ITATS
INSTITUT TEKNOLOGI ADHI TAMA SURABAYA

LIST OF COURSES DEPARTMENT OF CIVIL ENGINEERING

No	Courses	Code	Semester	Description
1	English 1 *Bahasa Inggris 1*	24000014	1	This course is designed for all levels, from beginners to advanced, focusing on improving speaking, writing, listening, and reading skills.
2	Statics and Mechanics of Materials *Statika dan Mekanika Bahan*	24011001	1	This course covers structural statics, mechanical properties of materials, stress and strain analysis, and engineering applications.
3	Concrete Technology *Teknologi Beton*	24011002	1	This course explores the properties of concrete, mix design, quality control, and durability.
4	Structural Drawing *Menggambar Bangunan Sipil*	24011003	1	Covers the principles of technical drawing, construction plans, and blueprint interpretation.
5	Practicum of Concrete Technology *Praktikum Teknologi Beton*	24011004	1	Focuses on testing concrete properties, mix designs, and material performance in a laboratory setting.

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No	Courses	Code	Semester	Description
6	Land Surveying Ilmu Ukur Tanah	24011005	1	This course covers mapping concepts, measurement techniques, data calculation, and contour mapping applications.
7	Practicum of Land Surveying Pratikum Ilmu Ukur Tanah	24011006	1	Focuses on theoretical mapping concepts and fieldwork, including the operation of distance and height measuring instruments and coordinate plotting for situation maps.
8	Statistics Statistika	24011007	1	Covers descriptive statistics, probability, sampling distribution, and variance analysis to support decision-making in civil engineering through data investigation and analysis.
9	Mathematics Matematika	24000016	1	Discusses complex numbers, algebraic functions, limits, derivatives, and integrals, including trigonometric functions and their applications, with a strong foundation in mathematical analysis.

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No	Courses	Code	Semester	Description
10	Chemistry Kimia	24011008	1	Reinforces basic chemistry concepts, including classification of substances, atomic theory, quantum mechanics, molecular bonding, acid-base theory, equilibrium, and reaction kinetics.
11	Practicum of Chemistry Praktikum Kimia	24011009	1	Provides hands-on experience in conducting experiments and observing chemical phenomena, including preparing solutions of various concentrations, determining solution pH based on dissolved salts, studying buffer and non-buffer solutions under different conditions, and examining the solubility of sparingly soluble salts in water.
12	Physics Fisika	24000006	2	Reinforces classical physics concepts learned in high school, covering Newton's Laws, Energy Concepts, Conservation of Mechanical Energy, Impulse and Momentum, and Rotational Dynamics.

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No	Courses	Code	Semester	Description
13	Structural Analysis 1 Analisis Struktur 1	24012111	2	Covers statically determinate truss structures, truss force analysis, influence lines for beams, Gerber beams and frames, beam and portal deformations, and the Unit Load Method.
14	Concrete Structures 1 Struktur Beton 1	24012112	2	Introduces the fundamentals of reinforced concrete and its design, including slab and beam design principles.
15	Road Geometry Geometri Jalan	24012113	2	Focuses on road tracing calculations using contour maps, geometric road design, cut-and-fill volume calculations, pavement classification and thickness design, and drainage system planning.
16	Soil Mechanics 1 *Mekanika Tanah 1*	24012010	2	Covers the fundamentals of soil mechanics, including soil origin, clay minerals, mechanical analysis, soil classification, Darcy's Law, permeability, and soil compaction.

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No	Courses	Code	Semester	Description
20	Statistics 2 Statistika 2	24012116	2	Covers measurement validity and reliability, basic assumptions in parametric statistics, classical assumptions, multiple linear regression, nonlinear regression, and one-way and two-way analysis of variance.
21	Calculus 1 Kalkulus 1	24012017	2	Discusses real numbers, complex numbers, matrix algebra, functions, and limits. Topics include linear equation graphs, complex number operations, linear equation systems, eigenvalues, and eigenvectors as the foundation for mathematical analysis.
22	Pancasila Pancasila	24000012	3	Examines Pancasila as the foundation of the state, ideology, value system, ethics, and philosophy, as well as its role in democracy and scientific development. It includes the history of Pancasila, multicultural politics, modern nationalism, and globalization challenges to Indonesian culture to strengthen understanding and implementation of its values.

