta: Earth Literacy.
13. Oliva, Peter F. (1992). Developing the Curriculum. United States of America: HarperCollinsPublishers.
14. Sumantri, Mulyani. (1988). Curriculum and Teaching. Jakarta: Ministry of Education and Culture, Higher Education, PPLPTK.
15. Yulaelawati, Ella. (2004). Curriculum and Learning: Philosophical Theory and Applications. Jakarta: Library Expert.
16. Zais. RS (1976). Curriculum Principles and Foundations. New York: Harper & Raw Publishers.

19050162W025 - **HISTOLOGY**

1. Course Identity:

Course	**:** Histology
Credits	**:** 2
Course Code	**:** 19050162W025
Lecturer(s)	: TEAM
Prerequisite Courses	**:** -

2. Learning goals/competencies:

a. Able to master basic theories, concepts, principles and procedures in the scientific field of biology and the interaction of organisms with Tropical Rain Forest and its Environment.
b. Able to apply logical, critical, systematic, and innovative thinking in making strategic decisions by applying humanities values in the field of biology and learning based on relevant information and data

3. Course Description:

Histology course consists of studies of cell structure, basic tissues(epithelium, connective, muscle, and nerves) and tissues thatcompose various organs, such as lymphoid, digestive, respiratory, circulatory, excretory, reproductive, endocrine and sensory. Practical learning of this course discusses basic tissues such as epithelial tissue, connective tissue, muscle tissue and nerves. Learning is carried out with active student-based learning models such as discovery learning and practicum.

4. Reference:

1. http://www.histologyguide.com/
2. Aplikasi PC Interactive ColorAtlas of Histology
3. Mescher, A.L. 2018. Junqueira's Basic Histology, 15th edition. New York: McGraw-Hill Education.
4. Trautmann, A., & Fiebiger, J. 2017. Fundamental of Histology of Domestic Animal. New Delhi: CBS Publishers ft Distributors Pvt. Ltd
5.

- BASIC STATISTICS

1. Course Identity:

Course	**:** Basic Statistics
Credits	**:** 2
Course Code	**:** 19050162W033
Lecturer(s)	: TEAM
Prerequisite Courses	**:** -

2. Learning goals/competencies:

a. Able to Collaborate and take responsibility for work attending in their fields of basic statistic: basic notions in statistics, data presentation, mode, mean, median, symmetry and slope, deviation measure, probability theory, probability distribution, sampling distribution, several tests including: test normality, homogeneity of variance test, regression linearity test and correlation, nonparametric statistics (sign test, Wilkoxon test, and Liliefors test), and have social sensitivity and concern for people and humid tropical forests and their environment.

b. Able to master knowledge related to methodological research of biology and learning especially in the field of advanced statistic: basic understanding in statistics, presentation of data related to biological materials obtained by moist tropical forests and their environment, mode, mean, median, symmetry and slope, deviation size, probability theory, distribution probability, sampling distribution, several tests including: normality test, homogeneity of variance test, regression linearity test and correlation, nonparametric statistics (sign test, Wilkoxon test, and Liliefors test) independently.

c. Able to design and implement research results by using statistical to be an alternative solutions to problems in the field of biology and learning : mode, mean, median, symmetry and slope, deviation size, probability theory, distribution probability, sampling distribution, several tests including: normality test, homogeneity of variance test, regression linearity test and correlation, nonparametric statistics (sign test, Wilkoxon test, and Liliefors test) and pedagogics.

3. Course Description:

The studies carried out in the course include: basic understandings in statistics, presentation of data related to biological materials obtained by tropical rain forests and their environment, center size and location size, symmetry and slope, deviation size, probability theory, probability distribution, sampling distribution, several tests including: normality test, homogeneity of variance test, regression linearity test and correlation, nonparametric statistics (sign test, Wilkoxon test, and Liliefors test). Technical lectures in the course are face-to-face meetings in class, by applying cooperative learning models and direct learning. Some of the information that is used as consideration for student success in lectures is: attendance, participation during lectures, assignments, papers, Mid-Semester Examination (UTS), and Final Semester Examination (UAS). This course is closely related to the following courses: Advanced Statistics, Research Methodology, Biology Seminar.

4. Reference:

1. Basic Statistics: Luhut P. Panggabean
2. Sudjana. 1992. Statistical Methods. Bandung: Tarsito.
3. Introduction to Statistics: Wallpole
4. Probability and Statistics for Engineers and Scientists, 4th Edition Ronald E. Walpole & Raymond H. Myers
5. Principles and Procedures of Statistics, A Biometrical Approach: Robert GD Steel, James H. Torrie. Biostatistics, for Medicine and Health: Budiman Chandra

19050162P024 - **CHARACTER BUILDING**

1. Course Identity:

Course	**:** Character Building
Credits	**:** 2
Course Code	**:** 19050162P024
Lecturer(s)	: TEAM
Prerequisite Courses	**:** -

2. Learning goals/competencies:

1. Able to implement pedagogical science in learning Biology especially for character building
2. Able to apply logical, critical, systematic, and innovative thinking in making strategic decisions by paying attention to and applying humanities values in accordance with the field of Character Building

3. Course Description:

The Character Education course describes the basic concepts of character,Definition of Character Education According to some experts, the objectives and functions of Character Education, Dimensions of Good Character; noble character, developing a grand design of character education for each path, level, and type of education unit.characteristic basic character education, the importance of character education, the Pillars of Character Education, Vision and Mission of Character Education, Character Education Functions and Media, Character Education Channels, Character Education Values;; Distribution of Character Education in the School Environment; the principle of developing national character and culture education in schools; development of student character education in schools; Character education within the scope of higher education units

4. Reference:

1. Azzet, Akhmad Muhaimin (2011). The Urgency of Character Education in Indonesia. Yogyakarta: Ar-Ruzz Media.
2. Bahtiar, Yoyon. (2010). Education Management Strategy (Building a Civilization Based on Ahlaqul Kharimah). Scientific Works. http://www.slideshare.net/penggawa/ Pendidikan-Character-5758744
3. Koesoema, Doni. (2009). Character Educator in the Age of Kebelinger. Jakarta: PT Grasindo.
4. Maftuhin. (2009). The Influence of Family Education and Teacher Competence on Character Formation of Students at Al-Izzah Islamic Boarding School Batu. Thesis. Masters Program in Islamic Education Management at the State Islamic University of Malang. Not published
5. Mu'in, Fatchul, (2011). Character building. Theoretical Construction and Practice. Yogyakarta: Ar-Ruzz Media.
6. Muslich. Masnur (2011). Character Education Responding to the Challenges of a Multidimensional Crisis. Jakarta: PT. Earth Literature
7. Rohmadi Muhammad (2010) Character Building of Teachers and Lecturers as an Effort to Realize Character Education in Indonesia. Paper
8. Zuria, Nurul. (2008) Moral Education and Character in the Perspective of Change. Jakarta: Earth Literacy

