GERMAN – MONGOLIAN INSTITUTE
FOR RESOURCES AND TECHNOLOGY

# QUALITY MANUAL

**2024**

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## Contents

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## 1. Introduction to Quality Assurance at GMIT

The German-Mongolian Institute for Resources and Technology (GMIT) regards quality management as a multidimensional requirement. Quality management focuses on the university's core areas (Learning & Education, Research & Innovation, Knowledge transfer & Social responsibility), Management (leadership), and Administration in terms of effectiveness and efficiency (procedure). GMIT is committed to pursuing the highest standards in quality assurance for the benefit of its stakeholders. The interaction with the different stakeholders (e.g. students, parents, ministries, GIZ, DAAD, industry, media) is a central responsibility of the university's staff at all levels.

The organizational structure of GMIT is defined by the GMIT Statute. So far, two faculties, the Language Center, and six (6) administrative departments have been established (*REC-OD-002-v2.0-EN-Organizational structure-12 December 2022*). The Rectorate consists of the Rector, the Vice-Rector for Academic Affairs, the Vice-Rector for Research, and the Vice-Rector for Finance and Administration. The responsibilities of the members of the Rectorate are set forth in the GMIT Statute (*REC-PO-001-v1.0-EN-Statute of GMIT*).

The Board of Governors (BoG) has been established, and conducts meetings (in-person, hybrid, online) twice a year, since 2018 (*REC-PO-008-v1.0-EN-Bylaw of the Board of Governors*).

As a service-oriented institution of higher education, GMIT's quality approach is largely based on the motivation of its members, who strive for excellence in their respective areas of activity. In line with this commitment, GMIT's quality assurance aims to promote and support its core areas (mentioned above). Hereby, GMIT has been designing corresponding processes by developing and communicating various documents.

According to its mission statement (*QAD-PO-001-v1.0-EN-Quality Policy and cultural norms*), „GMIT is committed to serving Mongolia by educating highly qualified, socially responsible, internationally recognized engineers, and by advancing research and innovation for the benefit of society and in support of sustainable economic growth. It is guided by German excellence in science and technology, specifically engineering, and has a firm grounding in Mongolia's culture and heritage."

Learning & Education and Research & Innovation are characterized by strong practice orientation and dedication to fostering creative and critical thinking. This practice orientation, the promotion of professional and personal development of its students, the international character of the university as well as its adherence to European quality standards in education (e.g. "Standards and Guidelines for Quality Assurance in the European Higher Education Area" ESG) and applied research enables GMIT to contribute to the reform of Higher Education in Mongolia.

Quality Management in the Higher Education sector is governed by the Ministry of Education and Science (MEDS) and the Mongolian National Council for Education Accreditation (MNCEA). GMIT's strategic orientation is driven by the goals and objectives of the Rectorate as well as by the guidance of the Academic Senate and the Board of Governors. The core values of the German-Mongolian Institute for Resources and Technology are presented in the Statute of GMIT as well as in the Quality Policy. An effective Quality Management System (QMS) is a vital pillar for the German-Mongolian Institute for Resources and Technology (GMIT), as it is mentioned in the QMS scope of the university (*QAD-PO-002-v1.0-EN-Scope of Quality Management System*). The GMIT QMS provides a "Process Approach" according to ISO norms.

GMIT established a comprehensive QMS to ensure effective customer relations (student, parents, ministries, industry), effective academic operations, and reliable record-keeping & document management. This supports the high/positive customer satisfaction approach of the university. Over the last few years, GMIT developed its own Quality Management System by providing policies, procedures, forms, and other documents in English and Mongolian language. Furthermore, the university conducts internal and external audits, and carries out continual improvement of its activities. Currently the Master List of Documents counts more than 230 English documents, even more in Mongolian language.

Overall, GMIT aligns itself with the ESG, and therefore with the European Higher Education Area (EHEA) and the Bologna Process. GMIT identifies three distinct terms:

1) quality assessment revolving on quality measurement;
2) quality assurance focused on quality guarantee; and
3) quality management is driven by the objective of quality attainment.

GMIT favors quality assurance via external evaluation, both institutional and program accreditations, as a tool for internal dissemination of the culture of continuous improvement.

The Quality Manual of GMIT (*QAD-PO-006-v1.0-EN-Quality Manual*) set out the regulations, policies, and procedures around Study & Education, Research & Innovation, Knowledge transfer & Social responsibility, Management (leadership) and Administration at the German-Mongolian Institute for Resources and Technology (GMIT).

## 1.1. The Main Procedures in Quality Assurance

The Quality Management System at GMIT provides orientation to develop documents according ISO norms which comprise with following QA procedures:

### Document Control

All documents such as policies, procedures, forms, and other documents (e.g. work instructions, guidelines) are to be controlled and documented:

- all documents are to be approved for adequacy;
- documents are to be reviewed, updated, and re-approved as necessary;
- ensure identification of any changes and current revision status of documents;
- ensure that the relevant versions of applicable documents are available at MS Teams "Document library at GMIT";
- documents are available in English and Mongolian language. The documents are written understandably.

The Internal Monitoring Officer (IMO) reviews, the Academic Senate endorse, and the GMIT Rector approves all documents by resolution. A Master List of Documents (*QAD-FR-001-v1.0-EN-Master list of Documents*) is prepared and maintained by the Associate to Quality Assurance (AQA), Head of the Rectorate's Office. The Internal Monitoring Officer distributes and ensures proper control of documents. All external documents such as documents by the Ministry of Education and Science (MEDS) are appropriately distributed and controlled as well. Periodic validation of the availability of external documents is granted.

