



BASIC TRAINING PLAN FOR GRADUATE ENGINEERS

Electrical Engineering Discipline

EBK/CBA/GEIP/13

VERSION: A

REVISION: 01

	NAME	DESIGNATION	DATE	SIGNATURE
Approved by:				

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PREAMBLE

Foreword

It is with great pleasure that I present the Basic Training Plan developed by the Engineers Board of Kenya. This initiative marks a significant step in our commitment to professional growth of our graduate engineers in Kenya. The Engineers Act 2011 provides that graduate engineers must undergo training for three years before they can apply to be registered as professional engineers. This Training Plan (TP) serves as a critical tool in fulfilling this requirement, ensuring that our engineers are well-prepared to meet professional standards and excel in their careers.

The purpose of the TP is to provide graduate engineers, employers and mentors with a detailed guide on the scope and content of the training necessary for preparing graduate engineers for registration as professional engineers. The creation of this TP was a collaborative effort of experts from academia and industry who worked diligently to develop this plan. This collaborative approach ensures that our training plan is both rigorous and relevant to the needs of the industry.

This training plan aligns with the strategic intent of the EBK to register 10,000 professional engineers by 2027. By providing a clear and structured training pathway, we are not only enhancing the skills and capabilities of our engineers but also contributing to the national goal of increasing the number of qualified professionals in the engineering sector.

I extend my sincere gratitude to all those who contributed to the development of this plan. Your dedication and expertise have been instrumental in creating a valuable resource that will greatly benefit our graduate engineers and the engineering profession as a whole.



Eng. Margaret Ogai
Registrar/CEO
Engineers Board of Kenya

PREFACE

The practice of engineering is critically important in all sectors of the Kenyan. To ensure professionalism and upholding of ethical behavior in the engineering practice, the Government of Kenya and other keystakeholders have established various structures and institutions which are legally mandated to provide oversight and related services to all strategic players in the economy.

The Engineers Board of Kenya is a statutory body established under Section 3(1) of the Engineers Act, 2011. The Board is responsible for the registration of engineers and engineering firms, regulation of engineering professional services, setting of standards, development and general practice of engineering.

The Act allows only registered engineers to engage in professional engineering work and/or services. Registration is thus a license and the only way of ensuring that one is professionally qualified to practice engineering. To qualify for registration in the categories of professional engineer one has to acquire adequate professional competence and experience in areas specified by the Board.

One of the functions of the Board is to promote and provide opportunities and facilities for the study of, and for professional training in engineering. Thus, in order to help graduate engineers acquire sufficient professional competence within a period of two years, the Board has conceived and designed a structured professional training programme known as the Graduate Engineers Internship Programme (GEIP).

The programme is designed to enable young graduates to gain hands-on professional experience under close supervision by senior registered professional members of the profession. Under the Programme trainee engineers will undergo professional training, following training guidelines specific to one's field of engineering practice and on non-technical areas. GEIP is, therefore, intended to ensure that trainee engineers are equipped to pursue their professional careers with precision and confidence thereby becoming competitive and able to effectively play their roles in national development. GEIP is a structured internship programme for engineers.

Purpose of the Training Plans

The TP aim to equip graduate engineers, employers, and mentors with a clear and detailed guide on the training required for preparing graduate engineers for registration as professional engineers. This plan outlines the essential areas of knowledge, practical skills, and professional competencies that graduate engineers need to develop during their three-year training period. By adhering to this structured approach, graduate engineers will gain the technical proficiency, hands-on experience, and professional judgment necessary to meet the rigorous standards of the engineering profession.

For employers and mentors, the TP serves as a valuable resource in designing and implementing effective training programs. It provides a comprehensive framework that details key training objectives, performance benchmarks, and assessment criteria, ensuring that the training is thorough and aligned with industry best practices. This guidance helps employers and mentors offer targeted support and mentorship, creating an environment where graduate engineers can develop and excel. By bridging the gap between academic knowledge and practical application, the BTP ensures that graduate engineers are well-prepared to contribute significantly to their fields and progress toward becoming registered professional engineers.