19050162W028 - **EVOLUTION**

1. Course Identity:

Course	**:** Evolution
Credits	**:** 2
Course Code	**:** 19050162W028
Lecturer (s)	: TEAM
Prerequisite Courses	**:** -

2. Learning goals/competencies:

a. Collaborate and take responsibility for work in their fields of evolution and learning.
b. Able to master basic theories, concepts, principles and procedures inthe field of evolution

3. Course Description:

This course contains material on the notion of evolution, the views of experts on evolution, human potential in evolution, development towards modern humans, evolution of primates, the relationship between cultural evolution and evolution of biology, humans and technology, natural selection, direction of evolution, gene pool, factors factors affecting genetic balance, genetic variation as the basis of evolution, mechanisms and the process of the occurrence of new species, intrinsic isolation and other isolation.

4. Reference:

1. Allan C, Wilson and Rebecca L. Canna, 1997. *Where and Modern Humans Originate*. Scientific American.
2. Debzhanky. Thedosius, 1979. *Evolution*, Genetics and Man. Jhon Willey & Sons, New York.
3. Douglas C. Wallace, 1997. *Mitochondrial DNA in Aging and Disease*, Sientific American.
4. Koenrjoroningrat, 1976. *Pengantar Antropologi*. Aksara Baru, Jakarta.
5. Widodo, 1992. *Teori Evolusi Biologis*. Depdiknas, IKIP Malang

19050162W029 - **ENTOMOLOGY**

1. Course Identity:

Course	**:** Entomology
Credits	**:** 2
Course Code	**:** 19050162W029
Lecturer (s)	**:** TEAM
Prerequisite Courses	**:** -

2. **Learning goals/competencies**:

a. Collaborate and take responsibility for work in their fields of Entomology and learning.
b. Able to master basic theories, concepts, principles and procedures inthe field of Entomology
c. Able to master work skills in the field of entomology

3. Course Description:

(1) Entomologi is a science (2) Insect anatomy (3) Insect physiology, (4) Reproductive system, (5) insect life cycle (6) insect human relatinship (7) apterygota insect (8) pterygota insect (9) factors that effect insect life (10) insect behavior (11) insect pest control (12) insect collection

4. Reference:

1. Borror. Triplehom, Johnson, 1992. *Pengenalan Pelajaran Serangga (terjemahan).* Gadjah Mada University Press, Yogyakarta.
2. Ross, H. Herbert., Charles, A. Ross and June R.P , Ross. 1982. *A Textbook of Entomology.* John Wiley and Sons. Ney York. pp.27-56.
3. Jumar. 2000. *Entomologi Pertanian.* Rineka Cipta, Jakarta.
4. Kasumtayo Untung, 1996. *Pengantar Pengelolaan Hama Terpadu.* Gadjah Mada University Press. Yogyakarta,
5. Satrocihardjo, 1990. *Pengantar Entomologi Terapan.* ITB,Bandung.

6. Mohammad Hadi dkk. *Biologi Insekta*. 2009. Graha Ilmu. Yogyakarta.

19050163W040 - **BIOLOGY LESSON PLAN + MICROTEACHING**

1. Course Identity:

Course	**:** Biology Lesson Plan + Microteaching
Credits	**:** 3
Course Code	**:** 19050163W040
Lecturer (s)	: TEAM
Prerequisite Courses	**: -**

2. Learning goals/competencies:

a. Able to implement pedagogical science in field of Biology Lesson Plan and Microteaching
b. Able to apply logical, critical, systematic, and innovative thinking in making strategic decisions by applying humanities values in the field of Biology Lesson Plan and Microteaching

3. Course Description:

The description of the material in the Biology Education Seminar course is as follows: Biology education problems in high school, PBL procedures, Libraries relevant to the solution of problems in biology education in high school, Systematics of writing and preparing papers , How to prepare presentation material, Presentation Rules, Reflection materials and presentation procedures

4. Reference:

1. Suparman, A. 2007. Instructional Design, Jakarta: Inter-University Center for Instructional Improvement and Development. Directorate General of Higher Education. Department of Education and Culture
2. Zainal, and Nasoetion, 1997, Assessment of Learning Outcomes. Jakarta: Inter-University Center for Instructional Improvement and Development. Directorate General of Higher Education. Department of Education and Culture
3. Ministry of National Education. 2004. General Guidelines for Syllabus Development, Ministry of National Education.
4. Ella, Y. 2004. Curriculum and Learning. Bandung: Grand Expert.
5. Hamalik, O. 2009. Teaching Planning Based on a Systems Approach. Jakarta: literate earth
6. Ibrahim, NS 1996. Teaching Planning. Jakarta: Rineka Cipta
7. Abdul Majid.2011 Learning Planning: Developing Teacher Competency Standards. cet 7. Bandung Youth Rosdakarya..
8. Agus Retnanto.2011 Learning Technology. Kudus Nora Media Enterprise..

9. Ahmad Falah.2009 Materials and Learning Fiqh MTs-MA. Holy. Department of Tarbiyah Study Program PAI STAIN
10. Aunurrahman. 2011 Learning and Learning. cet 3. Bandung CV Alfabeta..
11. Alexander the Great. 2010 Improving Learning Creativity for Teachers. Jakarta. Pure World Party.
12. Kunandar. 2007 Professional Teachers: Implementation of the Education Unit Level Curriculum (KTSP) and Preparation for Teacher Certification. Jakarta.