A documented procedure "Document Control Procedure" (*QAD-PR-001-v2.0-EN-Document Control Procedure)* and a "Master list of Documents" are to be maintained by GMIT.

### Record Control

There are many records maintained by GMIT and most of them could be used for analysis (e.g. exam results, student workload, questionnaire feedback, etc.), provide evidence of conformity to requirements, and provide improvements to processes.

GMIT records shall be,

- legible;

- readily identifiable and retrievable;

- properly stored - manually and electronically;

- with a specific retention period indicated in the Record Control Procedure;

- with disposal method (managed by the Quality Steering Committee and IMO).

A documented procedure "Record Control Procedure" (*QAD-PR-002-v2.0-EN-Record Control Procedure)* and a "Master List of Records" (*QAD-FR-004-v1.0-EN-Masterlist of Records*) are to be maintained by GMIT.

## Internal Audits and Internal Monitoring

Internal Audits are the main pillar of the successful quality assurance at GMIT. The Associate to Quality Assurance (AQA) acts as the coordinator for internal audits. The Internal Monitoring Officer (IMO) has to prepare an annual audit and monitoring plan (*QAD-FR-008-v2.0-EN-Annual Audit and Monitoring Plan*), and the annual audit schedule (*QAD-FR-011-v2.0-EN-Audit Schedule*). The Internal Monitoring Officer conducts the internal monitoring on the respective GMIT documents of the auditee according to the legal framework of Mongolia, one month prior to the scheduled audit. The Associate to Quality Assurance conducts the internal audits as "lead auditor" in cooperation with members of the GMIT's Internal Audit Team (certified by DAT Consulting, Mongolia). During the internal audit, the operation of the auditee according to the legal framework of Mongolia shall be addressed as well. The Internal Monitoring Officer observes the internal audit. In case of any identified deficiencies (outcome of the audit) a non-conformance report is filed by the lead auditor and the auditee. GMIT conducts internal audits based on ISO 19011:2017 and in accordance with the requirements of the "Institutional Accreditation Criteria" by the Mongolian National Council for Education Accreditation (MNCEA). In 2018, a Quality Steering Committee has been formed, chaired by the Associate to Quality Assurance. The Internal Audit Team is appointed by Rector's Resolution.

GMIT maintains a written procedure "Internal Audit Procedure" (*QAD-PR-003-v1.1-EN-Internal Audit Procedure),* an "Internal Audit Checklist" (*QAD-FR-009-v1.0-EN-Internal Audit Checklist*), and an "Internal Audit Report" (*QAD-FR-013-v1.3-EN-Internal Audit Report*) to ensure the effective implementation of internal audits.

Additionally, the IMO conducts "ad-hoc inspections" according to *QAD-PO-004-EN-Internal Monitoring*, if a complaint or urgent matter occurs. The findings will be discussed with the Rectorate and related staff members/students, and will be documented accordingly. Furthermore, records like annual plans to the Ministry of Education and Science will be monitored as well.

## Control of Non-Conformities

GMIT complies with the documented procedure to identify deficiencies to control the identified non-conforming services. Records should be maintained for the nature of deficiencies and actions taken to correct or eliminate them.

GMIT maintains a written procedure "Non-Conformance Procedure" (*QAD-PR-004-v1.1-EN-Non Conformance Procedure*) and a "Non-Conformance Report" (*QAD-FR-005-v1.0-EN-Non Conformance Report*) to ensure proper control of deficiencies.

## Corrective Action

GMIT complies with the documented procedure for implementing the corrections of deviations. Actions should be taken to minimize the cause of deviations.

GMIT maintains a written procedure "Corrective/Preventive Action Procedure" (*QAD-PR-005-v1.1-EN-Corrective and Preventive Action Procedure*) and a "Corrective/Preventive Action Form" (*QAD-FR-006-v1.0-EN-Corrective Action Preventive Action form*) to ensure deviation corrections.

## Preventive Action

GMIT determines actions to eliminate potential deviations or deficiencies that could happen in the future in order to prevent their occurrence. The following steps are to be taken, after reviewing:

Customer satisfaction outcomes;
Other stakeholder feedback;
Quality Policy, Quality Objectives, etc.;
Commitment to Quality.

## Management Review meeting

The Internal Monitoring Officer invites and leads the Management Review meeting. The lead auditor informs about the outcomes of the internal audit(s) to the GMIT Rectorate, Deans, Heads and related staff. Non-conformities and possible corrective actions will be discussed. GMIT maintains a written procedure "Corrective/Preventive Action Procedure" and a "Corrective/Preventive Action Form" to ensure the proposed improvements are materialized to control deficiencies of processes. Corrections and improvements of actions are to be discussed and reported at the Management Review Meeting (*QAD-PR-006-v1.0-EN-Control of Management Review Procedure).*

**International Program Accreditation: ESG**

The Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) contribute to the common understanding of quality assurance for learning and teaching across borders. The ESG are used by academic institutions as a reference document for internal and external quality assurance systems in higher education. Moreover, they are used by the European Quality Assurance Register (EQAR), which is responsible for the register of quality assurance agencies that comply with the ESG. The focus of the ESG is on quality assurance in higher education, including the learning environment and relevant links to research and innovation. In addition GMIT has policies and processes to ensure and improve the quality of its other activities, such as research and governance. According to ESG, is mainly a result of the interaction between teachers, students and the institutional learning environment. Quality assurance should ensure a learning environment in which the content of degree programs, learning opportunities and facilities are fit for purpose. The ESG have the following purposes: 1. They set a common framework for quality assurance systems for learning and teaching at European, national and institutional level; 2. They enable the assurance and improvement of quality of higher education in the European higher education area; 3. They support mutual trust, thus facilitating recognition and mobility within and across national border.