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No	Courses	Code	Semester	Description
23	Civics Kewarganegaraan	24000013	3	Explores civic responsibilities, Pancasila democracy, the state and constitution, and the relationship between the state and citizens. Topics include national resilience and identity, the rule of law and human rights, and national integration. Additionally, Nusantara insight as Indonesia's geopolitics is discussed through Student-Centered Learning (SCL) and Citizen Project approaches to foster national awareness and character development.
24	Structural Analysis 2 Analisis Struktur 2	24013119	2	Focuses on statically indeterminate structures, internal forces using the Consistent Deformation Method, Slope Deflection Method, and Cross Method, as well as influence lines for continuous beams.
25	Steel Structures 1 Struktur Baja 1	24013018	3	Covers steel structure design, including tension members, compression members, flexural members, and connections.

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No	Courses	Code	Semester	Description
26	Concrete Structures 1 Struktur Beton 2	24013120	3	Studies reinforced concrete structure design, including column design and earthquake-resistant concrete structures.
27	Construction Management Manajemen Konstruksi	24013021	3	Covers project construction organization, cost and quality planning (Bill of Quantities & Technical Specifications), and time planning (AOA, AON).
28	Soil Mechanics 2 Mekanika Tanah 2	24013122	3	Discusses stress distribution, consolidation settlement rate, soil shear strength, slope stability, and soil investigation.
29	Practicum of Soil Mechanics 1 *Praktikum Mekanika Tanah 1*	24013123	3	Covers soil testing procedures in both field and laboratory settings, interpretation of test results, and preparation of reports in accordance with soil mechanics principles.
30	Physics 2 *Fisika 2*	24910002	3	Reinforces classical physics concepts, covering elasticity theory, vibrations and waves, temperature and heat, static fluids, and electric forces.

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No	Courses	Code	Semester	Description
31	Calculus 2 Kalkulus 2	24013124	3	Covers differentiation/derivatives, their applications, and indefinite integrals.
32	Practicum of Physics Praktikum Fisika	24013125	3	Provides hands-on experience with physics experiments, including pendulum motion, friction coefficient determination, material elasticity modulus, thermal expansion coefficient, viscosity, and electrical circuits.
33	Religion Agama	24000001	4	Discusses concepts of divinity, morality, ethics, law, and the role of religion in society, focusing on harmony, human rights, and the application of religious values in modern life.
34	Hydraulics Hidrolika	24014027	4	Covers fluid properties, hydrostatics, viscosity effects in flow, flow concepts and basic equations, rotational systems, and unit systems.
35	Hydrology Hidrologi	24014028	3	Discusses basic concepts and objectives of hydrology, relationships between climate and meteorology, rainfall frequency analysis, river discharge, reliable discharge, and water demand calculations for crops.

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Teknik Sipil ITATS

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No	Courses	Code	Semester	Description
36	Structural Reliability Keandalan Struktur	24014129	4	Covers probability distribution of loads, reliability index, resistance models, structural system reliability, reliability-based design, safety factors, and sources of uncertainty.
37	Indonesian Language Bahasa Indonesia	24000007	4	Discusses language functions, varieties, and registers, as well as spelling, punctuation, and effective sentences. Topics include paragraph development, topics, theses, summaries, abstracts, citations, reference systems, and different types of writing to enhance academic language skills.
38	Earthquake Engineering Teknik Gempa	24014130	4	Covers earthquake analysis concepts for building structures, understanding earthquake occurrences, calculating forces on structures due to earthquakes, and designing earthquake-resistant structures
39	Steel Structures 2 Struktur Baja 2	24014131	4	Covers steel structure design, including portal structures, composite structures, MRF (Moment Resisting Frames), CBF (Concentrically Braced Frames), EBF (Eccentrically Braced Frames), BRBF (Buckling-Restrained Braced Frames), and SPSW (Steel Plate Shear Walls).