19050163W037 - **HUMAN PHYSIOLOGY**

1. Course Identity:

Course	**:** Human Physiology
Credits	**:** 3
Course Code	**:** 19050163W037
Lecturer(s)	: TEAM
Prerequisite Courses	**: -**

2. **Learning goals/competencies**:

a. Able to demonstrate a collaborate and take responsible for work attending Human Physiology lectures
b. Able to master basic theories, concepts, principles and procedures in the field of Human Physiology
c. Able to master work skills in the field of Human Physiology by utilizing science and technology

3. Course Description:

This Human Physiology course provides undergraduate students of biology education with knowledge about the structure oforgans and their functions as well as diseases and disorders that make up the human body in the Integumentary System, Skeletal System, Muscular System, Circulatory System, Food Digestive System, Respiratory System, Urinary System, System Nervous, Reproductive System, Sense System and Endocrine System

4. Reference:

1. Evelyn CP, Anatomi dan Fisiologi Manusia. , Jakarta :Gramedia Pustaka Utama
2. Tortora, GJ & NP Anagnostakos. 1990. Principles ofAnatomy & Physiology. Harper International Edition-Australian Edition

19050163W039 - EVALUATION OF BIOLOGY LEARNING OUTCOMES

1. Course Identity:

Course	**:** Evaluation of Biology Learning Outcomes
Credits	**:** 3
Course Code	**:** 19050163W039
Lecturer (s)	: TEAM
Prerequisite Courses	**:** -

2. **Learning goals/competencies**:

a. Able to demonstrate a collaborate and take responsible for work attending Human Evaluation of Biology Learning Outcomes lectures
b. Able to implement pedagogical science in learning Biology in the field of Evaluation of Biology Learning Outcomes
c. Able to design, implement, develop evaluation instruments in accordance with the concept of learning in the field of Evaluation of Biology Learning Outcomes

3. Course Description:

The Biology Learning Process and Outcomes Evaluation course consists of introductory study materials for educational evaluation and evaluation, learning outcomes evaluation techniques, test techniques and non-test techniques as a means of evaluating learning outcomes, techniques for preparing and implementing learning outcomes tests, test validity testing techniques and item validity. learning outcomes tests, learning outcomes test reliability testing techniques, examination techniques, scoring and processing learning outcomes tests, analysis techniques for learning outcomes test items, techniques for determining final grades, ranking and making learning achievement profiles.

4. Reference:

1. Prof. Drs. Anas Sudjiono, Introduction to Educational Evaluation. 2016. Jakarta. PT. Raja Grafindo Persada
2. Doran R., 1980. Basic Measurement and Evaluation of Science Instruction, Washington: NSTA
3. Ngalim Purwanto, 1986. Principles and techniques of Teaching Evaluation. Youth Work. Bandung
4. Wayan Nurkancana and Sumartana, VAT 1983. Evaluation of Education. Surabaya:National Usak

19050163W036 - **ANIMAL PHYSIOLOGY**

1. **Course Identity:**

Course	**:** Animal Physiology
Credits	**:** 3
Course Code	**:** 19050163W036
Lecturer (s)	: TEAM
Prerequisite Courses	**:** -

2. **Learning goals/competencies**:

   a. Able to work together in doing general biology assignments and have social sensitivity and concern for society and the environment
   b. Able to master theories, concepts, principles and basic procedures in the field of biology, especially animal physiology
   c. Able to design investigations, and analyze the mechanism of the digestive system of food, movement physiology, nervous system, endocrine system, excretion, osmoregulation, and circulation patterns that occur in animals and apply science and technology to produce accurate and accountable data for the purposes of prognosis, diagnosis through a research-based approach.

3. **Course Description:**

Through this study, animal physiology courses are introduced so that students are expected to be able to analyze the basic concepts of physiology, structure and function of cells, digestive system, respiratory system, circulatory system, excretory system, neuron system and nervous system, receptors and effectors, endocrine system, thermoregulation system, osmoregulation system, reproductive system and sensory system.

4. **Reference:**

1. Campbell. 2003. Biologi Jilid 3. Erlangga. Jakarta.
2. Djamhur Winatasasmita. 1998. Fisiologi Hewan. PT. Karuinika.Jakarta
3. Wiwi Isnaeni,2006. Fisiologi hewan. Kanisius. Jogyakarta.
4. KartoloS. Wulangi. 1990. Prinsip-prinsip Fisiologi Hewan. Tim Basic Science LPTK. ITB. Bandung
5. H. Jailani dkk. 2010. Diktat Fisiologi. FKIP UNMUL. Samarinda
6. Kay Ian. 1998. Introduction to Animal Physiology. BIOS-SciencePlubisher. Singapore
7. Marshall, P.T.,G.M. Hughes. 1980. Physiology of Mammals and Other Vertebrates, second edition, Cambrigde University Press, Melbourn

1905062W038 - **PROTISTS**

1. Course Identity:

Course	**:** Protists
Credits	**:** 2
Course Code	**:** 1905062W038
Lecturer (s)	: TEAM
Prerequisite Courses	**: -**

2. **Learning goals/competencies**:

a. Able to work together and form a responsible, socially sensitive, and caring character for society and the environment in carrying out tasks and work related to protists.
b. Able to master and apply theories, concepts, and principles related to the classification and role of fungi, algae, protozoa, and viruses, especially those originating from humid tropical forests and their environment.
c. Able to follow scientific developments and develop an entrepreneurial spirit related to the field of protist science and learning, especially those from humid tropical forests and their environment.

3. Course Description:

The studies carried out in the course include: the position of two protists in the classification of living things, prokaryotic cells and eukaryotic cells, describing the characteristics, structure, classification, and roles of: fungi, algae, protozoa, and viruses. The practicum program was carried out by examining samples containing high levels of protists (eukaryotes),especially those from tropical rain forest environments. The practicums included sterilization of tools and media manufacture, isolation of fungal spores in the air, staining and identification of inoculations of fungi, protozoa, algae, and preserved fungi. In addition, trials of materials, especially plant simplicia or plants containing anti-fungal, were carried out from tropical rain forest environments.

4. Reference:

1. Jawetz, E., et al. 1996. *Mikrobiologi, Untuk Profesi Kesehatan.* Jakarta: EGC.
2. Joklik, et al. 1988. *Zinsser Microbiology.* USA: International.
3. Pelczar, M.J. *Dasar-Dasar Mrikrobiologi.* Jakarta: UI Press.
4. Fardiaz, S. 1992. *Mikrobiologi Pangan.* Jakarta: Gramedia Pustaka Utama.
5. Ristiati, N.P. 2000. *Pengantar Mikrobiologi Umum.* Jakarta: Proyek Pengembangan Guru Sekolah Dasar, Ditjen Dikti, Depdiknas.
6. Harti, A. S. 2015. *Mikrobioologi Kesehatan.* Yogyakarta: Andi Offset.