The ESG assessment (part 1: Internal quality assurance) asses:

1. Policy for quality assurance;
2. Design and approval of programs;
3. Student-centered learning, teaching and assessment;
4. Student admission, progression, recognition and certification;
5. Teaching staff;
6. Learning resources and student support;
7. Information management;
8. Public information;
9. On-going monitoring and periodic review of programs;
10. Cyclical external quality assurance.

Furthermore, GMIT strives to implement ISO 45001:2018 Occupational Health and Safety in the year 2025. Additionally, GMIT will apply for the MNS ISO 17025:2018 certification (related to the GMIT laboratories) after the establishment of the Multi-Purpose Building on campus in late 2025. This ISO standard specifies the general requirements for the competence and consistent operation of laboratories. ISO 45001:2018 and ISO 17025:2018 are Quality Management Systems (QMS) with a significantly different scope.

**Institutional Accreditation: The Ten Criteria of MNCEA**

The following vital criteria of the Institutional Accreditation – with all related areas and activities – have been taken into consideration:

Criterion 1: Mission and objectives;

Criterion 2: Design and quality assurance;

Criterion 3: Governance and legal framework;

Criterion 4: Human resources;

Criterion 5: Technological resources and facilities;

Criterion 6: Curriculum reformation;

Criterion 7: Student services;

Criterion 8: Research and innovation;

Criterion 9: Social services;

Criterion 10: The institution status at national and international level.

## 1.2. Definitions

### Quality
Quality is a term that has many definitions. Quality at GMIT means providing a working and studying environment that guarantees quality throughout the entire university – particularly within the framework of the institutional mandate in the areas of Study & Education, Research & Innovation, and Knowledge transfer & Social responsibility. To implement these concepts in practice, GMIT set up a customized Quality Management System (QMS) based on the requirements of ISO standards. This QMS takes into consideration the specific characteristics of a transnational university, and its affiliates (German partner universities, German and Mongolian ministries, DAAD and GIZ, etc.).

### Quality Assurance
Quality Assurance is an assessment tool designed to evaluate the adherence of the higher education establishments to pursuing quality and a process by which that quality could be improved. It requires both an internal and external assessment that are specific to establish sustainably the necessary culture of evaluation and regulation to improve quality.

**Quality Management**

The Process Map activities of GMIT that determine the quality policy, the quality objectives, and the responsibilities to implement them by various means such as quality planning, quality control, quality assurance, and quality improvement within the framework of the quality system.

**Accreditation/Certification**

It is a process leading to a judgment, certification, or official recognition of specific and predefined quality standards, e.g. ESG, MNCEA criteria.

## 1.3. Key Principles for Quality Assurance

The GMIT Rectorate, the academic staff, and the administrative staff have shared responsibilities in terms of following key principles:

a) Academic Freedom and Quality;

b) Centrality of Student Experience;

c) Transnational Approach;

d) Strategic Values;

e) Monitoring Core Processes;

f) Continuous improvement;

g) Efficiency and Transparency of Processes.

**a) Academic Freedom and Quality**

As a transnational university which is committed to the Magna Carta Universitas and Academic Freedom, GMIT's academic staff enjoys a high degree of autonomy within the institution. As an institution of scientific teaching and learning, GMIT adheres to the principle of academic freedom and is committed to great academic and ethical practice in teaching, research and administration. In addition to that, there are additional principles that guide the university's activities.

GMIT's corporate culture is based on consensus, not hierarchy. On the one hand, academic staff shall not be streamlined with the quality goals of the university, on the other hand, quality related duties and responsibilities shall be integrated in the job descriptions of all GMIT staff.

Most importantly, GMIT is dedicated to high quality standards. On the one hand, GMIT ensures that students receive a quality education. This starts with a careful design of the degree programs by involving different stakeholders in the process towards employability. At the same time, by engaging faculty with experience in industry, by including a mandatory internship in the curricula, and by encouraging research at GMIT – especially including students in research projects. GMIT

promotes both, the unity of theory and practice and of teaching and research. This is supported by a regular evaluation and revision of the study programs, based on peer review, e.g. by reports of 'fly-in faculty', by the study program evaluations, and by student surveys. In addition to that, GMIT pays attention to the recruitment of qualified staff and to staff development, and monitor the teaching performance with the help of student evaluation and peer review, e.g. sit-in by colleagues (*ACA-FR-005-v1.2-EN-Peer Teaching Observation Form*).

## b) Centrality of Student Experience

The relevance and effectiveness of quality assurance mechanisms are measured by their impact on student experience. The process of Learning and Education put a focus on student's success, their well-being, and their preparation for a successful professional career path. GMIT promotes a quality-based admission procedure for its Bachelor's programs based on qualification requirements (600 GEE scores in mathematics and physics or chemistry or biology, and C1 proficiency in English language) as well as on GMIT-specific entrance interviews (inspired by TU Darmstadt). Furthermore, GMIT ensures a close supervision via small class sizes and a very favorable student-faculty ratio, offers tutorials, internships and field trips, and provides practice-oriented education as mentioned above. At the same time, GMIT encourages its students to meet the standards for academic performance. If this is not the case GMIT discontinue students' enrolment.