Preparation of the Training Plans

The TP was developed through a collaborative effort involving a task force of experts from academia and industry. This approach ensured that the TP is both rigorous and relevant to the industry's needs. The collective expertise and experience of the task force members contributed to a robust framework designed to meet the high standards required for professional engineering registration.

List of Training Plans

The Board has developed Training Plans in the following disciplines:

- a. Agricultural and Biosystems Engineering
- b. Mechanical Engineering
- c. Civil Engineering
 - i. Water,
 - ii. Building & Structures
 - iii. Highways
- d. Electrical Engineering

Acknowledgement

The Engineers Board of Kenya (EBK) sincerely thanks Eng. R. M Wanyoike, Eng. Paul M. Gitiche, Eng. Judith Okebe and Eng. Kelvin Odhiambo for their invaluable contributions to developing the Training Plan for Electrical Engineering. Their expertise, dedication, and collaborative efforts have been crucial in creating high-quality training plans that align with Board's mission to enhance engineering standards and practices in Kenya.

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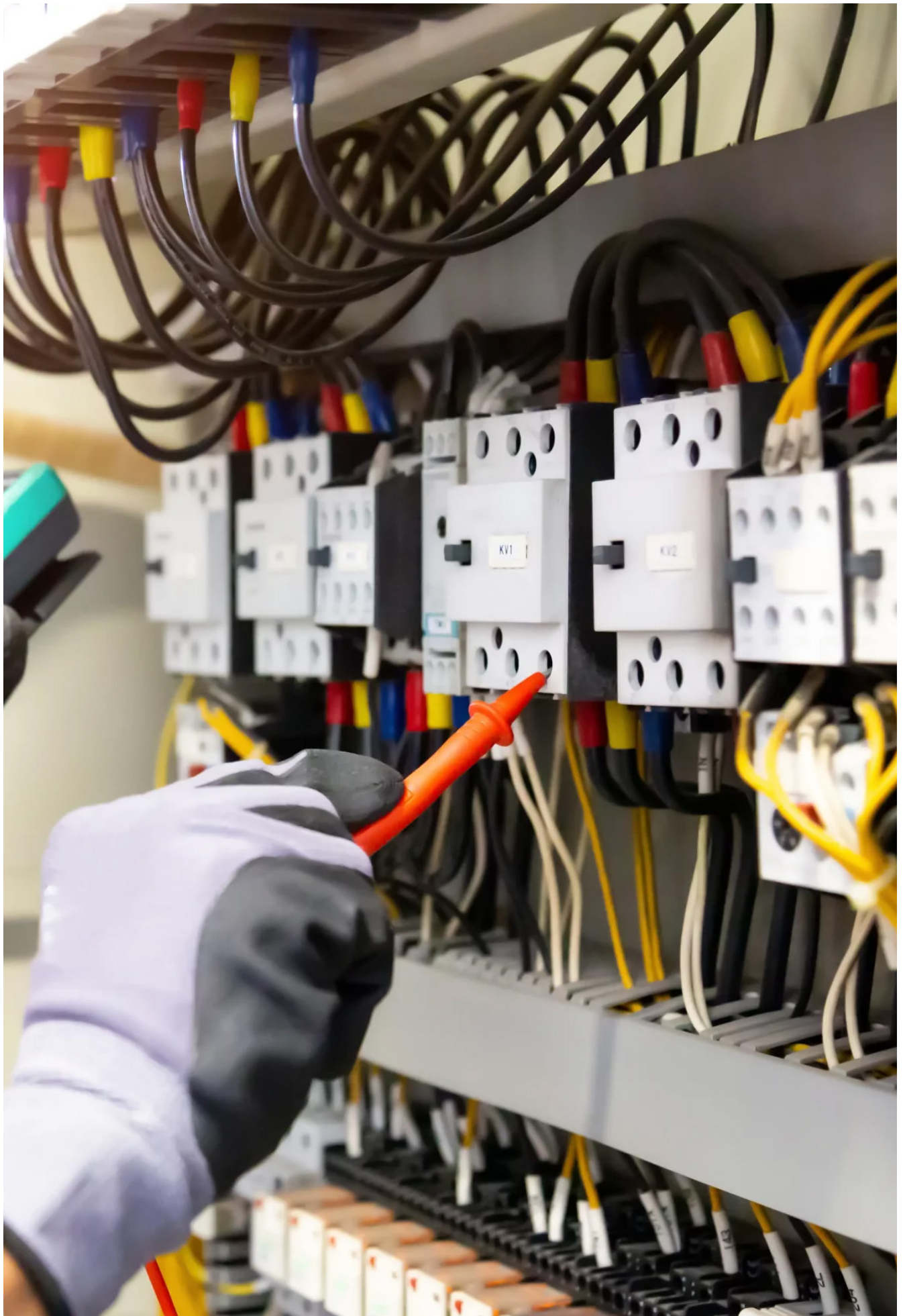
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ACRONYMS