7. Ijong, Frans Gruber. 2015. *Mikrobiologi Perikanan dan Kelautan.* Jakarta: Rineka Cipta.

19050163W035 - **PLANT PHYSIOLOGY**

1. Course Identity:

Course	**:** Plant Physiology
Credits	**:** 3
Course Code	**:** 19050163W035
Lecturer (s)	: TEAM
Prerequisite Courses	**:** -

2. **Learning goals/competencies**:

a. Able to demonstrate a collaborate and take responsible for workattending plant physiology
b. Able to master basic theories, concepts, principles andprocedures in the field of plant physiology
c. Able to master work skills in the field of plant physiology byutilizing science and technology

3. Course Description:

1). Basic plant physiology (understanding of plant physiology, fields of science concerned with plant physiology, methods and tools for studying plant physiology); 2). relationship between plants and water (importance of water, diffusion, osmosis, factors affecting osmotic potential, imbibition, and plasmolysis and turgor; 3). Transpiration (Definition of Transpiration, Measurement of transpiration, Factors affecting transpiration, Mechanism of transpiration and the importance of transpiration); 4). Soil (definition of soil, soil texture and structure, soil components, water and soil solution, and measurement of groundwater in the laboratory); 5). Photosynthesis and Chemosynthesis; 6). Growth and development; 7). Nutrients in plants (Nutrition needed by plants, The role of mineral elements in the soil, Solute absorption, absorption of mineral salts by plant roots, transfer of solutes, and factors affecting mineral transport; 8). fermentation and respiration (Understanding metabolism, Biological oxidation, Enzyme mechanism of action, Stages of respiration and fermentation, Pentose phosphate pathway, Location of respiration in cells, Factors affecting respiration, and Measurement of respiration); 9). carbohydrate and nitrogen metabolism; 10). Growth Hormone; 11). Energy and enzymes; 12). motion, photoperiodism and vernalization. This course is presented in theory and practice Factors that affect respiration, and how to measure respiration); 9). carbohydrate and nitrogen metabolism; 10). Growth Hormone; 11). Energy and enzymes; 12). motion, photoperiodism and vernalization. This course is presented in theory

and practice Factors that affect respiration, and how to measure respiration); 9). carbohydrate and nitrogen metabolism; 10). Growth Hormone; 11). Energy and enzymes; 12). motion, photoperiodism and vernalization. This course is presented in theory and practice

4. Reference:

1. Benjamin Lakitan. 2011. Fundamentals of Plant Physiology. Jakarta: Rajagrafindo Persada
2. Bidwell, RGS 1985. Plant Physiology. Second eg. New York: McMillan Publishing Co. Inc
3. Devlin, RM 1975. Plant Physiology, Third ed. New York: D. Van Nostrand Co.
4. Halliwell, B. 1981. Chloroplast Metabolism. Oxford: Clarendom Press.
5. Krishnamoorthy, HN 1981. Plant Growth Substances. New Delhi: McGraw Hill Publishing Co.
6. Loveless, AR 1987. Principles of Plant Biology for the Tropics. Jakarta: PT Gramedia.
7. Noggle, GR and Fritz, GJ 1982. Introductory Plant Physiology, New Delhi: Prentice-Hall of India Private Limited.
8. Pandey, S./N. and Sinha, BK 1981. Plant Physiology, 2nd Revised Edition, New Delhi: Vikas Publishing House PVT LTD.
9. Salisbury, FB and CW Ross, 1989. Plant Physiology. Third ed. Belmont California: wadsworth Publishing Co.
10. Street, HE and H. Opik, 1984. The Physiology of Flowering Plants. Third ed. London: Edward Arnold Publishers, Ltd.
11. Wareing, PF and IDJ Phillips. 1976. The Control of Growth and Differentiation in Plants. Oxford: Pergamon Press.

19050162P034 - **HEALTH SCIENCES**

1. **Course Identity:**

Course	**:** Health Sciences
Credits	**:** 2
Course Code	**:** 19050162P034
Lecturer (s)	: TEAM
Prerequisite Courses	**:** -

2. **Learning goals/competencies**:

a. Able to master basic theories, concepts, principles and procedures in the scientific field of Health Science and the interaction of organisms with Tropical Rain Forest and Environment
b. Able to follow the Scientific development of Health Science

3. **Course Description:**

The studies carried out in the course include: understanding of health, illness, levels of illness; efforts to maintain health; environmental sanitation and health (sanitation and health: food and drink, water, air, public places, prenatal health); various diseases: degenerative diseases, infectious diseases (gastrointestinal tract, respiratory tract, skin and sexual intercourse); vectors and disease transmission; zoonoses; and immunology

4. **Reference:**

1. Amsyari, F. 1996. Building a Healthy Environment. Surabaya: Airlangga University Press.
2. Mukono. 2000. Basic Principles of Environmental Health. Surabaya: Airlangga University Press.
3. Notoatmodjo, S. 2007. Public Health. Jakarta: Rineka Cipta.
4. Subowo. 1993. Immunobiology. Bandung: Space.
5. Soeharsono. 2002. Zoonoses. Yogyakarta: Kanisius.
6. Slamet, S. 1994. Public Health. Yogyakarta: Gadjah Mada University Press.

19050162P042 - CONSERVATION OF NATURAL RESOURCES

1. **Course Identity:**

Course	**:** Conservation Of Natural Resources
Credits	**:** 2
Course Code	**:** 19050162P042
Lecturer (s)	: TEAM
Prerequisite Courses	**:** -

2. **Learning goals/competencies**:

a. Able to master basic theories, concepts, principles and procedures in the field of biology and the interaction of organisms with Moist Topical Forests and their Environment.
b. Able to master work skills and laboratory management by utilizing science and technology and available natural resources from humid tropical forests and their environment.

3. **Course Description:**

Introduced to the Natural Resources Conservation course so that students are able to analyze the potential of natural resources (soil, water, rain forests, coastal areas, Indonesian seas and energy), conservation and conservation (soil, water, rain forests, coastal areas, Indonesian seas and energy), and analyze Indonesia's natural resource conservation laws

4. Reference:

1. Kanasapoetro, et al. 2000. Soil Conservation Technology from Water. Jakarta: Rieka Cipta
2. Otto Sumarwoto, 1977. Environmental Ecology and Development. Jakarta:Bridge.
3. Research journal, Scientific articles

19050162W041 - **ADVANCED STATISTICS**

1. Course Identity:

Course	**:** Advanced Statistics
Credits	**:** 2
Course Code	**:** 19050162W041
Lecturer (s)	: TEAM
Prerequisite Courses	**:** -

2. Learning goals/competencies:

a. Able to Collaborate and take responsibility for work attending in their fields of advanced statistic.
b. Able to master knowledge related to methodological research of biology and learning especially in the field of advanced statistic.
c. Able to design and implement research results by using statistical to be an alternative solutions to problems in the field of biology and learning.