## c) Transnational Approach

Although one of the main objectives of GMIT certainly is to enhance academic and cultural exchange between Mongolia and Germany, it promotes cooperation and diversity that goes beyond this transnational outlook.

Internationality has been an integral part of the GMIT concept since the very beginning as the university follows European Quality Standards in Education (ESG), and uses curricula that combine German engineering expertise and international research with Mongolian needs that are, in many ways, also global challenges. Although currently, GMIT's student body is almost 100% Mongolian, GMIT is open to all nationalities, ethnic backgrounds, local origins, and religious beliefs. GMIT students are from Ulaanbaatar and from other Aimags. GMIT's staff includes colleagues from Germany, South Korea, Russia, Canada and the United States, and 85% of the faculty and almost 40% of the administrative staff were educated outside Mongolia and/or has international work experience.

Furthermore, GMIT understands interconnectedness / integration as a close cooperation with partners in the public and private sector, as well as with the partner universities in Germany and Mongolia. Stakeholders in industry are partners in training, especially providing internship placements, but increasingly also in research. GMIT contributes to the capacity development of

the companies' current staff by providing training courses including engineering, English and business communication.

## d) Strategic Values

The university strategy („6 pillars of GMIT") serves as a normative framework for quality management. The normative basis is concretized in the shared values of the University Development Plan (*REC-OD-001-v1.0-EN-University Development Plan 2025*), the Statute of GMIT, and the Code of Ethics (REC-PO-010-v1.0-EN-Code of Ethics for Lecturers and Staff of GMIT). The six (6) pillars are:

- – Teaching and Learning;

- – Research;

- – Continuing Education and Scientific Services;

- – Governance and Management;

- – Campus and Infrastructure;

- – Human Resources.

In these areas, GMIT uses the SWOT analysis method to determine and analyze both external and internal issues that are relevant to its purpose and strategic direction. The SWOT analysis consists of a description of the strengths and weaknesses of the organization's internal environment (e.g. values, culture, performance, infrastructure, resources) and the opportunities and risks of the external environment.

GMIT's approach to quality is based on the awareness of its members having diverse backgrounds (nationality, gender, age, sexual orientation, disabilities, etc.). The university measures quality by the degree of inclusion and well-being of its heterogeneous members (students, and staff) as well as by strong protection against discrimination (*REC-PO-015-v1.0-EN-Diversity Policy of GMIT*). GMITs approach to quality is based on its commitment to social responsibility (individual and societal) and sustainability in all its activities (Learning & Education, Research & Innovation, Knowledge transfer & Social responsibility, Management, and Administration).

GMIT implemented the function of a Diversity Liaison Officer in 2017. The Diversity Liaison Officer is in charge of three main duties: a) to ensure gender mainstreaming through the student recruitment process and the staff management is in line with gender equality; b) to report to the Ministry of Education and Science (MEDS) on gender analysis including equal opportunities in main process (faculties, departments and research); c) to advise the Academic Senate, the Scholarship Committee, and the Ethics Committee according equal opportunities of men and women.In 2021, GMIT was awarded as the best "Gender conscious organization" in Mongolia by the Mineral Resources Women's Association and the Ministry of Mining and Heavy Industry.

### e) Monitoring Core Processes

According to its Process Map, GMIT focuses on the development of its three core areas: Learning & Education, Research & Innovation, Knowledge transfer & Social responsibility. The overarching goals of GMITs approach to quality are to monitor the relevant factors in terms of input, process and output/outcome as closely as possible. Additionally, the support processes and management tasks are continuously improving the conditions for processes in the core areas.

GMIT implemented the position of an Internal Monitoring Officer (IMO) in 2017. The Internal Monitoring Officer is conducting quality, legal, health & safety, and administrative tasks, and is in charge of three main duties: a) to ensure that the quality assurance processes are established, implemented and maintained, and that Internal Audits are conducted according Annual Audit and Monitoring Plan, incl. Management Review meetings. Additionally providing guidance according the Internal Monitoring procedures; b) to report to the Rector on GMIT's quality performance and to provide guidance where improvements are needed; c) to ensure that everyone at GMIT is aware of quality requirements (quality of degree programs, quality of research activities, and quality of administrative support processes, etc.).

### f) Continuous improvement

GMITs' approach to quality aims to achieve continuous improvement (promoting performances and optimizing the chances of future successes, rather than judging previous achievements or failures). Therefore, GMIT does focus on the advice, support, and assistance. A data-based monitoring of indicators and of the variables influencing quality in the core areas is used to further develop quality standards and requirements within the core processes.

### g) Efficiency and Transparency of Processes

The GMIT Rectorate and the IMO ensure consistency and articulation of the processes to avoid potential deviations of policies and procedures. Similarly, the transparency of the objectives of evaluations and their uses is equally important. Via internal audits and Management Review meetings, faculties and administrative departments are evaluated. These assessments are used to identify areas for improvement and to communicate best practices within the organization.

## 1.4. Awareness of QMS

All GMIT employees should have basic knowledge of the quality policy, the quality objectives and the documentation (Quality Manual, Master List of Documents, Master List of Records, etc.). Quality awareness programs have to be conducted by using competent resource personnel either internal, or external (IMO, AQA, MEDS, MNCEA, GIZ, DAAD, etc.).

