UKRIDA ENGINEERING AND COMPUTER SCIENCE

Where Character Meets Innovation

UKRIDA Engineering and Computer Science (FTIK-UKRIDA) provides students with a rigorous curriculum, industrial relevant training, and career-advancing degree study programs. Over the past years, FTIK-UKRIDA had built up a wide industry network to link its study programs’ curricula with well renowned enterprises and higher learning institutions. The aims are to enhance highly industry-relevant trainings and a rigorous education process for our students. Our inclusive, immersive, and in-employment education transforms FTIK-UKRIDA graduates into professionals equipped with relevant knowledge, employable hard skills, and inspirational soft skills.

The FTIK-UKRIDA offers various accredited study programs in Electrical Engineering, Civil Engineering, Industrial Engineering, Informatics, and Information Systems. Our study programs leverages on technology to empower students with flexible interactions and learning with their tutors and lecturers. Moreover, our study programs encourage students to work closely with industry and academics through internships, research collaborations, and society empowerment programs.

The academic year comprises two semesters, February to July and September to January. Students are required to complete 144 credits minimum within eight semesters (four years). Students with excellent grades are eligible to take up to 24 credits in one semester and can finish their study within seven semester (3.5 years).
Inspiring the Future of Engineers and Computer Scientists

Dean’s Message

Welcome to UKRIDA Engineering & Computer Science...

In the beginning of 2021, we celebrated the 54th Anniversary of UKRIDA, as well as the 54th Anniversary of Electrical Engineering Department, one of our oldest and most experience study programs at UKRIDA. We are now on the journey of our sixth decade providing excellent education to our students.

At the FTIK-UKRIDA, as we call our school with this name, we highlight Quality, Interdisciplinary, Innovation, and Internationalization (Q3I) through our education process, research programs, and service to students. Q3I are the core mission of our school. Faculty, staff, and students conduct our daily activities with these mission in mind.

Many FTIK-UKRIDA graduates have been inspiring their workplaces, organizations, and societies, by showing their excellent hand-on skills, hard working culture, technopreneurship capability, and well attitude. We are very proud of them...

We would like to invite you to join our FTIK-UKRIDA, the place where Inspiring Engineers & Computer Scientists are born...
MISSION, VISION, AND VALUE

Mission Statement
The mission of the UKRIDA School of Engineering and Computer Science (FTIK) is to develop students with strong character and global mindset, who care about their society and environment. FTK believes that through good education and research, we have the opportunity to empower the society and contribute to the quality of life.

Vision
The UKRIDA School of Engineering and Computer Science (FTIK) is dedicated to be a leading school committed in education and research in engineering and computer science driven by Christian values and leadership.

Value
The People of UKRIDA School of Engineering and Computer Science (FTIK) believe that:

- We are existed because of GOD, and therefore, we live to Love our GOD. We love our GOD by caring, supporting, collaborating, and empowering human being and nature.
- We are the blessed and the best, and therefore, we live to shine amongst others. We are trustworthy and we Enlighten others through our words and acts.
- We are friend with change, and therefore we are committed to learn with enthusiasm, to make friend with changes, and to Advance with our creativity and innovativeness.
- We are born to be great, and therefore, we are Determined to have better life and to outshine our performance.
10 GOOD REASONS TO STUDY AT UKRIDA ENGINEERING AND COMPUTER SCIENCE

- Highly competence faculty members and industry experts
- Strong partnerships with industry and government
- Well-designed learning management system
- Student-centered learning
- Highly competence faculty members and industry experts
- Lifelong learning supports
- Integrated laboratory services
- High engagement with community and society
- Strong partnerships with industry and government
- research grants and scholarships
- International collaborations and networking
- Integrated laboratory services
Program Overview

**BACHELOR OF ELECTRICAL ENGINEERING**

Established 1967

The Bachelor of Electrical Engineering (EE) program provides a broad comprehension of the fundamental principles that are responsible for the remarkable advances in the technology of computers, micro-electronics, robotics, telecommunication, power systems, and biomedical engineering. This knowledge can be applied in many industries, including telecommunications, automotive, smart devices, control systems, microelectronics, energy, and biomedical instruments.