3. Course Description:

This Advanced Statistics course provides undergraduate students of biology education with knowledge and application of calculations with various research designs, Completely Randomized Design, Randomized Block Design, Factorial Design, Descriptive Hypothesis Testing, Comparative Hypothesis Testing, Associative Hypothesis Testing, Simple and Multiple Linear Regression , Statistical validity and reliability test, Introduction to SPSS

4. Reference:

1. Prof. Dr. Sugiyono, Statistics for Research. 2014. Alphabeta
2. Prof. Dr. Sutrisno Hadi, Statistics
3. Other statistical support books

19050163W049 - **REPRODUCTION AND EMBRYOLOGY**

1. Course Identity:

Course	**:** Reproduction and Embryology
Credits	**: 3**
Course Code	**:** 19050163W049
Lecturer(s)	:**TEAM**
Prerequisite Courses	**: -**

2. Learning goals/competencies:

1. Able to master basic theories, concepts, principles and procedures inthe field of embryology
2. Able to master work skills in the field of Human Physiology

3. Course Description:

The studies carried out in the courses include: Reproductive OrganAnatomy, Reproductive Organ Physiology, Reproductive Endocrinology, Gametogenesis, Ovulation, Fertilization, Embryo Development (Mudigah Discs, Homecoming and Fetal Period) and Urogenital tract organology. Technical lectures in courses are face-to-face meetings in class, and practicum activities in the laboratory usingexperimental animals (mammals)

4. Reference:

1. Arif A. 1982. Andrology In Perspective Konose IndonesianSociety of Andrology, Surabaya, Unair
2. Arsyat. 1990. Spermatogenesis, Surabaya, Pandi
3. Langman's. 1991. Medical Embryology, EEG., Jakarta
4. Martin J. Barry Eviritt. Essential Reproduction, London:Blackwell.
5. Surya Gunawan. 2011. Whether it's a boy or a girl, PT Agromedia Pustaka, Jakarta
6. Nieschlog. 1999. Testosterone, New Ypark: Berlin Heidelberg
7. RJ Scholtmeijer and FH Schroder. 1992. Urology, EGC

19050163W044 - **HIGH LEVEL BOTANY**

1. Course Identity:

Course	**:** High Level Botany
Credits	**:** 3
Course Code	**:** 19050163W044
Lecturer(s)	: TEAM
Prerequisite Courses	**: -**

2. **Learning goals/competencies**:

   a. Able to collaborate and take responsibility for work in their fields of botany high level courses
   b. Able to master basic theories, concepts, principles and procedures in the fieldof biology tropical rain forests and its environment.
   c. Able to master work skills and laboratory management by utilizing science and technology and available natural resources from tropical rain forests and its environment.

3. Course Description:

Introduction (definition and scope, purpose, relationship with other botany, and stages of development, Relationship of taxonomy with other branches of science), determination, nomenclature, plant diversity, plant taxonomy (basic principles of taxonomy, aspects in taxonomy: classical taxonomy, biosystematics, numerical and chemical, basics of taxonomy). Herbarium. Structure and properties and benefits of seed plants (Spermatophyta). Classification of seed plants. The structure and properties of gymnosperms.

4. Reference:

1. Arrijani. 2000. Taxonomy of plants (especially spermatophyta). Manado: Biology Education Department, IKIP Manado
2. Benjamin S. 1979. Taxonomy of Educational Objectives (The Classification of Educational Goals) Handbook 1 Cognitive Domain. London: Longman Group Ltd.
3. Bilgrami, KS, 1986. Fundamentals of Botany. Second revised edition.
4. DavisJP.H., 1973. Principle of Angiospermae Taxonomy. New York: Publishing Company Huntington
5. Herliani. 2015. Teaching Material for High Level Botany Spermatophyta: Agarwood Tree (Aqualaria malaccensis Lamk). Science Education Study Program. FKIP. UNMUL.
6. Jones, S3. Plant Systematic second Edition. New York: McGraw Hill Book Company
7. Lawrence, HM, 1978. Taxonomy of Vascular Plants. San Francisco: Freeman and Company
8. Moertolo. 2004. Open Seed Plants. Malang: State University of Malang.
9. Go up. 1984. Taxonomy of Angiosperms. New Delhi: Tata McGraw-Hill publ. Company.

19050163W047 - **ANIMAL ECOLOGY**

1. **Course Identity:**

Course	**:** Animal Ecology
Credits	**:** 3
Course Code	**:** 19050163W047
Lecturer (s)	: TEAM
Prerequisite Courses	**: -**

2. **Learning goals/competencies**:

a. Able to collaborate and take responsibility for work attending in their fields of animal ecology.
b. Able to master basic theories, concepts, principles and procedures in the scientific field of animal ecology and the interaction of organisms with Tropical Rain Forest and its Environment.
c. Able to master work skills in the field of Animal Ecology by utilizing science and technology

3. **Course Description:**

The description of the animal ecology course covers the basic concepts of animal ecology, animals with an abiotic environment, animals with a biotic environment, biological habitats and niches, econergics, animal response and adaptation, animal distribution, population dynamics, community ecology applications, behavioral ecology and biodiversity conservation.

4. **Reference:**

1. Bagon, M., TLHarper & C.R. Townsend, 1986. Ecology: Individuals Populations and Communities. Blackwell, Oxford.
2. Tondeigh,. C, 1980. Ecology with Special Reference to Animal&Man, PrenticeHall, New Jersey.
3. Krebs, C. 1978. Ecology of the Experimental Analysis of Distribution and Abundance. Harper's Pub. New York
4. Sugeng Puji Leksono, 2013. Animal ecology. University of Muhammadiyah Malang Press. ISBN 978-979-796-085-8 Malang
5. Rasidi, S.; Adi Basukriadi & Tb. M. Isaac. 2006. Animal Ecology, Open University Publisher, Jakarta
6. Pudyo Susanto, Introduction to Animal Ecology Module, 1990

19050163W047 - **HUMAN ECOLOGY**

1. **Course Identity:**

Course	**:** Human Ecology
Credits	**:** 2
Course Code	**:** 19050163W047
Lecturer (s)	: TEAM
Prerequisite Courses	**: -**

2. **Learning goals/competencies**:

a. Able to upholding human values based on morals, ethics and having social sensitivity as well as care for the community and the environment especially in Human Ecology Courses
b. Able to master basic theories, concepts, principles and procedures in the field of Human Ecology
c. Able to apply logical, critical, systematic, and innovative thinking in making strategic decisions by applying humanities values in the field of Human Ecology and learning based on relevant information and data

3. Course Description:

The studies carried out in the course include: (1) Introduction to Human Ecology, (2) Ecosystems and Ecology, (3) Demography (Population), (4) Ecological Organizations, (5) Dominance, (6) Migration and Mobilization, and (7) Substitution (Succession). Technical lectures in the course are face-to-face meetings in class, and field study activities related to the human environment as biological beings, social beings and cultural beings.

