



DIPLOMA SUPPLEMENT

Pelengkap Ijazah

BIOTECHNOLOGY STUDY PROGRAMME PROGRAM STUDI BIOTEKNOLOGI

1. **Information identifying the holder of the qualification**
Informasi mengenai identitas pribadi pemegang gelar

 - 1.1. Full name
Nama lengkap
Nabilah Rizka Estiningtyas

 - 1.2. Place and date of birth
Tempat dan tanggal lahir
Lamongan, 22 Juli 1999

 - 1.3. Student Identification Number
Nomor Induk Mahasiswa
165100500111010

2. **Information on the degree conferred**
Informasi mengenai gelar yang diberikan

 - 2.1. Name of degree conferred
Nama gelar yang diberikan
Bachelor of Biotechnology (B.Biotech)
Sarjana Bioteknologi (S.Biotek)

 - 2.2. Main field of study for the degree conferred
Bidang ilmu terkait gelar yang diberikan
Biotechnology
Bioteknologi

 - 2.3. Name of the awarding institution
Nama dari institusi pemberi gelar
Faculty of Agricultural Technology,
Department of Agricultural Product Technology
Fakultas Teknologi Pertanian,
Jurusan Teknologi Hasil Pertanian

 - 2.4. Name and status of the administering institution
Nama dan status dari institusi pengelola program
Universitas Brawijaya, Public University
Universitas Brawijaya, Perguruan Tinggi Negeri

 - 2.5. Language(s) of instruction/examination
Bahasa dalam perkuliahan/ujian
English, Indonesian
Bahasa Inggris, Bahasa Indonesia

This Diploma Supplement follows the model developed by the European Commission, Council of Europe and UNESCO/CEPES. The purpose of the supplement is to provide sufficient independent data to improve the international 'transparency' and fair academic and professional recognition of qualifications (diplomas, degrees, certificates etc.). It is designed to provide a description of the nature, level, context, content and status of the studies that were pursued and successfully completed by the individual named on the original qualification to which this supplement is appended. It should be free from any value judgments, equivalence statements or suggestions about recognition. Information in all sections should be provided. Where information is not provided, an explanation should give the reason why.

Pelengkap ijazah ini mengikuti model yang dikembangkan oleh European Commission, Council of Europe dan UNESCO/CEPES. Maksud dari dokumen pelengkap ini adalah menyediakan data independen yang cukup untuk meningkatkan 'keterbukaan' internasional dan pengakuan akademik yang adil dan profesional atas kualifikasi (ijazah, gelar, sertifikat, dll.) di dalamnya. Dokumen pelengkap ini dirancang untuk menyediakan uraian tentang sifat, tingkatan, konteks, isi dan status dari studi yang dijalani dan berhasil diselesaikan oleh individu yang namanya tertera di dalam ijazah di mana pelengkap ini dilampirkan. Dokumen pelengkap ini harus bebas dari segala bentuk penilaian, pernyataan tentang ekivalensi, atau saran mengenai pengakuan. Informasi di dalam semua bagian dari dokumen pelengkap ini harus disediakan. Apabila informasi tersebut tidak tersedia, penjelasan mengenai alasan ketidaktersediaan informasi tersebut harus diberikan.

DIPLOMA SUPPLEMENT



3. Information on the level of the qualification *Informasi mengenai tingkat kualifikasi*

3.1. Duration of the programme
Durasi pelaksanaan program
Four academic years (8 regular semester), 144 SCU (240 ECTS)
Empat tahun akademik (8 semester reguler), 144 sks

3.2. Admission requirement(s)
Persyaratan masuk
High school diploma and other requirements specified by the Ministry of Education and Culture
Ijazah SMA dan persyaratan lain yang diatur oleh Kementerian Pendidikan and Kebudayaan

4. Information on the programme and level of attainment *Informasi mengenai program dan capaian yang diperoleh*

4.1. Modes of study
Bentuk studi
Full time
Penuh waktu

4.2. Programme description and learning outcomes
Deskripsi dan luaran pembelajaran program

The Biotechnology Study Programme at Universitas Brawijaya is an undergraduate education programme that focuses on industrial biotechnology (the conversion of biomass to bioproducts). The curriculum of the programme is designed to equip students with competencies in the areas of biomass and living systems, bioprocess, and bioproducts.