EBK	Engineers Board of Kenya
GEIP	Graduate Engineers Internship Programme
OSHA	Occupational Safety and Health Act
TP	Training Plan



CHAPTER 1 – INTRODUCTION

1.1 Background

The Engineers Board of Kenya (EBK) is a statutory body established under Section 3(1) of the Engineers Act, 2011. The Board is responsible for the registration of engineers and engineering firms, regulation of engineering professional services, setting of standards, development and general practice of engineering.

According to Section 7(1)(o) of the Engineers Act 2011, the Board is mandated to establish a school of engineering and provide facilities and opportunities for learning, professional exposure and skills acquisition. Section(1)(r) mandates the Board to collaborate with engineering training institutions, professional associations, engineering organizations and other relevant bodies in matters relating to training and professional development of engineers.

The Government of Kenya has developed Vision 2030 whose main objective is to turn Kenya into a globally competitive and prosperous nation with a high quality of life by the year 2030. Vision 2030 is anchored on three key pillars: Economic, Social and Political. Each pillar has a number of strategies designed to deliver different components of the Vision. Engineers are expected to play a key role in the delivery of the vision, especially in the realization of the necessary infrastructure, the industrialization process, and development of new technologies led by the ICT sector. All these activities will be key serving as a catalyst for wealth creation in 'Kenya's quest to become a middle-income country by 2030.

Professional registration is practiced by various countries around the world to primarily protect the safety, well-being and interests of the public. In Kenya, professional registration allows one to 'offer his professional engineering services to the public for gain or reward or by way of trade or for employment in the engineering discipline or category in which he is registered.

There is therefore need to provide structured training for graduate engineers to enable them gain the requisite training and experience before transitioning to professional engineers.

Graduate engineers are expected to have several desirable attributes that may be expressed in terms of:-

- Technical competencies
- Non-technical competencies.

The technical competencies may be categorized into two distinct areas – the science of engineering, and the practice of engineering. The 'science of engineering is the set of mathematical and scientific tools used to solve engineering problems, while the practice of engineering is the recognition and formulation of a problem and its solution. Mentorship in these two key areas will enable the graduate engineers to enter the job market with greater confidence and apply for professional status within the shortest time possible.

Consequently, the Board has developed the TP to guide the process of structured of graduate engineers over a period of thirty-six months as required by the Engineers Rules 2019.

1.2 Objectives

The objectives of the TP are to: -

Provide structured training for the graduate engineers to enable them gain professional competencies in preparation for professional registration.

Guide mentors and supervisors on areas of training for graduate engineers.