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No	Courses	Code	Semester	Description
40	Traffic Engineering Teknik Lalu Lintas	24014132	4	Studies transportation engineering, particularly transportation systems. Topics include road segment performance calculations, unsignalized and signalized intersections, transportation service performance analysis, traffic management planning, and traffic management evaluation.
41	Foundation Engineering 1 Rekayasa Pondasi 1	24014133	4	Covers retaining walls, lateral earth pressure, steel sheet piles, soil investigation for foundation purposes, types of foundations, shallow foundations (requirements, bearing capacity, and settlement).
42	Soil Mechanics Practicum 2 Praktikum Mekanika Tanah 2	24014134	4	Focuses on soil testing for bearing capacity and soil strength, interpretation of test results, and preparation of reports in accordance with soil mechanics principles.
43	Hydraulics Practicum Praktikum Hidrolika	24015135	5	Provides practical experience in specific energy and critical depth, flow through sluice gates, and hydraulic jumps.

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No	Courses	Code	Semester	Description
44	Pavement Engineering Teknik Perkerasan Jalan	24015136	5	Covers different types of pavement construction, pavement layer parameters, asphalt concrete mix analysis and design using various methods, pavement thickness design, and pavement damage evaluation and repair techniques.
45	Heavy Equipment Management Manajemen Alat Berat	24015137	5	Covers heavy equipment management, calculation of soil physical properties, equipment loads and power, productivity planning for individual and group equipment, and cost planning for ownership and operation of heavy equipment.
46	Introduction to Management Pengantar Manajemen	24000011	5	Covers management concepts, managerial roles, and organizational functions, including human resources, marketing, finance, and operations. It also includes environmental management, green marketing, corporate social responsibility (CSR), and sustainable development to support business sustainability.
47	Character Education Pendidikan Karakter	24000010	5	Discusses the definition, causes, and impacts of corruption, as well as investigation and eradication efforts in Indonesia and other countries. The course covers non-governmental anti-corruption institutions and anti-corruption values in religion to foster student awareness and integrity.

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48	Computer Applications 1 Aplikasi Komputer 1	24015138	5	Focuses on computer programming applications, enabling students to use software tools to solve problems in civil engineering.
49	Internship Kerja Praktek	24015139	5	Aims to develop an understanding of project construction management, construction processes and methods, specific project reviews, and report writing.
50	Urban Drainage Drainase Perkotaan	24015140	5	Covers the functions, objectives, challenges, and planning of urban drainage systems.
51	Railway Engineering Rekayasa Jalan Rel	24015141	5	Examines railway technology developments, railway structure components, and geometric railway planning standards.
52	Highway Design *Desain Jalan raya*	24015142	5	Focuses on the comprehensive design of highways, including contour reading, route selection, horizontal and vertical alignment, cut-and-fill requirements, flexible and rigid pavement design, and road drainage planning.

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No	Courses	Code	Semester	Description
53	Project Administration Administrasi Proyek	24015143	5	Covers the meaning, function, and stages of project administration, preparation and implementation of project contracts, project monitoring, problem resolution, work handover, construction law, and claims management in construction projects.
54	Foundation Engineering 2 Rekayasa Pondasi 2	24015144	5	Covers deep foundations, including requirements, bearing capacity, uplift capacity, and settlement analysis.
55	Road Materials Laboratory Praktikum Bahan Jalan	24016145	6	Provides theoretical and practical knowledge of road pavement materials, including field and laboratory testing, data analysis, and interpretation of results.
56	Sustainable Construction Methods Metode Pelaksanaan Konstruksi Berkelanjutan	24016146	6	Focuses on principles of sustainable construction, planning and implementation methods for simple houses, bridges, buildings, ports, roads, dams, and irrigation structures.
57	English 2 *Bahasa Inggris 2*	24000015	6	Develops English communication skills, covering listening, speaking (including presentations), reading, and writing.

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No	Courses	Code	Semester	Description
58	Entrepreneurship Kewirausahaan	24000008	6	Covers entrepreneurship and technopreneurship concepts, the impact of economic policies on business, business idea generation, market analysis, production, management, and finance. It also includes business strategy, promotion, feasibility studies, and concludes with business presentations and ranking selection.
59	Technology Concepts Konsep Teknologi	24000009	6	Explores science, scientific logic, and its development, as well as the relationship between science, technology, and culture. Topics include narrow and broad definitions of technology, technological engineering, its impact, and intellectual property rights (IPR) in innovation.
60	Computer Applications 2 Aplikasi Komputer 2	24016147	6	Continues from Computer Applications 1, focusing on software tools for solving civil engineering problems.
61	Community Service Program Kuliah Kerja Nyata	24016148	6	Aims to identify issues in the implementation area and engage local communities in applying solutions through work plans, analyzing problems, and compiling scientific reports.