Program Studi Bioteknologi di Universitas Brawijaya merupakan program pendidikan sarjana yang berfokus pada bioteknologi industri (konversi biomassa menjadi bioproduk). Kurikulum dari Program Studi Bioteknologi didesain untuk membekali mahasiswa dengan kompetensi di bidang biomassa dan sistem biologis, bioproses, dan bioproduk.

Graduate profiles of the Biotechnology Study Programme

Graduates of the programme will be able to fill the position of:

1. Researcher, able to perform basic and applied research as well as write scientific reports.
2. Teacher, able to perform teaching at basic education institutions.
3. Staff in industry or government agencies, able to perform specific tasks according to their position.
4. Entrepreneur, able to start and develop business enterprises.
5. Post-graduate student, able to undertake advanced studies for pursuing careers at universities or research institutions, for example as lecturers or scientists.

Profil Lulusan

Lulusan program dapat menjadi:

1. *Peneliti, mampu melakukan penelitian dasar dan terapan serta menulis laporan ilmiah.*
2. *Pengajar, mampu mengajar pada institusi pendidikan dasar.*
3. *Staf di industri atau lembaga pemerintahan, mampu mengerjakan tugas spesifik sesuai posisinya.*
4. *Pengusaha, mampu memulai dan mengembangkan usaha.*
5. *Mahasiswa pascasarjana, mampu menempuh studi lanjut untuk meniti karir di universitas atau institusi penelitian, misalnya sebagai dosen atau ilmuwan.*

Programme Learning Outcomes (PLO)

Within five years of graduation, graduates of the programme will:

1. Have the knowledge of and technical skills in industrial biotechnology and the ability to use these competencies to address industrial biotechnology problems in a wide range of industries including (but not limited to) food, feed, pharmaceutical, chemical, material, and energy industries.
2. Have professional aptitude: the ability to communicate effectively, work in teams, and lead under pressure; uphold professionalism ethics; and be responsible.
3. Have the ability to develop oneself into a lifelong learner to face future challenges.



Kompetensi Lulusan

Dalam kurun waktu lima tahun setelah wisuda, lulusan program akan:

1. *Menguasai pengetahuan dan ketrampilan teknis di bidang bioteknologi industri serta memiliki kemampuan dalam menggunakan kompetensi tersebut untuk memecahkan masalah di bidang bioteknologi industri yang mencakup (tapi tidak terbatas pada) industri pangan, pakan, farmasi, kimia, material, dan energi.*
2. *Memiliki kecakapan profesional: kemampuan berkomunikasi secara efektif, bekerja dalam tim, dan memimpin dalam tekanan; menjunjung tinggi etika profesionalisme; dan bertanggung jawab.*
3. *Memiliki kemampuan mengembangkan diri menjadi pembelajar sepanjang hayat untuk menghadapi tantangan di masa depan.*

Intended Learning Outcomes (ILO)

Upon successful completion of the programme, graduates will:

- ILO1. Have acquired the foundational knowledge of mathematics and statistics and understand their relevance to industrial biotechnology.
- ILO2. Have acquired the foundational knowledge of the natural sciences (biology, chemistry, and physics) and understand their relevance to industrial biotechnology.
- ILO3. Have acquired the foundational knowledge of biotechnology and microbiology.
- ILO4. Have sound knowledge of biomass as a resource and living systems (molecules, cells, tissues, and organisms) as agents for making bioproducts.
- ILO5. Have sound knowledge of biomass-to-bioproducts conversion processes (physical, chemical, and biological) on a lab, pilot, and an industrial scale.
- ILO6. Have sound knowledge of industrial biotechnology products and services.
- ILO7. Have acquired technical knowledge and proficiency in lab skills that support work in industrial biotechnology.
- ILO8. Have acquired proficiency in transferable skills (research, entrepreneurial, social, and interpersonal skills).
- ILO9. Demonstrate the aptitude for a lifelong professional and personal development.