## 2. Goals of Quality Management at GMIT

GMIT quality management serves to strengthen and further develop high quality standards in its three core areas in accordance with Mongolian and international standards. It also serves to ensure that the core areas receive the necessary support from the Rectorate, faculty and staff.

The quality goals and areas of action are in accordance with the Statute (*REC-PO-001-v1.0-EN-Statute of GMIT*) and the Quality Manual (*QAD-PO-006-v1.0-EN-Quality Manual*), incl. the fundamental policies and the quality assurance procedures (document control, record control, internal audit, non-conformities, corrective/preventive actions, management review).

GMIT's quality assurance aims to support individual members (in particular teaching faculty, students, and staff). It supports their decisions and actions at all levels of the university.

The Quality Management System of GMIT and the necessary procedures have a high priority for the Rectorate and for the Board of Governors (BoG).

Following issues are describing important components of the GMIT QMS:

- quality standards (quality of the input, quality of the process, quality of the output respectively quality of the expected learning outcomes);
- organization of the QMS;
- management responsibilities for quality and quality assurance;
- teaching performance of professors and lecturers (incl. English proficiency);
- organization in the field of teaching and study;
- organization in the field of research;
- organization of the examination procedures;
- data gathering regarding the improvement of the degree program;
- data gathering regarding students and alumni.

Quality management aligns with the mission statement and the profile of GMIT. These aspects are decisive for the definition of the quality standards (learning outcomes) of the Bachelor's and Master's degree program as well as the qualification of the graduates. Quality of a degree program means and requires quality of the input, quality of the process, and quality of the output respectively quality of the expected learning outcomes.

The <u>output quality</u> is evidence by means of the coherent substantiation of the expected learning outcomes respectively the required goals of graduates' qualification. The description of the expected learning outcomes is geared to the requirements of knowledge, skills and competence of the future relevant professional experience and to the aimed contribution to the personality development.

The <u>input quality</u> is to recognize the kind of the level, in which the available resources are adequate in order to reach the expected learning outcomes. Resources mean human resources as well as premises, equipment and facilities (campus infrastructure). The quality of the different degree programs depends decisively on the academic staff. Therefore, GMIT is seeking to ensure highest standards of staff development and continuous professional development of the professors / lecturers as part of the scope of a comprehensive quality assurance.

The <u>process quality</u> is to recognize the kind of level, in which the organization of the process of Learning & Education is adequate in order to reach the expected learning outcomes. The quality of this process is to see in the consistence, the coherence, the efficiency and the effectiveness of the concept of the degree programs as well as the organization, the implementation and the realization of the degree programs, the procedures and the processes of study and examinations including also support procedures for the students. While responsibility for quality enhancement and quality assurance is a common effort for all members of GMIT, additional stakeholders (e.g. GIZ, DAAD) are providing additional contributions.

GMIT professors and lecturers and also the students hold responsibility for obtaining and ensuring the realization of intended high quality learning outcomes. The Deans, the Program Coordinators and the Heads of Department are responsible for designing and implementing effective support processes and establish an encouraging environment to enable the high quality of the degree programs.

<u>The GMIT Quality Assurance Process includes:</u>

- development and publication of explicit intended learning outcomes;
- careful attention to curriculum, program design and content;
- availability of appropriate learning resources;
- formal approval procedures of degree program by the relevant Mongolian educational authorities, e.g. Ministry of Education and Science (MEDS), Mongolian National Council for Education Accreditation (MNCEA);
- monitoring of the progress and achievements of students;
- regular periodic reviews of the degree programs (including external panel members);
- participation of students in quality assurance activities;
- regular feedback from graduates, employers and other stakeholders.

Essential for the quality assurance process are the needs and expectations of interested parties (*QAD-PO-005-v1.0-EN-Needs and Expectations of interested Parties).* GMIT identified and categorized its interested parties in order to ensure the continuity and sustainability of educational services in accordance with the requirements of the Mongolian law and ministry decrees.

This Quality Manual is published in English and Mongolian language on the GMIT website. In this manner the implementation and consolidation of systematic procedures in the field of quality management will ensure the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG). The precise description of the core processes in the area of Learning & Education, Research & Innovation, and Knowledge transfer & Social Responsibility is an important element of quality management.

# 3. **The Process Map at GMIT**

## 3.1. PDCA

The Plan-Do-Check-Act (PDCA) cycle, also known as the "Deming Wheel" or "Deming cycle", is an iterative method for continual improvement of processes, products, or services. It is a loop rather than an end-to-end process. The goal is to improve on each improvement in an ongoing process of learning and growth.

PDCA in higher education institutes (HEI) is a method used to improve and optimize performance by continuously controlling activities in the educational service process. That way, it breaks out of stagnancy and transition to a system of continuous improvement. The PDCA cycle consists of four steps:

**First step (Plan):** A problem should be identified and the processes involved evaluated. The scope needs to be well established and the roles and responsibilities of each person defined.

**Second step (Do):** Put the plans and strategies from the previous step into practice. The execution must be in accordance with what was planned, and it is mainly up to the Rectorate to ensure the fulfillment of any action plan previously established.

**Third step (Check):** Stage in which the progress and results already achieved is verified.

**Fourth step (Act):**

Also known as the "correction step" – it is time to analyze the potential failures and maintenance needs, identify points for improvement, inefficiencies, and procedural failures, and adapt intervention measures in this sense.