*Under the EE, students are encouraged to choose one of our new two specialization programs: Bachelor’s Program in Intelligent Systems and Robotics or Bachelor’s Program in Biomedical Engineering*

This program is accredited “B” in 2017 by the National Accreditation Agency of Higher Education (BAN-PT) of the Republic of Indonesia.
# CURRICULUM

## FIRST YEAR
- Social Studies (4 Subjects)
- English for Academic Purposes
- Physics
- Mathematics 1 & 2
- Basic Chemistry
- Basic Electrical Engineering
- Basic Electronics
- Electrical Circuit 1
- Measurement of Electrical Quantities
- Telecommunication
- Anatomy*

## SECOND YEAR
- Basic Computer & Programming
- Digital Electronics
- Engineering Math 1 & 2
- Electrical Circuit 2
- Modern Physics
- Microprocessor & Microcontroller
- Electromagnetic Field
- Signals and Systems
- Analog Electronics
- Laboratory Works (6 Subjects)
- Molecular Biology*
- Physiology*
- Biochemistry*
- Bioethics*

## THIRD YEAR
- Probability & Statistic
- Basic Electrical Energy Conversion
- Basic Control System
- Digital Signal Processing
- Robotics
- Artificial Intelligence
- Industrial Electronics
- Numerical Computation
- Electronic System Design
- Research Methods
- Laboratory Works (3 Subjects)
- Biostatistics*
- Radiology*
- Neuroscience*
- Biophysics*

## FOURTH YEAR
- Entrepreneurship
- Internship - Merdeka Belajar program
- Professional Insights
- Laboratory Research
- Final Project

## In House Electives
- Internet of Things
- Digital Image Processing
- Artificial Neural Networks
- Electromagnetic Applications
- Microcontroller Applications
- Biomedical Instrumentation
- Digital System Designs
- Advanced Control Systems
- Communication of Data
- Optics
- Photonics
- Advanced Programming
- Advanced Neuroscience*
The Bachelor of Civil Engineering (CE) program delivers an extensive understanding of the fundamental principles that are accountable for the design, construct, and maintain society’s infrastructure – the highways, buildings, and water systems we use daily. CE-UKRIDA believes that Civil Engineering is about community service, development, and improvement. It involves problem solving, physics, statistics, information technology, and environmental studies. Our students are equipped with Information Modelling capabilities using the latest software. Many of our graduates work as contractors, consultants, and quantity surveyors.

Under the CE, students are encouraged to choose one of our new two specialization programs:
Bachelor’s Program in Infrastructure Design or Bachelor’s Program in Infrastructure Management

This program is Accredited “B” in 2018 by the National Accreditation Agency of Higher Education (BAN-PT) of the Republic of Indonesia.
**CURRICULUM**

### FIRST YEAR
- Social Studies (3 Subjects)
- English for Academic Purposes
- Calculus 1
- Physics
- Introduction to Civil Engineering
- Computer Programming
- Building Construction 1 & 2
- Probability & Statistic
- Land Measurement
- Statics

### SECOND YEAR
- Social Studies (2 Subject)
- Calculus 2 & 3
- Mechanics of Materials
- Mechanics of Soil
- Hydraulic & Fluid Mechanics
- Numerical Analysis
- Structural Analysis
- Highway Engineering
- Foundation Engineering
- Project Management 1

### THIRD YEAR
- Community Service
- Structural Analysis with Matrix
- Construction Contract Law
- Technology of Construction Materials
- Hydrology & Water Resources
- Theory & Design of Concrete Structure 1 & 2
- Theory & Design of Steel Structure 1 & 2
- Structure Dynamics & Forging Technic
- Irrigation Planning & Waterworks
- Traffic Engineering
- Entrepreneurship
- Construction Methods

### FOURTH YEAR
- Environmental Engineering
- Infrastructure Planning
- Civil Building Planning
- Case Studies in Infrastructure Projects
- Elective (2 Subjects)
- *Internship / Merdeka Belajar Activities
- Final Project

**In House Electives**
- Integrated Water Management; Urban Drainage; Heavy Equipment & Mechanic Soil Movement; Geo-synthetic Application; Land Repair Techniques; Airport Engineering; Railway Engineering; Port Engineering; Urban Transportation Management; Bridge Engineering; Quality Management in Construction Projects; Infrastructure Assets Management; Pre-strained Concrete.