Capaian Pembelajaran Lulusan (CPL)

Setelah menyelesaikan program, lulusan akan:

- ILO1. *Menguasai konsep dasar matematika dan statistika serta memahami relevansinya terhadap bidang bioteknologi industri.*
- ILO2. *Menguasai konsep dasar ilmu pengetahuan alam serta memahami relevansinya terhadap bidang bioteknologi industri.*
- ILO3. *Menguasai konsep dasar bioteknologi dan mikrobiologi.*
- ILO4. *Memiliki pengetahuan tentang biomassa sebagai bahan baku dan sistem biologis (molekul, sel, jaringan, dan organisme) sebagai agen untuk membuat bioproduk.*
- ILO5. *Memiliki pengetahuan tentang proses (fisik, kimiawi, dan biologis) konversi biomassa menjadi bioproduk pada skala lab, pilot, dan industri.*
- ILO6. *Memiliki pengetahuan tentang produk dan jasa industri bioteknologi.*
- ILO7. *Menguasai pengetahuan teknis dan memiliki ketrampilan bekerja di laboratorium yang relevan dengan industri bioteknologi.*
- ILO8. *Memiliki ketrampilan lintas-konteks (kecakapan penelitian, kewirausahaan, sosial, dan interpersonal).*
- ILO9. *Mendemonstrasikan potensi sebagai pembelajar sepanjang hayat untuk pengembangan profesi dan pribadi.*

4.3. Programme details and completion requirements

Detail dan persyaratan penyelesaian program

The curriculum of the Biotechnology Study Programme is structured into five main modules (groups of courses that contribute to the attainment of specific learning outcomes). The Bachelor of Biotechnology will be awarded upon successful completion of the following five main modules (240 ECTS):

1. **Basic Module (42 ECTS):** compulsory courses for laying the foundational knowledge of mathematics and natural sciences.
2. **Core Module (103 ECTS):** compulsory courses for building the theoretical and applied concepts of industrial biotechnology.
3. **Personality Module (20 ECTS):** compulsory courses for instilling nationalism and developing personality.
4. **Final Project Module (22 ECTS):** compulsory projects for developing research, entrepreneurial, social, and interpersonal skills.
5. **Elective Module (53 ECTS):** optional courses or projects for enriching knowledge and skills in diverse fields; may be taken in other institutions.

DIPLOMA SUPPLEMENT



Kurikulum PS Bioteknologi tersusun atas lima modul utama yang terdiri dari mata kuliah yang mendukung capaian pembelajaran tertentu. Gelar Sarjana Bioteknologi akan diberikan setelah menyelesaikan lima modul utama (144 sks) sebagai berikut:

1. **Modul Dasar (25 sks):** mata kuliah wajib untuk membangun landasan pengetahuan matematika dan sains yang relevan dengan bidang bioteknologi industri.
2. **Modul Inti (62 sks):** mata kuliah wajib untuk membangun konsep teoritis dan aplikatif di bidang bioteknologi industri.
3. **Modul Kepribadian (12 sks):** mata kuliah wajib untuk memupuk nasionalisme dan membentuk kepribadian.
4. **Modul Tugas Akhir (13 sks):** mata kuliah wajib untuk mengembangkan kecakapan penelitian, kewirausahaan, sosial, dan interpersonal.
5. **Modul Pilihan (32 sks):** mata kuliah pilihan untuk memperkaya pengetahuan dan ketrampilan di berbagai bidang sesuai pilihan minat mahasiswa.

Module-ILO Matrix

The contribution of courses towards the attainment of specific ILOs is measured with a score of 0–1. Note that (i) the contribution score is calculated in proportion to the ECTS of courses that support the attainment of specific ILOs, (ii) the sum of the contribution score of all courses towards a specific ILO is 1, and (iii) the scores are approximation only and are used for assessment purposes.

Matriks Modul-CPL

Kontribusi mata kuliah terhadap ketercapaian CPL diukur menggunakan skor 0–1. Perlu dicatat bahwa (i) skor kontribusi dihitung berdasarkan proporsi sks dari mata kuliah yang mendukung CPL tertentu, (ii) jumlah skor kontribusi dari mata kuliah yang mendukung CPL tertentu adalah 1, dan (iii) perhitungan masing-masing skor merupakan estimasi dan digunakan untuk kepentingan evaluasi.