*Image 1: PDCA cycle at GMIT*
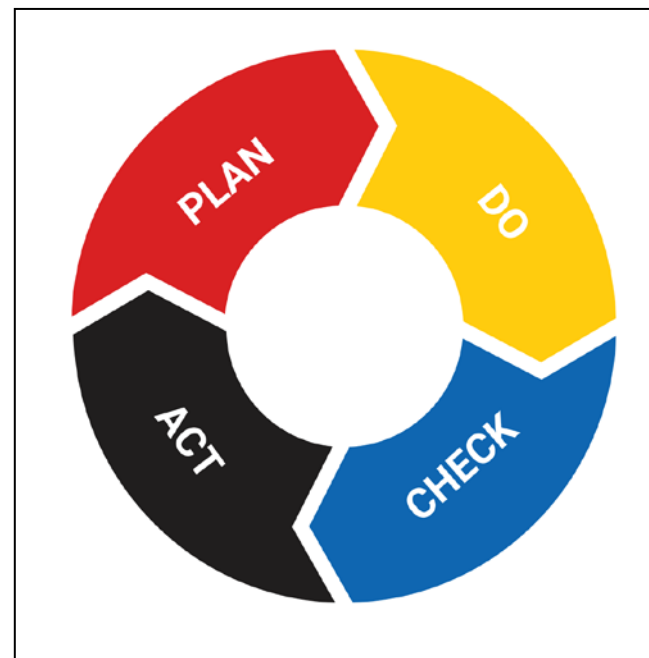
## 3.2. The Process Map
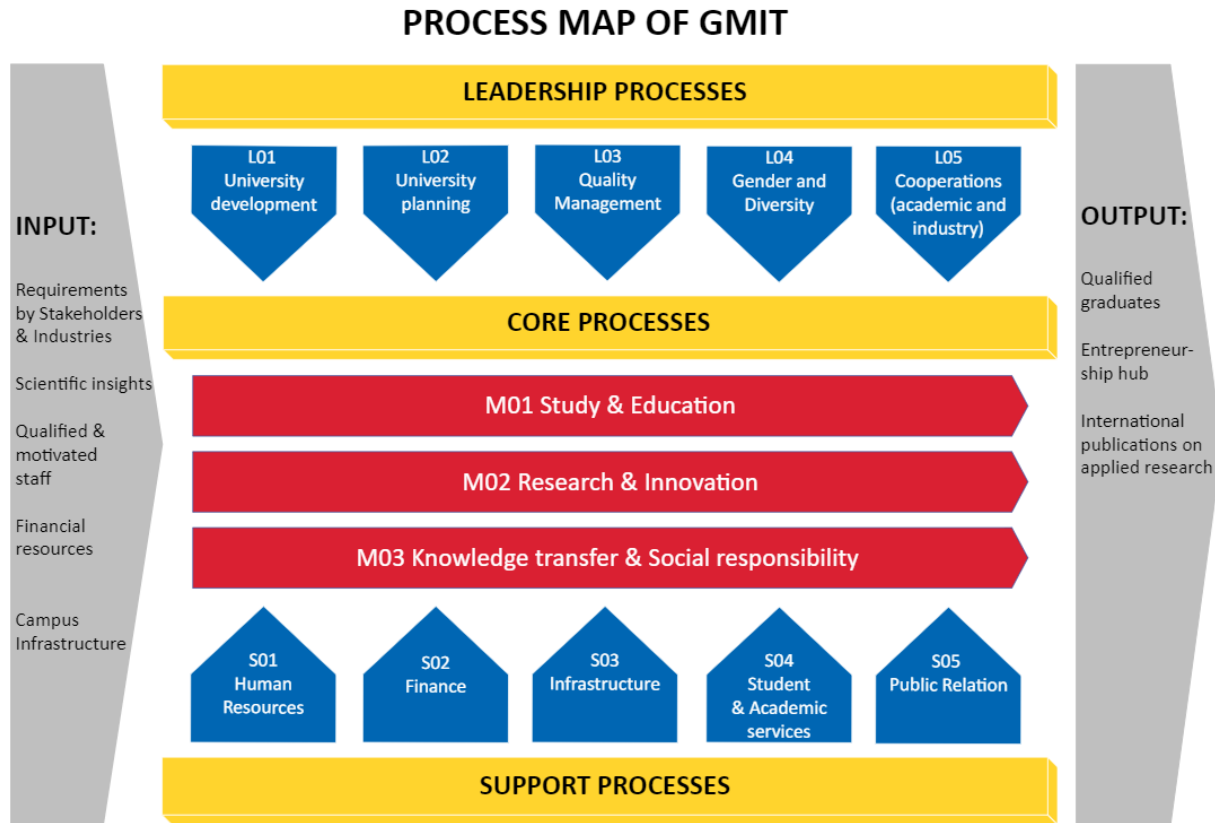


*Image 2: Process Map of GMIT*

This process map is one way to provide a high-level view of the processes that displays GMIT's educational management system and show how it interacts. This approach was discussed and developed by the GMIT Rectorate, with support of the Quality experts from the Rectorate's Office, in 2022.

In order to keep the visual free from an overload of information, the PDCA cycle hasn't been embedded into this graphic. Please be aware, that PDCA is the driving force behind the GMIT process map.

# 4. Learning & Education as a Core Process

According to the GMIT Process Map, GMIT is focusing on following core processes:

- Learning & Education I: Bachelor's and Master's Degree Programs;

- Learning & Education II: Post-Experience Degree Programs (MBA), and Ph.D Program;

- Research & Innovation I: Knowledge Production and Dissemination;

- Research & Innovation II: Development of Faculty and Early-Stage Researchers;

- Knowledge transfer & Social Responsibility I: Science to Practice Transfer
   (e.g. public lectures, consultations, lectures, expert reports);

- Knowledge transfer & Social Responsibility II: Professional Development
   (e.g. Non-Degree Programs, language training).