*8 Merdeka Belajar Activities*
Program Overview

**BACHELOR OF INDUSTRIAL ENGINEERING**

Established 1998

The Bachelor of Industrial Engineering (IE) program prepares its graduates with the fundamental principles in math, statistics, engineering design, information technology, business process, and social studies, that are integrated for the improvement of “All Types of Systems”. Whether shortening cashier lines in shopping centers, designing factory and its facilities, manufacturing expensive automobiles, distributing products worldwide, or improving service level in hospital operations, Industrial Engineers face common goals: saving money and increasing efficiency.

*Under the IE, students are encourage to choose one of our two new specialization programs:* Bachelor’s Program in Digital Supply Chain Management or Bachelor’s Program in Digital Product Design

This program is Accredited “B” in 2017 by the National Accreditation Agency of Higher Education (BAN-PT) of the Republic of Indonesia. This program also collaborates with The Institution of Engineers Indonesia (PII) for Professional Engineers Certification.
# CURRICULUM

## FIRST YEAR
- Social Studies (3 Subjects)
- English for Academic Purposes
- Mechanic & Fluid
- Differential & Integral
- Computer Programming for Engineer 1 & 2
- Introduction to Industrial & Systems Engineering
- Bio-industry
- Probability & Statistic
- Introduction to Economics
- Vector & Matrix
- Electric, Magnet & Optic

## SECOND YEAR
- Social Studies (2 Subject)
- Materials
- Industrial Statistics
- Operations Research & Optimization 1 & 2
- Computer Aided Design
- Work Methods
- Entrepreneurship
- Ergonomic & Human Factors
- Engineering Economics
- Quality Management Systems
- Smart Manufacturing
- Production Planning & Inventory Control

## THIRD YEAR
- Community Service
- Quality Control
- Knowledge Management
- Supply Chain Systems
- Facilities Design
- Cost Analysis
- Product Design
- Industrial Internet of Things (IIOT)
- Design for Information System
- Systems Modelling & Simulation
- Industrial Management & Organization
- Research Methodology
- *Merdeka Belajar Elective (1 Subjects)
- *Specialization Studies (3 subjects)

## FOURTH YEAR
- Internship
- * Merdeka Belajar Elective (2 Subjects)
- Final Project

**In House Electives**
- Natural Computation; Healthcare System & Management; Computational Data Mining; Resources Management; Project Management; e-Business & Digital Marketing; Maritime Logistics; Big Data & Analytics; Industrial Psychology; Supply Chain Risk Management; Design of Experiment; Industrial Robotics; Marketing Management; Finance Management
Program Overview

**BACHELOR OF INFORMATICS**

Established 2002

The Bachelor of Informatics (IF) program is designed to strengthen the fundamentals of logics, software programming, wireless technology, hardware requirements and specifications, and human computer interaction. IF-UKRIDA offers students a variety of hands-on projects in creative design practices, web development, mobile programming, cloud computing, Artificial Intelligent, Cyber Security, and high performance computing. IF-UKRIDA also prepares the students for professional certifications in collaboration with Alibaba Clouds and Oracle Academy.

*Under the IF, students are encourage to choose one of our new two specialization programs:*  
*Bachelor’s Program in Health Informatics* or *Bachelor’s Program in Intelligent Systems*

This program is Accredited “B” in 2017 by the National Accreditation Agency of Higher Education (BAN-PT) of the Republic of Indonesia.
# CURRICULUM

## FIRST YEAR
- Social Studies (2 Subjects)
- English for Academic Purposes
- Calculus 1 & 2
- Physics
- Statistics
- IT Concepts
- Algorithm & Programming 1 & 2
- Computer Architecture
- Mathematical Logic
- Data Structures
- Operations Research