The following module-ILO scored matrix defines the contribution level of specific courses towards the attainment of specific ILOs.

Matriks modul-CPL berikut mendefinisikan tingkat kontribusi mata kuliah tertentu terhadap pencapaian CPL tertentu.

Code	Course	ILO								
		1	2	3	4	5	6	7	8	9
Basic Module (42 ECTS)										
Sub Module 1: Basic Science										
TPF61001	Biology (3.3 ECTS)		0.17							
TPF61002	Biology Lab Work (1,7 ECTS)		0.08					0.04		
TPF61003	General Chemistry (3.3 ECTS)		0.17							
TPF61004	General Chemistry Lab Work (1,7 ECTS)		0.08					0.04		
TPF62008	Organic Chemistry (3.3 ECTS)		0.17							
TPF62009	Organic Chemistry Lab Work (1,7 ECTS)		0.08					0.04		
TPF61005	General Physics (3.3 ECTS)		0.17							
TPF61006	General Physics Lab Work (1,7 ECTS)		0.08					0.04		
TPB61001	Mathematics (5 ECTS)	0.50								
TPF60010	Statistics (3.3 ECTS)	0.50								
Sub Module 2: Basic Biotechnology										
TPP62002	General Microbiology (3.3 ECTS)			0.29						
TPP62003	General Microbiology Lab Work (3.3 ECTS)			0.29				0.08		
TPB61002	Introduction to Biotechnology (5 ECTS)			0.43						
Core Module I: Biomass and Living Systems (40 ECTS)										
Sub Module 1: Biomaterials										
TPF61012	Biomaterials (3.3 ECTS)				0.08					
TPF61013	Biomaterials Lab Work (1.7 ECTS)				0.04			0.04		
Sub Module 2: Biomolecules and Cells										
TPP61005	Biochemistry (6.7 ECTS)				0.17					
TPP62015	Enzymology (3.3 ECTS)				0.08					
TPB62001	Genetics (3.3 ECTS)				0.08					
TPB61006	Molecular and Cell Biology (5 ECTS)				0,13					
Sub Module 3: Bioanalyses										
TPB61003	Biochemistry and Enzymology Lab Work (1.7 ECTS)				0.04			0.04		
TPB61004	Analytical Techniques in Biotechnology (3.3 ECTS)							0.08		
TPB61005	Analytical Techniques in Biotechnology Lab Work (1.7 ECTS)							0.04		

DIPLOMA SUPPLEMENT



Sub Module 4: Bioengineering									
TPB62004	Introduction to Bioinformatics (3.3 ECTS)					0.08			0.08
TPB62005	Genetic Engineering (5 ECTS)					0.13			0.13
TPB62006	Genetic Engineering Lab Work (1.7 ECTS)					0.04			0.04
Core Module II: Bioprocess (32 ECTS)									
Sub Module 1: Bioprocess Engineering									
TPB62003	Principles of Bioprocess Engineering (5 ECTS)					0.17			
TPB61007	Bioprocess Unit Operations 1 (3.3 ECTS)					0.11			
TPB61008	Bioprocess Unit Operations 2 (5 ECTS)					0.17			
TPB61009	Bioprocess Unit Design (5 ECTS)					0.17			
Sub Module 2: Bioprocess Technology									
TPB62002	Introduction to Bioprocess Technology (3.3 ECTS)					0.11			
TPB62008	Industrial Microbiology and Biotechnology (3.3 ECTS)				0.08	0.11			
TPB62009	Industrial Microbiology and Biotechnology Lab Work (1.7 ECTS)				0.04			0.04	
TPB62007	Enzyme Technology (5 ECTS)					0.17	0.19		
Core Module III: Bioproducts (22 ECTS)									
TPB62010	Product Development and Regulation in Biotechnology (5 ECTS)						0.19		
TPP61017	Quality Control (3.3 ECTS)						0.13		
TPP62014	Quality Management and Halal Assurance System (3.3 ECTS)						0.13		
TPF60011	Engineering Economics (3.3 ECTS)						0.19		
UBU60003	Entrepreneurship (3.3 ECTS)						0.13		0.06
TPF60015	Entrepreneurship Lab Work (1.7 ECTS)						0.06		0.03
Core Module IV: Final Project-Supporting Courses (10 ECTS)									
TPF61014	Scientific Methods (3.3 ECTS)								0.06
TPB61010	Experimental Design (3.3 ECTS)								0.06
TPB61011	Seminars in Biotechnology (3.3 ECTS)								0.06
Personality Module (20 ECTS)									
Sub Module 1: Personal Character									
MPK6000x	Religion (3.3 ECTS)								0.06
MPK60006	Civic Education (3.3 ECTS)								0.06
MPK60008	Pancasila (3.3 ECTS)								0.06
MPK60007	Bahasa Indonesia (3.3 ECTS)								0.06
UBU60004	English (3.3 ECTS)								0.06
Sub Module 2: Professional Character									
TPF60007	Personality Development and Professional Ethics (3.3 ECTS)								0.06
Final Project Module (22 ECTS)									
TPF60016	Fieldwork (5 ECTS)								0.11 0.29
UBU6000x	Community Service (6.7 ECTS)								0.11 0.29
UBU60001	Undergraduate Thesis (10 ECTS)							0.25	0.17 0.43