1.3 Target users

This BTP is expected to be used by to graduate engineers and their supervisors and mentors in the discipline of Electrical and Electronics Engineering. It is intended to support a programme of training and experience incorporating good practice elements.

This guide applies to persons who have:

- i) Completed the education requirements by obtaining an accredited BEng-type qualification, or a Washington-Accord recognized qualification or through evaluation/assessment
- ii) Registered as Graduate Engineers by the Engineers Board of Kenya
- iii) Facilitate job rotation by employers

1.4 Programme Duration

The programme shall be conducted over a period of not less than 36 months. The estimated periods through the training cycle shall be as indicated in the matrix below (Table 1).

Table 1: Estimated duration of the technical training cycle

GEIP Training	Duration							
	Electrical Engineer	Building Services Engineer	Design and Construction Engineer	Operations and Maintenance Engineer	Industrial Engineer	Lecturer	Research Engineer	Average
Induction	1	1	1	1	1	1	1	1
Planning and Design	9	14	8	8	8	9	9	9
Implementation and Supervision	10	12	15	5	6	6	6	9
Contract Management	8	0	5	15	15	3	3	7
Operations and Maintenance	6	7	5	5	4	15	15	8
Soft Skills	2	2	2	2	2	2	2	2
Total	36	36	36	36	36	36	36	36

CHAPTER 2 – COMPETENCY STANDARDS

2.1 Professional Competence

A professionally competent person has the attributes necessary to perform activities within the profession to the standards expected in professional employment or independent practice. The Board's Competency Standard gives insight into the elements of competency necessary for competent performance that the graduate engineer is expected to demonstrate in a holistic way at the stage of application for transitioning from graduate to professional registration.

To meet the minimum standard of competence, the graduate engineers must demonstrate that they are able to practice competently in their practice area to the standard expected of a reasonable Professional Engineer. The extent to which the person can perform each of the elements in their practice area will be taken into account in assessing whether or not they meet the overall standard.

2.2 Expected Outcomes

The desired outcomes of the engineering activities undertaken by the candidate are classified under four (4) categories:

- Category I: Engineering Problem Solving;
- Category II: Managing Engineering Activities;
- Category III: Evaluation of Impacts of Engineering Activities; and
- Category IV: Upholding Professional Practice.

2.3 Category I Outcomes: Engineering Problem-Solving

This group of outcomes requires the candidate to apply appropriate theoretical and practical methods to identify, analyze and solve engineering problems.

2.3.1 Outcome 1: Identification and Definition of an Engineering Problem

This outcome is concerned with the discerning, understanding, contextualizing and judgement of a problem. Engineering problems require in-depth, fundamental, and specialized engineering knowledge that facilitates an analytical approach from first principles.

Engineering problems should be high level problems that require judgement in decision-making in uncertain contexts and include components parts or sub problems and should demonstrate the inclusion of one or more of the following:

- a) Solutions to engineering problems that are not obvious and require abstract thinking or originality in analysis to formulate suitable models.
- b) Engineering problems that are outside the scope of standards and codes.
- c) Engineering problems that require information from a variety of sources that is complex, abstract or incomplete.

- d) Complex engineering problems that involve wide-ranging or conflicting issues such as technical and engineering issues and interested or affected parties.

The engineering problem may be:

- i) A design requirement,
- ii) An applied research and development requirement
- iii) A maintenance requirement or
- iv) A problematic situation in an existing component, system or process.

2.3.2 Outcome 2: Design / Development of Engineering Solution

This Outcome 2 is concerned with the solution. The solution may be the design of a component, system or process or a recommendation of the remedy to a problematic situation. The design or developed solution will be evidenced by the following indicators: -

- i) Identified and analyzed design/ planning requirement and drawn up detailed requirements specification;
- ii) Synthesized a range of potential solutions to problem or approaches to project execution;
- iii) Evaluated the potential approaches against requirements and impacts outside requirements;
- iv) Fully developed design of selected option; and
- v) Produced design documentation for implementation.