## SECOND YEAR
- Social Studies (2 Subject)
- Discrete Math
- Data Communication
- Algorithm & Programming 3
- Human Computer Interactions
- Object Oriented Programming
- Database System
- Computer Network
- Computer Graphics
- Operating Systems
- Numerical Method
- Web Design
- Database Design

## THIRD YEAR
- Community Service
- Social Studies (1 Subject)
- Computer Security
- Network Applications
- Web Programming
- Advanced Database Programming
- Artificial Intelligent
- Language Theory & Automata
- Software Engineering
- Entrepreneurship
- Data Warehouse & Data Mining
- Image Processing
- Mobile Programming
- Expert System
- * Merdeka Belajar Elective (2 Subjects)

## FOURTH YEAR
- Research Methodology
- Internship
- * Merdeka Belajar Elective (2 Subjects)
- Final Project

## In House Electives
- Advanced Mobile Programming;
- Advanced Web Programming;
- Decision Support System;
- Graphics Design;
- Multimedia Applications;
- Computer Vision;
- Testing & Implementation;
- Network Administration;
- Bio-informatics;
- Internet of Things;
- Robotics
The Bachelor of Information Systems (IS) program focuses on implementation and management of information technology to solve business and organizational problems. IS-UKRIDA develops its students to excel not only on technical implementation, but also able to formulate IS/IT strategies and policies so that the technology being implemented can provide sustainable tangible benefits for business and organizational needs.

**Under the IS, students are encourage to choose one of our new four specialization programs:**

**Bachelor’s Program in Full-Stack Development or Bachelor’s Program in IT Infrastructure or Bachelor’s Program in Business Intelligence or Bachelor’s Program in Data Science**

This program is Accredited “B” in 2019 by the National Accreditation Agency of Higher Education (BAN-PT) of the Republic of Indonesia. IS-UKRIDA also prepares the students for professional certifications in collaboration with Alibaba Clouds, Quint, DQLab and Google.
## CURRICULUM

### FIRST YEAR

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<tr>
<th>Subject</th>
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<tbody>
<tr>
<td>Social Studies (2 Subjects)</td>
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<tr>
<td>English for Academic Purposes</td>
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<td>Linear Algebra &amp; Mathematical Logic</td>
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<td>Management of Information Systems</td>
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<td>IT Service Management</td>
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<td>Algorithm &amp; Programming</td>
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<td>Java Programming 1</td>
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<td>Full-Stack Programming 1</td>
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<td>Database System</td>
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<td>Business Analysis Methods 1</td>
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<td>IT Governance 1</td>
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<td>Business Math</td>
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<td>Business Process Management</td>
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<td>System Analysis and Design</td>
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<td>Operating System 1</td>
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### SECOND YEAR

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<th>Subject</th>
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<td>Social Studies (2 Subjects)</td>
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<td>Community Service</td>
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<td>Statistics</td>
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<td>Software Engineering</td>
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<td>Full-Stack Programming 2</td>
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<td>Java Programming 2</td>
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<td>Human Computer Interaction</td>
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<td>Computer Network &amp; Virtualization Technology 1</td>
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<td>Database Design</td>
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<td>Methodology of Agile Scrum</td>
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<td>IT Governance 2</td>
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<td>Accounting Information System</td>
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<td>Business Intelligence 1</td>
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<td>Track 1: Full-Stack Development (Fundamental)</td>
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<td>Track 2: IT Infrastructure (Fundamental)</td>
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### THIRD YEAR

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<th>Subject</th>
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<td>Social Studies (1 Subject)</td>
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<td>Entrepreneurship</td>
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<td>Data Management</td>
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<td>Enterprise Architecture</td>
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<td>IT Risk Management</td>
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<td>Research Methodology</td>
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<td>Track 1: Full-Stack Development (Intermediate)</td>
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<td>Track 2: IT Infrastructure (Intermediate)</td>
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<td>Track 3: Business Intelligence (Fundamental)</td>
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<td>Track 4: Data Science (Fundamental)</td>
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<td>* Merdeka Belajar Electives</td>
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### FOURTH YEAR

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<th>Subject</th>
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<td>Internship</td>
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<td>DevOps Fundamental</td>
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<td>IS Project Management</td>
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<td>Business Analysis Methods 2</td>
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<td>Business Process Modelling</td>
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<td>Multimedia</td>
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<td>Final Project</td>
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### In House Electives

Mobile Apps Development using Flutter; Full-Stack JavaScript Web Development; React-Native Full-Stack Development; System Implementation & Testing; IS Strategic Planning; IS Security; Innovation Management Fundamental; Strategic Management Fundamental; Infographics & Data Visualization; ISO27001, ISO20000, and ISO22301 Foundation
In addition to accredited study programs, UKRIDA has a number of research centers. Four of them are coordinated by the researchers from the UKRIDA Engineering & Computer Science (FTIK).