4.4. Grading scheme

Skema penilaian

Alphabetical Grades <i>Huruf Mutu</i>	Score Range <i>Rentang Nilai Mutu</i>
A	81 – 100
B+	76 – 80
B	70 – 75
C+	61 – 69
C	56 – 60
D+	51 – 55
D	45 – 50
E	0 – 44

DIPLOMA SUPPLEMENT

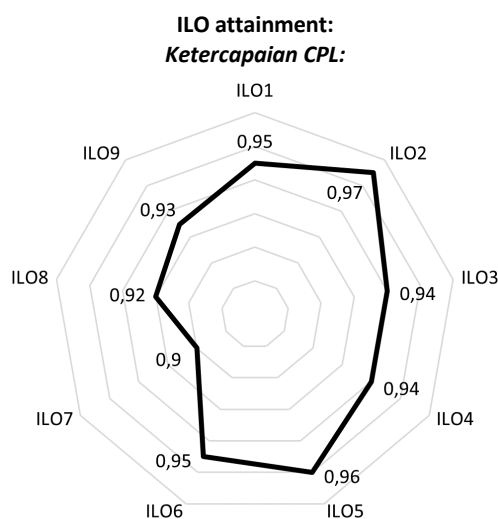


4.5. Graduation predicate *Predikat kelulusan*

Cumulative Grade Point Average (CGPA) <i>Indeks Prestasi Kumulatif (IPK)</i>	Predicate <i>Predikat</i>
3.50 – 4.00	Cum Laude (Dengan Pujian)
3.00 – 3.49	Distinction (Sangat Memuaskan)
2.75 – 2.99	Satisfactory (Memuaskan)
2.00 – 2.74	Sufficient (Cukup)

4.6. CGPA, graduation predicate, percentile, and ILO attainment of the holder of the qualification *IPK, predikat kelulusan, persentil, dan ketercapaian CPL pemegang gelar*

CGPA: 3.86	Predicate: graduated cum laude	Percentile: top 5% of 300 graduates
IPK: 3.86	Predikat: lulus dengan pujian	Persentil: 5% teratas dari 300 lulusan



5. Information on the function of the qualification *Informasi mengenai fungsi dari kualifikasi*

5.1. Access to further study
Akses untuk studi lanjut
Post-graduate studies
Studi pascasarjana

5.2. Professional status conferred
Status keprofesian
This programme does not confer any professional status
Program ini tidak memberikan status keprofesian

6. Additional information
Informasi tambahan
The degree programme was accredited by ASIIN on _____
Program ini telah terakreditasi ASIIN pada _____
<https://thp.ub.ac.id/en/education/undergraduate/biotechnology/>

DIPLOMA SUPPLEMENT



7. Certification of the supplement
Pengesahan dari dokumen pelengkap ini

Dean
Dekan

Malang, 21 Januari 2021
Head of Biotechnology Study Programme
Ketua Program Studi Bioteknologi

Prof. Dr. Ir. Imam Santoso, MS
NIP. 19681005 199512 1 001

Tunjung Mahatmanto, STP, MSi, PhD
NIP. 19810908 200801 1 007