4. Reference:

1. Sri Moertiningsih Adioetomo dan Omas Bulan Samosir. 2015. Dasar-Dasar Demografi, Edisi-2, Salemba empat, Lembaga Demografi, Fakultas Ekonomi Universitas Indonesia.
2. Mattulada, dkk, Human Ekologis. Departemen Pendidikan dan Kebudayaan, Proyek Sistem Pendidikan Jarak Jauh dengan Setelit (Sisdiksat), BKS PTN INTIM-IPB-USAID
3. Otto Soemarwoto. 1997. Ekologi, Lingkungan Hdup dan Pembangunan, Djambatan, Jakarta
4. Soedjiran Resosoedarmo, dkk. 1986. Pengantar Ekologi, Remaja Karya, Bandung

19050163W046 - **PLANT ECOLOGY**

1. Course Identity:

Course	**:** Plant Ecology
Credits	**:** 3
Course Code	**:** 19050163W046
Lecturer (s)	: TEAM
Prerequisite Courses	**:** -

2. **Learning goals/competencies**:

1. Able to collaborate and take responsibility for work in their fields of plant ecology.

2. Able to master basic theories, concepts, principles and procedures in the scientific field of plant ecology
3. Able to master work skills in the field of plant ecology by utilizing science and technology

3. Course Description:

This course examines the introduction of ecology, ecological principles, plant environment, plant communities and populations, vegetation analysis, plant adaptation, biomes and vegetation formation, phytogeography and vegetation distribution, plant natural resources, plant productivity, plant phenology, and interactions. plant.

4. Reference:

1. Borbour, 1987. Terrestrial Plant Ecology. California: University of California
2. Eden Surasana Syafri, 1996. Introduction to Plant Ecology. Bandung: FMIPA ITB.
3. Eugene P. Odum, 1995. Fundamentals of Ecology. BX Edition. Yogyakarta: Gadjah Mada University Press.
4. Gembong Tjitrosoepomo, 1987. Weed of Rice and Indonesian. Jakarta: Balai Pustaka.
5. Hardyosuwarmo, 1990. Principles of Plant Biology for Tropical Regions I. Jakarta: Gramedia Pustaka Utama.
6. Willis, HJ 1984. The Environmental Challenge. New York: Crawford Sville Indiana.
7. References from journals that match the subject matter.

19050162P050 - **INTEGRATED LEARNING**

1. Course Identity:

Course	**:** Integrated Learning
Credits	**:** 3
Course Code	**:** 19050162P050
Lecturer (s)	:TEAM
Prerequisite Courses	**:** -

2. **Learning goals/competencies**:

a. Able to demonstrate a collaborate and take responsible for work attending Integrated Learning lectures.
b. Able to implement pedagogical science in Integrated Learning
c. Able to design and implement in accordance with the concept of learning in the field of Integrated Learning.

3. Course Description:

The definition of integrated learning (integrated), the basic concepts of integrated learning: 1) integrated learning, 2) integrated learning characteristics, 3) integrated learning foundation, 4) integrated learning principles, 5) the benefits of integrated learning, general procedures for integrated learning, Model- integrated learning model: 1) fragmented, 2) Connected, 3) Nested, 4) sequenced, 5) shared, 6) webbed, 7) threaded, 8) integrated, 9) immersed, 10)Networked. Basic teaching skills in integrated learning: a) Opening and closing skills in integrated learning, 2) explaining and asking skills in integrated learning.

4. Reference:

1. Fogarty. (1991).*How To Integrate the Curricula*. Skylight Publishing: USA.
2. Hewitt, Paul G & etc. (2007).*Conceptual Integrated Science*. Pearson Education: USA
3. Insih wilujeng.(2010). Integrated Science Competence through Skills Approach
4. Science Education Student Process. *Scientific Journal of Education. Number*.ISSN: 0216-1370.
5. 5. Koballa & Chiapetta. 2010.*Science Instruction in the Middle and Secondary Schools*.Pearson: USA.

19050162W045 - **BACTERIOLOGY**

1. Course Identity:

Course	**:** Bacteriology
Credits	**:** 2
Course Code	**:** 19050162W045
Lecturer (s)	: TEAM
Prerequisite Courses	**:** -

2. **Learning goals/competencies**:

a. Able to demonstrate a collaborate and take responsible for work attending bacteriology
b. Able to master basic theories, concepts, principles and proceduresin the field of bacteriology
c. Able to master work skills in the field of bacteriology by utilizing science and technology

3. Course Description:

Studies in the course include: (1) the history of microbiology development, 2) microscopy and operation, (3) morphology and ultrastructure of bacterial cells, (4) metabolism, (5) reproduction and growth of bacteria, (6) genetics

of bacteria , (7) selected bacteria (pathogenic, non pathogenic, spore forming, and non spore forming), (8) sterilization and disinfection, (9) classification and identification bacteria, (10) nutrition and bacterial cultivation, (11) kinds of bacterial colonies, (12) practicum on the basic techniques of bacterial analysis,namely: (1) sterilization and disinfection, (2) manufacture of media and bacterial cultivation, (3) calculation bacterial colonies, (4) staining of bacterial cells, (5) the Most Probable Number/MPN test, where samples were obtained from tropical rain forests which were also associated with the use of local plant species in tropical rain forests as a medium or energy test. Inhibit the growth of bacteria, in an effort to solve problems in people's lives. Lecturers, in managing learning, apply student-centered learning, with learning models: (1) Problem- based Learning, (2) Socio-Biological Case-Based Learning.