2.3.3 Outcome 3: Application of Advanced Knowledge

Outcome 3 involves the comprehension and application of advanced knowledge including principles underpinning good practice, specialist knowledge, jurisdictional knowledge and local knowledge. Applicable knowledge includes:

- i) Specialist knowledge that has depth in the practice area and is underpinned by the fundamental knowledge of an engineering discipline or cross-disciplinary area. In-depth specialist knowledge in the practice area supports a fundamentals-based, first-principles analytical approach and develops models as required;
- ii) A working knowledge of interacting disciplines (engineering and other) to underpin teamwork; and
- iii) Jurisdictional knowledge that includes legal and regulatory requirements in addition to locally relevant codes of practice.

2.4 Category II Outcomes: Managing Engineering Activities

This group of outcomes requires the candidate to demonstrate technical leadership and effective interpersonal skills.

2.4.1 Outcome 4: Management of Engineering Activities

This outcome requires the candidate to demonstrate their capability to manage part or all of one or more engineering activities. Management is directed at achieving engineering results through the management of people, resources, processes, systems and money. Management involves:

- i) Planning engineering activities;
- ii) Organizing engineering activities;
- iii) Coordinating engineering activities;
- iv) Leading engineering activities; and
- v) Controlling engineering activities.

2.4.2 Outcome 5: Communication

The candidate is required to demonstrate their capacity to communicate effectively and clearly with others in the course of the engineering activities including:

- i) Communication: strategic, managerial, technical and wider impacts of engineering work.
- ii) Material communication: concepts, analyses, proposals and informative subjects.
- iii) The audience: peers, superiors, persons implementing designs and other work, persons in other disciplines, clients and wider stakeholders.
- iv) Communication functions

2.5 Category III Outcomes: Evaluation of Impacts of Engineering Activity

This group of outcomes requires the candidate to demonstrate recognition of an obligation to society, the profession and the environment, to make an evaluation of the outcomes and impacts of engineering activities and to make a commitment to abide by the Professional Code of Conduct.

2.5.1 Outcome 6: Recognition of Obligations to Society

The candidate is expected to be able to recognize and address the reasonably foreseeable social, cultural and environmental effects of engineering activities including:

- i) Recognition that protection of society is the highest priority
- ii) Due regard for the principles of sustainability
- iii) Direct, indirect, immediate and long-term effects of engineering solutions

2.5.2 Outcome 7: Legal and Regulatory Requirements

Meet all legal and regulatory requirements and protect the health and safety of persons during his/her complex engineering activities, including:

- i) Impacts and regulatory requirements

- ii) Regulatory requirements that are explicit for the context and are generally applicable.

2.5.3 Outcome 8: Judgement in Decision Making

Exercise sound judgement during execution of engineering activities. Judgement in decision-making involves consideration of:

- i) Diverse and wide-ranging risk factors.
- ii) Significant consequences in a range of contexts; and
- iii) Wide ranges of interested and affected parties with widely varying needs.

2.5.4 Outcome 9: Responsibility

The outcome requires the candidate to be responsible for the decision-making for part or all of the engineering activities. It encompasses responsibility exercised for outcomes of significant parts of one or more engineering activities.

2.6 Category IV Outcomes: Upholding Good Professional Practices

This group of outcomes requires a candidate to conduct uphold the code of ethics and conduct for engineers in undertaking engineering activities.

2.6.1 Outcome 10: Upholding Code of Ethics and Conduct

Conduct engineering activities ethically. Ethical behavior of no less than that defined by the Code of Conduct.

2.6.2 Outcome 11: Continuing Professional Development

This outcome requires a candidate to demonstrate a commitment to lifelong learning. And to undertake sufficient professional development activities to maintain and extend competence. Professional development includes:

- i) Planning own professional development strategy;
- ii) Selecting appropriate professional development activities; and
- iii) Recording of professional development strategy and activities while displaying independent learning ability.