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62	Steel Structure Design Desain Bangunan Baja	24016149	6	Covers the planning and design of steel structures, including roof design, columns, pedestals, and connections.
63	Concrete Structure Design Desain Bangunan Beton	24016150	6	Focuses on the structural design of reinforced concrete, covering slabs, beams, and columns.
64	Transportation Systems Sistem Transportasi	24016151	6	Explores the scope of transportation systems, transportation planning stages, simple interaction models, transportation modeling concepts, transportation issues, and their management.
65	Cost Estimation and Scheduling Design Desain Estimasi Biaya dan Jadwal	24016152	6	Covers calculations, preparation, and implementation of construction management based on Industry 4.0.
66	Civil Building Planning and Design *Perencanaan dan Perancangan Bangunan Sipil*	24016153	6	A project-based course where students design a three-story building, including beam, column, slab, and foundation planning, along with cost estimation. The planning follows the latest technical standards, regulations, and manuals, with a portfolio-based assessment.

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No	Courses	Code	Semester	Description
67	Irrigation and Water Structures Irigasi dan Bangunan Air	24016026	6	Covers the definition, function, objectives, and development of irrigation networks, irrigation area composition and cropping patterns, irrigation water demand analysis, and planning of irrigation channels and water structures.
68	Research Proposal Proposal Penelitian	24017154	7	Involves group discussions and intensive supervision to help students develop a research proposal for their final project or thesis.
69	Risk Management Manajemen Risiko	24017155	7	Covers theoretical concepts of risk and uncertainty, risk identification, risk measurement principles, risk evaluation, and risk control planning.
70	Dynamic Foundations Pondasi Dinamis	24017156	7	Discusses machine types, machine foundation design criteria, free and forced vibration analysis with/without damping, wave propagation due to machine vibrations, soil dynamic parameters, and liquefaction.
71	Water Resources Development PSDA	24017157	7	Studies the fundamentals of water resource development, water resource potential, infrastructure capacity, and economic feasibility.

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No	Courses	Code	Semester	Description
72	Civil Building Planning and Design 2 Perencanaan dan Perancangan Bangunan Sipil 2	24017158	6	Focuses on the concepts and planning of bridges based on SNI 1725-2016 standards.
73	Bridge Structure Design Desain Struktur Jembatan	24017159	7	Covers bridge structural planning, including deck slab design, girders, trusses, wind bracing, abutments, and bearings.
74	Port Engineering Pelabuhan	24017160	7	Explores basic concepts in port planning, understanding port components, and designing port structures such as docks, breakwaters, fenders, and supporting facilities.
75	Project Control Techniques Teknik Pengendalian Proyek	24017161	7	Covers calculations and applications of natural science concepts in project control, including Earned Value Analysis (EVA), Time-Cost Trade-Off (TCTO), and explanations of Supply Chain Management (SCM) and Lean Construction principles.
76	Thesis Skripsi	24018162	8	Involves research, discussions, and conclusions on a specific topic, training students to systematically and scientifically prepare and present their thesis.

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No	Courses	Code	Semester	Description
77	Occupational Health, Safety, and Disaster Management Manajemen K3 dan Bencana	24018163	8	Focuses on workplace safety concepts, disaster management, hazard analysis in civil engineering projects, implementation of safety guidelines, and safety management systems in civil construction.
78	Airport Engineering Lapangan Terbang	24018164	8	Covers airport planning concepts, structural components of airfields, and air traffic management.
79	Long-Span Bridges Jembatan Bentang Panjang**	24018165	8	Discusses long-span bridge concepts, types of long-span bridges, construction execution, and long-span bridge construction methods.
80	Soil Improvement Methods *Metode Perbaikan Tanah*	24018166	8	Explores geotechnical issues in civil structures, various soil improvement techniques, design, and construction methods.