4. Reference:

1. Boleng, DT 2014. Bacteriology, Basic Concepts. Malang: UMMPress.
2. Boleng, DT 2019. Bacterial Local Plants. Samarinda. mulpress.
3. Chan, VL; Sherman, PM; Bourke, B. 2006. Bacterial Genome and Infectious Diseases. Totowa, New Jersey: Humana Press.
4. Dale, J.; Park, S. 2003. Molecular Genetics of Bacteria. England:Wiley.
5. Davis, BD et al. 1990. Microbiology. Singapore: Harper & Roe Publishers.
6. Entjang, I. 2003. Microbiology and Parasitology. Bandung: PT. Image of Aditya Bakti.
7. Fardiaz, S. 1992. Food Microbiology. Bogor: PAU Food and Nutrition, IPB.
8. Gupte, S. 1990. Basic Microbiology. Translation: Julius ES Jakarta: Bina Rupa Aksara.
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11. Joklik, WK; Willets, HP; Amos, DB; Wilfert, CM 1988. Zinsser Microbiology. Singapore: Prentice Hall International Inc.
12. Lay, BW 1994. Microbiological Analysis in the Laboratory.Jakarta: PT. RajaGrafindo Persada.
13. Muliawan, SY 2009. Obligate Intracellular Bacteria. Jakarta:Erlangga.
14. Nishiyama, M.; Kojima, S. 2012. Bacterial Motility Measured by a Miniature Chamber for High-Pressure Microscopy: Int. J. Mol. science. 13:9225-9239.
15. Pelczar, MJ, Chan, CS 1986. Fundamentals of Microbiology Volumes 1 and 2. Translation: Ratna Siri Hadioetomo, et al. Jakarta: UI Press.
16. Sapp, j. 2006. Two Faces of Prakaryote Concept: International Microbiology. 9:163-172.
17. Tortora, GJ; Funke, Bro; Case, CL 2010. Microbiology. Sanfrancisco: Benjamin Cummings.

19050162W043 - **ENTREPRENEURSHIP**

1. **Course Identity:**

Course	**:** Entrepreneurship
Credits	**:** 2
Course Code	**:** 19050162W043
Lecturer (s)	: TEAM
Prerequisite Courses	**:** -

2. **Learning goals/competencies**:

   a. Able to collaborate and take responsibility for work in their fields of entrepreneurship courses
   b. Able to follow scientific developments and develop an entrepreneurial spirit related to the field of entrepreneurship

3. **Course Description:**

   Understanding the concept of entrepreneurship in an effort to develop an entrepreneurial spirit. Ability to motivate oneself to be able to create business opportunities, services, production, partnerships and management.

4. **Reference:**

1. Mulki, S. 1997. Tips for Becoming an Entrepreneur. Jakarta: Sinar Harapan.
2. Meredith, GG 1996. Entrepreneurship Theory and Practice. Jakarta: Presindo Binaman Library. Maslow
3. Merrill, Mike. 2005. Dare to Lead: CEO's Top 50 Creative Strategies for Success. Jakarta: Bhuana Popular Science.
4. Heller, R. 2003. Selling Successfully. Jakarta: Dian Rakyat.
5. Directorate General of Learning and Student Affairs. Directorate General of Higher Education Ministry of Education and Culture. 2013. Entrepreneurship: Learning Module. (On line).(https://philarchive.org/archive/FUGACN).
6. Private Enterprise Participation Project - PEP White Reynolds Internnational Inc. Canada, 2000.
7. WS Module 2 – Heirweigh 2014 -www.Nathanlustig.com

19050163W051 - **EDUCATIONAL RESEARCH METHODOLOGY**

1. **Course Identity:**

Course	**:** Educational Research Methodology
Credits	**:** 3
Course Code	**:** 19050163W051
Lecturer (s)	: TEAM
Prerequisite Courses	**:** -

2. **Learning goals/competencies**:

a. Able to master knowledge related to the field of educational research methodology.
b. Able to design, implement research that they can be used as alternative solutions to problems in the field of biology and learning.

3. Course Description:

Research and development of science: Scientific and non-scientific methodologies. Scientific research. Types of research: historical research. Descriptive. Development. Case and field. Correlation. Comparative causal. Experiments and action research. Research design: Observational research design. Experimental research design. Stages of the research process: Identify and define the problem. Literature study Formulation of hypothesis. Identification and classification and definition of variables. Research and development of instruments. Preparation of research design. Sample determination. Processing and analysis of data. Interpretation of research results Compilation of reports. The format of thesis writing: The beginning, the main part, the end. Procedure for writing a thesis: Paper and size, typing, giving sequence marks. Tables and pictures. The language used. Name writing. Quote writing.

4. Reference:

1. Sugiyono.2015. Quantitative Research Methodology. Jakarta: Gramedia
2. Sugiyono. 2015. Qualitative Research Methodology. Jakarta: Gramedia
3. Sugiyono.2015. CAR Research Methodology. Jakarta:Gramedia
4. Usep Kuswari.2014.Guidelines for the preparation of Research Proposals. Surya Kencana University.
5. Arman Basir. 2017. The Rules of Good Presentation. https://www.tutorialswb.com/2017/10/6-rules-presentation-powerpoint-yang.html
6. Elizabeth. 2013. How to make good and effective presentation presentation materials.

19050162P054 - **BIOTECHNOLOGY**

1. Course Identity:

Course	**:** Biotechnology
Credits	**:** 2
Course Code	**:** 19050162P054
Lecturer (s)	:TEAM
Prerequisite Courses	**: -**

2. Learning goals/competencies:

a. Able to master basic theories, concepts, principles and procedures in the fieldof biology tropical rain forests and its Environment.

b. Able to master work skills and laboratory management by utilizing science and technology and available natural resources from tropical rain forests and its environment.