CHAPTER 3 – PROGRAMME COMPONENTS

3.1 Electrical Engineers

Electrical engineering deals with the study and application of the theories of electricity, electronics, and electromagnetism, electrical engineers apply scientific knowledge to solve technical problems and develop products and services that benefit society. Electrical engineering encompasses electrical power generation & distribution, electronics, wired & wireless communications, robotics, computers, radar, ultrasonic, lasers, fiber optics, digital signal processing, analog and digital control systems among others.

Expected academic competence areas include elements of mechanical engineering, communication, instrumentation and control, power systems and electrical machines, analog and digital electronics. The most common areas of engagement of electrical engineers include: - building electrical services, instrumentation and control engineering, academics/research, manufacturing/production engineering, electronic and telecommunications engineering, and power engineering.

The main thrust of the professional training of Electrical Engineers is on knowledge, understanding of subject matters, analysis and methods so as to enable the trainees acquire sufficient specific skills/expertise to become reliable and competitive professionals in the field. Professional engineers must have analytical capabilities, adaptability to varying situations, ability to identify, rectify problems and design solutions, management capabilities, communication skills, ability to optimize resources and adherence to the professional ethics.

3.2 Training Plan

The Board has developed a training plan that graduate engineers in Electrical and Electronics Engineering will go through to acquire the technical and non-technical competencies (Table 2).

Table 2: Training Plan

S/No.	Training	Module	Objectives and Area to be Covered	Duration (Months)
1	Induction		• Introduction to systems and operations and preliminary training • Knowledge of organizational structures • Labour management and staff relations • Workplace place policy	1
2	Planning and Design		• Electronics and Telecommunication Engineering • Conceptual analysis of the specific network/ systems architecture/ network element; design requirements • Engagement with Clients or users for clarity on the above • Evaluation of the required statutory/regulatory/licensing requirement for specific design • Evaluation and understanding any relevant background information relating to the intended design works • Understanding the various network/ Systems architectures » Cellular systems: 2G/3G/4G/LTE/Core Network/BSS » Microwave Satellite (VSAT) systems » Optical Fiber systems » IP/Ethernet systems /WiFi systems » Routers, Switches and Multiplexers » WiMax Systems » CCTV systems	9

S/No.	Training	Module	Objectives and Area to be Covered	Duration (Months)
			- Cost benefits analysis in determination of the suitable solution - Understanding the various planning and design tools - Data collection by undertaking; - Field Surveys - Site surveys - Route surveys - Site/route investigation - Colocation options - Access requirements - Approval requirements by various entities - Safety and Risks Assessment - Network planning and design using the relevant tools - Network dimensioning to meet the performance criteria and future demands i.e scalability and expansions - Systems architecture feasibility studies, planning, design and BOQ preparations. - Preparation of technical solutions business cases for CAPEX justification and budgeting process. - Systems planning, forecasting and managing element additions and expansions. - Develop and evaluate systems performance criteria and measurement methods. - Dimensioning, redesigning and optimization of the existing systems to meet the performance criteria and demands. - Periodical review of systems, analyze the risks and OPEX - Costs benefits analysis for the business and coming up with mitigating solutions. - Research and preparation of systems evolution roadmap for business continuity, strategy and growth. - Systems feature testing, trials, activation and parameters standardization according to best practices and standards as defined by international standard regulators such as ANSI, ETSI, ITU-R, ITU-T, IEEE and RFC among others. - Periodical review of planning and design tools and recommendation for upgrades where necessary. - Preparation of RFP and new systems evaluation documents. - Evaluation of proposed new technologies and service providers. - Maintaining the planning and design databases and asset inventory. - Ensure compliance and adherence to in country and international regulatory requirements and standards. - Understanding and troubleshooting of various network components - Automation Networks - Troubleshooting, Designing and Installing Digital and Analog Closed Circuit TV Systems - Hands-on Data Communications, Networking and TCP/IP - Troubleshooting - Understanding and application of Fibre Optic Systems - Data Communications, Networking and Protocols for industry - Practical Troubleshooting & Problem Solving of Industrial Data Communications - Practical Troubleshooting and Problem Solving of Modbus Protocols - Practical Radio Telemetry Systems - Practical Routers & Switches - Fundamentals of Telecommunications and Wireless Communications - Practical Fundamentals of Voice over IP (VoIP) - Traffic Studies	
			- Switching philosophy, matrices, statistical multiplexers, digital switching, digital signal standard bit rates and interface signal levels - Network Planning - International Regulations - Application of ITU-T and the ITU-R Recommendations - Construction Practice - Evaluation of system availability and reliability on the basis of MTBF and MTTR - Establishment of maintenance programmes taking into - Mean Time between Failures (MTBF) and the Mean Time To Restore (MTTR) criteria. - Compilation and analysis of maintenance reports and fault statistics Efficiency Study - Internet of Things (IoT), - FTTX (Fiber To The X) - IC 61850	