These core processes are framed and supported by the university's management and administrative processes.

GMIT is a place of knowledge and competencies which is aligned with these core processes and is enriched by the university's management and administrative processes.

## 4.1. Learning & Education I: Bachelor's and Master's Degree Programs

### 4.1.1. Characteristics at GMIT

Learning & Education as a core process is characterized by different goals and requirements. Quality in teaching as a core area is directly related to teaching-learning situations (faculty-student interaction). Developing the quality of teaching and learning as a core process is oriented towards learning objectives, learning outcomes, and examinations. These components are integrated into GMIT quality measures.

In the area of teaching, individual faculty, followed by the Program Coordinators and Deans, are primarily responsible for developing the modules and the study programs quality. They are supported by various quality assurance measures in the area of student and teaching-related administration. The Academic Senate, the Senate Committee for Education and the Department of Academic and Student Affairs are responsible for supporting the teaching and the study program development (with support by DAAD and other stakeholders). Formal responsibility for quality assurance and quality development is vested in the hands of the Rectorate.The Vice-Rector for Academic Affairs is responsible for studies and for academic affairs, and coordinates

in coordination with the Rectorate the students' involvement (via representatives) in the university's quality assurance and development

The comprehensive development of teaching quality will generate impulses on several levels: faculty and student competencies, lectures (including examinations), written theses, co-curricular offerings, degree programs, and the university as a whole. Accordingly, quality development addresses both the actions of those responsible for teaching and the organizational framework for ensuring high-quality academic studies. The quality of teaching and examination performance is also measured by barrier-free access to learning opportunities and materials. The university is committed to accommodate any persons with special needs (inclusion as part of the gender diversity policy) as far as possible, in order to prevent them from suffering disadvantages in their studies and examinations for health, psychological or financial reasons.

At the level of lectures and written theses, feedback is provided via module evaluations, target agreements (Vice-Rector for Academic Affairs, Deans, Program Coordinators, and lecturers), class-observations and further assurance-of-learning processes. After consultation with faculty, feedback is linked to follow-up activities (e.g. curriculum development workshops with DAAD). Feedback processes and aggregated data also provide the Rectorate and committees with valuable information (e.g. the assessment of modules evaluations serves as a basis for developing modules in the area of higher education teaching methods and skills).

At the level of the university, the quality of teaching is also influenced by the structural and cultural framework of academic studies (e.g. small-scale classes, field trips, internships). Such framework conditions are included in quality development. The review of teaching activities will contribute to critically reflecting on potential discrepancies between the intended and the implemented learning culture.

At GMIT, modules can include different forms of teaching and learning, such as lectures, recitations, laboratory sessions, field trip, study projects, or internships. In line with the practice-orientation of GMIT are the Engineering Projects at the very beginning and the very end of the Bachelor programs. These projects promote not only a very interdisciplinary professional approach, critical thinking and problem-solving skills, but also team work, time management, responsibility of the students for their project result and presentation skills.

The purpose of the module examination is to assess if the student has achieved the learning outcome of the module, the knowledge, skills and competencies as described in the module description. Most modules conclude with an examination. In these cases, the academic performance during the module accounts for 30% of the final grade, and the module examination for 70% of the final grade for the module. In other modules, the academic performance during the semester accounts for 100% of the module grade, e.g. laboratory modules, and academic writing. Some of these modules are not graded but assessed as pass or fail, e.g. Engineering Project, or the Engineering Summer School.

Module examinations can be written examinations (minimum 60 and maximum 180 minutes); oral examinations (minimum 15 and maximum 60 minutes per student); oral presentations; seminar papers; essays; projects; posters; reports; thesis and colloquium (defense of thesis). The kind of examination is part of the module descriptions.

The Academic Year has four examination periods, three weeks at the end of the semester following the lecture period and one week before the beginning of each semester (published in the Academic Calendar, accessible on the GMIT website). The examination schedule is prepared by the Department of Academic and Student Affairs in agreement with the faculties approved by the Examination Board and announced one week before the beginning of the examination period. Participation in the first module examination is mandatory for the students. A registration for this examination is not necessary. Failed examinations can be retaken twice, the first retake in the retake period of the following semester and the second retake in the next following exam period. The student has to register for the retake examinations.

The co-curricular engagement of students (e.g. in the context of student clubs) is highly valuable for the students at the GMIT Campus University. It also contributes significantly to the development of leadership skills and transdisciplinary methods (in particular students' personal and interpersonal skills). Developing the quality of co-curricular activities is supported by targeted initiatives to more strongly integrate transversal issues – diversity and inclusion, responsibility and sustainability – at GMIT.

### 4.1.2. Responsibilities and Measures at GMIT

The lectures / modules are evaluated at regular intervals. Evaluation results are made available in a suitable form to faculty, students, Program Coordinators, Deans, and Rectorate. If action is required, the responsibility lies primarily with faculty. Secondarily, the Program Coordinator or the Vice-Rector for Academic Affairs is responsible for monitoring the changes derived from module evaluations. Quality assurance procedures for the supervision and assessment of written theses are developed and implemented in the degree programs.