**UKRIDA Center of Optimization System and Machine Learning (COSMa)**
COSMa focuses on how technologies and computer enable systems optimization and machines learning. COSMa organizes its research into three inter-related subjects: models & methods of optimization, models & methods of machines learning, and applications of intelligent computational systems.

*Coordinator:* Dr. Iwan Aang Soenandi

**UKRIDA Center for Photonics (CP)**
CP focuses on theoretical and experimental studies of laser spectroscopy, bio-photonics, thin film-based sensors, and optical communications. The applications of photonics have been widely accepted in today’s technologies include smart phones manufacturing, marine industry, home appliances manufacturing, fiber optic telecommunications, laser printing, and medical diagnostics.

*Coordinator:* Indra Karnadi, Ph.D.

**UKRIDA Center for Biomedical Engineering (CBE)**
CBE focuses on experimental studies of biomechanics and image processing in medical environment. The aim are to advance health care treatments, including diagnosis, monitoring, and therapy. The applications of biomechanics research involves the use of advanced medical imaging techniques and computational methods to characterize the mechanical properties of human body.

*Coordinator:* Ivan Tanra, Ph.D.

**UKRIDA Center for Knowledge Management and Collaborative Innovations (CKMCI)**
CKMCI focuses on the role of knowledge, technology, and human behavior in our society. Through collaborations from multidisciplinary perspectives, CKMCI explores how industries and non-profit organizations acquire, create, share, and utilize knowledge and adapt it to the advancement of technology, process innovation, and sustainability.

*Coordinator:* Dr. Oki Sunardi
STUDENTS LIFE

We All Have Stories to Tell…
And Our Stories Last Forever…
As one of the largest and busiest city in the world, Jakarta offers many opportunities to study, work, and pleasure. A home of 9.6 million people, Jakarta held many nicknames: J-Town, The Big Durian, City of Bajaj, and City of Angels.

When you come to Jakarta, make sure that you try some of well-known foods, such as: Asinan Betawi, Soto Betawi, Soto Mie, Soto Tangkar, Ayam Sampyok, Gabus Pucung, Bandeng Pesmol, Ketoprak, Gado-gado, Nasi Goreng Kampoeng, and many traditional dishes and cakes that will make you remember of this city. You should also visit sightseeing spots such as: Monas, Kota Tua, Ancol, Taman Mini Indonesia Indah, and Sunda Kelapa Port.

Transportation in Jakarta is very easy to access. Jakarta is surrounded by 12 Transjakarta Bus Corridors, Commuter Lines, MRT, LRT, Metered Taxy, and Online Transportations such as GOJEK and GRAB. You can also take Angkot and Mikrolet to access narrow streets.

UKRIDA School of Engineering & Computer Science (FTIK) is located in the old campus (Campus 1), on Jalan Tanjung Duren Raya No. 4, West Jakarta. Within 1 Km radius, Campus 1 is surrounded by four shopping malls (Mall Taman Anggrek, Mall Ciputra, Mall Neo SOHO, and Mall Central Park) and two Transjakarta Bus Stations (Grogol Station and Central Park Station). Also, nearly 150 boarding houses and apartment rooms are available near the campus with affordable price. The monthly average living cost for students is at IDR 2.800.000,- (include accommodation, 3 times meal, transport, and telecommunication). Our campus provides many Scholarships opportunities for students, free 24 hours Wifi for students, and free e-books and printed books to access.

Enjoy Jakarta...
UKRIDA Engineering & Computer Science (FTIK)

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ukrida.ac.id