S/No.	Training	Module	Objectives and Area to be Covered	Duration (Months)
			» Confirmation of budgets • Occupational Health and safety Industrial Power System Engineering • User requirements analysis and specification » Electrical Load Study/Sizing » Electrical Protection and protection setting » Motor drive mechanisms » Equipment Capacity and rating » End use performance simulations • Network apparatus design and Sizing » Conductor selection and sizing » Motor starting requirements. » Power quality considerations » Selection and sizing of substation equipment (site down transformers, medium voltage protection systems, circuit breakers e.t.c) • Engagement with utility company (Power supply capacity reviews and/ or provision) • Auxiliary power system planning (Backup power supply systems) • Generation of BOQs and Tender documents • Understanding engineer's codes and standards • Occupational Health and safety Power Generation, Transmission and Distribution Engineering • Load Planning • Network Planning • Inventory Management • Generating Station • Electrical Plant • Generator Specification • Substation Design • Protection • Power system studies • Transmission System Design • Distribution System Design • Customer Equipment and Service Requirements • Internal customer installations • Confirmation of budget • Generation of BOQs and Tender documents • Engineer's codes and standards • Occupational Health and safety Building Services Engineering • Understanding of electrical and data drawings and schematics • Modification of drawings and its procedures. • Preparation of shop drawings and accompanying documents • Familiarization with laws and regulations covering electrical design • Familiarization with the applicable design standards and codes of practice • Computer aided drawing office practice • Generation of cost estimates • Confirmation of budget • Familiarization with project stages • Design analysis and review	
			• Familiarization with different types of project implementation strategies • Preparation of specifications and design documentation • Confirmation of budget • Preparation of bills of quantities, tender documents and evaluation of tenders • Familiarization with local and international tendering procedure site supervision of project works • Product performance, reliability and maintenance • Product interaction with the environment and impact on society • Customer relations • Use of design software and generation of reports • Health and safety	

S/No.	Training	Module	Objectives and Area to be Covered	Duration (Months)
3	Implementation and Supervision	Module 4	• Identification of various types of cables • Colour coding for various types of cables • Ability to differentiate the different sizes and types of cables. • Safety • Cable termination/ Connection • Cable laying • Cable pulling • Estimation of cable lengths • Cable labeling and identification • Cable root verification • Cable root protection • Mechanical support • Equipment identification • Wayleave certification • Equipment Identification • Equipment verification • Contractor Engagement • Site handover • Project handover reports • Contract Administration • Equipment Installation • Pre-commissioning tests • Commissioning • Handover • Generation of reports • Switching • Sectionalization • Isolation • Testing • Measurements reading • Protection • Equipment sizing • User Training • Interpersonal skills • Project Management • Project Tracking • Progress reports • Site meetings • Quality assurance and quality control	9
4	Operations and Maintenance		• Preparation of Maintenance schedules • Familiarization with the use of maintenance manuals • Familiarization with the installation • Operational feature functions, understanding and interpretation. • Troubleshooting • Maintenance resource planning • Assess the system performance. • Carrying out preventive maintenance/Corrective maintenance. • Routine performance check and tests • Safety and Risk assessment • Stress testing • Develop standard operating procedures. • Risk mitigation plans/Back up plans • Routine testing • Environmental Impact Assessment • System Interactive Effect • System life cycle performance monitoring, assessment, and impact reporting. • Practical Trouble shooting and Problem solving. • Applicable standards and regulations • Data analytics and management reporting • Quality control	7