3. Course Description:

This course examines the principles of biotechnology and its relation to other scientific fields; development of biotechnology at various times; the role and enzymatic mechanism of microbes in biotechnology (which includes preservatives with sugar, salt, and drying); distinguish between conventional and modern biotechnology; genetic engineering theories and techniques; analyze the relationship between genetic engineering and modern biotechnology; examines biotechnology in the fields of pharmacy, medicine, agriculture, animal husbandry, forensics, aquatic and marine, humid tropical forests and their environment, and examines biotechnology from various perspectives. Conducting conventional biotechnology practicums (among them making tempeh, tapai, soy sauce, yogurt, yakult, grass jelly, and nata de coco from a variety of fruits),

4. Reference:

1. Norman W. Desrosier. 1988. Food Preservation Technology. UI Press, Jakarta
2. Nasir, M. 2002. Molecular Biotechnology, Plant Genetic Engineering. Citra Aditia Budi, Bandung
3. Nasir, M. 2002. Biotechnology, its Potential and Success in Agriculture. PT Raja Grafindo, Jakarta.
4. Untung Sanioso and Fatimah Nusiandi. 2003. Plant Tissue Culture. UMM Press, Malang
5. Yusanta, 2003. Tissue Culture, How to Multiply Plants Efficiently. Agromedia Pustaka, Jakarta.
6. Kumar, HD 2003. Modern Concepts of Biotechnology. Vikas Publishing House PVP Ltd.
7. Thieman, WJ and Palladino, MA 2010. Introduction of Biotechnology. Pearson Benjamin Cummings.
8. References from journals that match the subject matter

19050162P053 - **ENVIRONMENTAL POLLUTION**

1. Course Identity:

Course	**:** Environmental Pollution
Credits	**:** 2
Course Code	**:** 19050162P053
Lecturer (s)	: TEAM
Prerequisite Courses	**:** -

2. **Learning goals/competencies**:

   a. Able to master basic theories, concepts, principles and procedures in the scientific field of biology and the interaction of organisms with Tropical Rain Forest and its Environment.
   b. Able to master work skills and laboratory management by utilizing science and technology and available natural resources

3. Course Description:

This Environmental Pollution course provides undergraduate students of biology education with knowledge of theories, concepts, and principles about natural resourcesand their pollution in tropical rain forest areas and also the world globally, so that students can understand environmental pollution, have concern for pollution in the environment, as well as being able to make the right decisions regarding environmental pollution (decision making & problem solving) and efforts to prevent and overcomeenvironmental pollution as well as make efforts to preserve or conserve natural resources (critical & creative thinking skills), both in environment and to be able to invite the community in general. The discussion of each material includes a description of environmental pollution, types of environmental pollution, sources of pollution, the impact of pollution on various aspects of supporting the life of living things, examples of cases ina study, methods (methods and techniques) in measuring environmental pollution, as well as analysis techniques, and efforts to overcome pollution. The material objects include 1) introduction to environmental pollution courses consisting of natural resources and their pollution in tropical rain forest areas and the world; 2) environmental pollution parameters, biomonitors, bioindicators and biomarkers of environmental pollution; 3) water pollution; 4) soil pollution; 5) air pollution and greenhouse effect; 6) pollution in the room; 7) heavy metal pollution; 8) pesticide contamination; 9) food and drug contamination; 10) noise and radiation pollution; 11) environmental management, basic environmental management and natural carrying capacity against pollution; 12) waste management as an effort to reduce environmental pollution; and 13-14) Test the level of pollution or environmental quality (water/air/land/room) of tropical rain forest areas and alternative solutions.Learning is carried out with active student-based learning models such as inquiry, problem-based learning and Project BasedLearning.

4. Reference:

1. Gaurav Saxena, Ram Chandra, and Ram Naresh Bharagava. (2017). Reviews of Environmental Contamination and Toxicology: Volume a.240. Pim de Voogt (ed.). Switzerland: Springer International Publishing.

2. Patnaik, P. (2017). Handbook of environmental analysis: Chemical pollutants in air, water, soil, and solid wastes, third edition. Third Edition. https://doi.org/10.1201/9781315151946
3. Tan, Z. (2014). Air Pollution and Greenhouse Gases. https://doi.org/10.1007/978-981-287-212-8
4. Van Overmeire, M., Verbandt, FJR, & Jonckheere, RE (2013). Noise Pollution: Causes, effects and control. In Environmental Management in Practice: Compartments, Stressors and Sectors (Vol. 2).
5. Liu, J., Zhang, L., & Liu, Z. (2017). Environmental pollution control.https://doi.org/10.1515/9783110538311
6. Rom, WN (2012). Environmental Policy and Public Health_ Air Pollution, Global Climate Change, and Wilderness (Public Health Environmental Health). Jossey-Bass, John Wiley & Sons, Inc.
7. NewGen Strategies and Solutions, & Louis Berger Group. (2014).Solid Waste Assessment; Management Study (for the Santa Fe Solid Waste Management Agency, City of Santa Fe, and Santa Fe County) – Final Report. https://www.sfswma.org/wp-content/uploads/2015/02/Santa-Fe_Solid-Waste-Assessment-and-Management-Study_12-2014.pdf
8. Rodic, L. (2011). Urban solid waste. Public Health.
9. Jenberu, Getachew Agegnehu (2017) Biochar, compost and biochar-compost: effects on crop performance, soil quality and greenhouse gas emissions in tropical agricultural soils. PhD thesis, James Cook University.
10. Mitra, A. (2018). Environmental Pollution and Its Control. Preprint, DOI: 10.13140/RG.2.2.26048.17927.

19050162W052 - **BIOLOGICAL EDUCATION SEMINAR**

1. **Course Identity:**

Course	**:** Biological Education Seminar
Credits	**:** 2
Course Code	**:** 19050162W052
Lecturer (s)	: TEAM
Prerequisite Courses	**:** -

2. **Learning goals/competencies**:

a. Able to master knowledge related to methodological research of biology and learning especially for Biology Education Seminar
b. Able to design, implement, publish research results that they can be used as alternative solutions to problems in the field of biology and learning in the context of Tropical Rain Forests and its Environment especially for Biology Education Seminar

3. Course Description:

The description of the material in the Biology Education Seminar course is as follows: Biology education problems in high school, PBL procedures, Libraries relevant to the solution of problems in biology education in high school, Systematics of writing and preparing papers , How to prepare presentation material, Presentation Rules, Reflection materials and presentation procedures.

4. Reference:

1. Mark Iyus Supiandi. 2016. The Effect of Problem Based Learning (PBL) Model on Ability Solving Problems and Cognitive Learning Outcomes of High School Biology Students. ISSN: 2338-9117/EISSN: 2442-3904. Vol. 4 No. 2, June 2016, pp. 60–64. Barell Journal of Science Education, J. 2010.
2. Excerpts from "Problem Based Learning: The Foundation for 21st Century Skills p. 2-4
3. An, OS 2003. Problem Based-Learning Innovation: Using Problems to Power Learning in The 21st Century. Singapore: Cengage Learning Asia Pte Ltd
4. Knonaka. Writing Papers Correctly. https://examplemakalahgan. blogspot.com/2016/11/cara-mak makalah.html