S/No.	Training	Module	Objectives and Area to be Covered	Duration (Months)
			- Occupational Health and safety » Understanding safety procedures » Ensuring there is the right protection i.e. PPE's. » Getting the right permits and formal approvals. - Regulation and licensing	
		Module 2	Energy and Process Management - Process and facility energy audit - Energy efficiency measurement and verification - Energy use performance tracing - Carbon reporting and accounting - Waste management - Water management - Process and facility energy optimization - Building automation and control - Equipment inventory management	
5	General Contract Management/ Administration		The Basics of Contracts - Parties to a Contract - Needs for Parties to a Contract - Classification of Contracts - Cost Plus Contracts - Cost Reimbursable Contracts - Lump Sum Contracts - The Unit Price Contract - Classification of Contracts based on allocation of the parties' roles and responsibilities/ rights in contracts - Contracts with Employers' Design - Design and Build/EPC/Turn-Key Contract - Design and Build, Operate and Transfer ("BOT") and Build, Operate and Own ("BOO") Contracts - Engineering Procurement Construction Management Contracts – EPCM - From Tender to Contract » Identification of Requirement » Procurement planning » Determining procurement method » Procurement tender processing » Preparation and publication of tender documents » Bid/proposal submission and opening » Bid/proposal evaluation » Contract award recommendation » Contract negotiations » Contract signing - Contract Effectiveness » Cost control » Preparation of payment certificates » Cost benefit analysis	Months
6	Soft and Non-Technical Skills	Module 1	Journey Towards Registration as a professional engineer- - Training and experience report - Summary of Training and Experience - Summary of Time Spent - Detailed report on training and practical experience - Organization chart of the current firm where the candidate is working	2
		Module 2	Communication skills for professional interview preparations - Goals of Communication - Importance of Communication skills - Preparing for interviews - The interview experience - Ways to improve communication skills - Questions to expect and to ask - Conclusion	

S/No.	Training	Module	Objectives and Area to be Covered	Duration (Months)
		Module 3	Code of ethics and conduct for engineers - The fundamental principles - The fundamental canons - Obligations to society - Obligations to employer or client - Integrity of an engineer - Disclosure of information - Conflict of interest - Compensation improper - Unfair means engineering practice - Recognition of proprietary interests - Cooperation, development and advancement of engineers - Advertisement or writing of articles for publication - Breach of code of conduct - Penalties	
		Module 4	- Report Writing skills, - presentation skills, - people management, teamwork	
		Module 5	The engineer's manual for practice in Kenya - The Engineering Profession in Kenya - Responsibilities and Privileges of Engineers under the Engineers Act, 2011 & Engineers Rules 2019	
		Module 6	- Lean Manufacturing and Operations - Principle of 6 Sigma	
		Module 7	Entrepreneurial skills - Operational cost optimization - Lifecycle cost tracking (ROI, IRR, NPV, Time Value of Money) - Profitability analysis and reporting	

Table 3: Duration of technical training

GEIP Training	Duration (Months)
Induction	1
Planning and Design	9
Implementation and Supervision	9
Contract Management	7
Operations and Maintenance	8
Soft Skills	2
Total	36





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