Internal and external procedures are used to further develop degree programs (e.g. student focus groups and graduate surveys, periodic peer reviews, and international program accreditations). The study program development is supported by the Academic Senate and the Vice-Rector for Academic Affairs (e.g. curricula development, general management). Modules and written theses are reviewed with regard to their contribution to the attainment of the degree program objectives, based on which student performance is analyzed accordingly. Measures for module and degree program development are deduced from such analysis and implemented. The tasks of the Program Coordinators regarding the development of program quality are clearly defined.

At GMIT, regular meetings are held at the Faculty Council to monitor the quality and quality development of the degree programs (*retaining documented information: meeting minutes*).

Two Senate Committees, one for Education, and one for Research are established at GMIT. The Senate Committee for Education is chaired by the Vice-Rector for Academic Affairs; the Vice-Rector for Research is the Chairman of the Senate Committee for Research. The Committees meet once a month (*retaining documented information: meeting minutes*). The Committee for Education has drafted the Admission and Enrolment Regulations, the General Study and Examination Regulations, the Internship Regulations and the Scholarship Regulation of GMIT, and their updates. The Senate Committee for Research has drafted the GMIT Research Strategy 2025 and the Research Policy, provided information on research funding opportunities, and compiled ongoing and completed research projects at GMIT.

GMIT established the framework for designing teaching at the level of the degree program (e.g. lectures, seminars, workshops). Quality assurance measures are taken by the university's faculties, the Senate Committee for Education and the Academic Senate, e.g. curricula developments, examination organization, written theses). The labs and the lab assistants provide specific support in developing teaching quality along various dimensions.

The Academic Senate convenes, regularly, once a month (*retaining documented information: meeting minutes*). The Academic Senate consists of the Rectorate (incl. the Vice-Rector for Finance and Administration as a non-voting member), all professors, a representative of lecturers, the Head of Department (HoD) in charge of Academic and Student affairs, the President of the Student Council, and the Diversity Liaison Officer.

The development and revision of the study programs have been a joint undertaking of the GMIT faculties in strong cooperation with DAAD, German Partner universities, GIZ, and Higher Education experts.

The faculties have appointed Program Coordinators for each degree program. The Bachelor's programs in Raw Materials and Process Engineering, in Environmental Engineering and in Industrial Engineering program are assigned to the Faculty of Raw Materials and Environment Engineering, while the degree programs in Mechanical Engineering, in Mechatronical Engineering and in Electrical Engineering are the responsibility of the Faculty of Mechanical and Electrical Engineering. The Master's program is assigned to the newly created "Graduate School" which is in close contact to the respective Deans of the faculties. The Language Center (LC with its strong focus on language training for students and staff, as well cultural events, plays an important role in conducting the degree programs. Didactics is integrated into the newly created organizational unit Faculty Development and Online Learning Center. The Department of Academic and Student Affairs administers all degree programs, coordinates the examinations, provides the academic schedule for the semester, and administers the student files.

To organize and recognize the internships for GMIT students, an interdepartmental Internship Committee is appointed. In line with the Internship Regulations, the responsibility for internships is with the faculties.

Due to the limited number of degree programs and human resources capacity, the Academic Senate has decided to establish one Examination Board only. The Board works according to the tasks outlined in the Examination Regulations (*ACA-PO-013-v1.1-EN-General Study & Exam Regulations*). Decisions were published in the Exam Board Bulletin. Based on the approved Study and Examination Regulations, the Examination Board is to be appointed by the faculties. Decisions about the admission of students to the Master's, Bachelor's and Basic Engineering Program have so far been made by the interdepartmental Admission Committee (*ACA-PO-001-v2.3-EN-Admission and Enrollment Regulations*). Decisions relating to the faculties and the Language Center (LC) are made in the Faculty Meeting (by the Faculty Council) which is held once a month (*retaining documented information: meeting minutes*). Although there is no provision in the GMIT Statute, the Rectorate has established a Deans Meeting that convenes once a month (*retaining documented information: meeting minutes).* Furthermore, a Heads Meeting, a fortnightly meeting of the administrative Head of Departments (HoD), takes place. The Heads Meeting is chaired by the Vice-Rector for Finance and Administration (*retaining documented information: meeting minutes*).

Since its early beginnings, GMIT students have had a voice in how the university functions. In Spring 2015 the Student Council was firmly established, and elections are held each semester. The Student Council represents BEP students, all Bachelor Students (Freshman, Sophomore, Junior, and Senior) and Master's students. The student representatives are strongly involved in the Examination Board, the Admission Committee, the Academic Senate, the Senate Committee for Education, the Quality Steering Committee, and the Scholarship Committee.


All regulations related to the degree programs are available on the university website (www.gmit.edu.mn) as well as in the Campus Management System and on MS Teams (intranet). The names of participants, attendance, grades as well as literature and assignments for the modules are provided in the Campus Management System (CMS) and MS Teams. Students can at all times follow their academic performance. At the moment, transcripts of records are provided by the Department of Academic and Student Affairs.


## 4.2. Learning & Education II: Post-Experience Degree Programs (MBA), and PhD Program

### 4.2.1. Characteristics at GMIT

The process of the post-experience degree program (MBA) and Ph.D is characterised by an orientation on German academic standards. Currently, GMIT doesn't offer a MBA program, but if

so, the quality development tasks are directly evident in teaching-learning situations (i.e. faculty-student interaction). These tasks are oriented towards the constructive alignment of learning objectives, learning opportunities and examination performance. These three components are incorporated in quality development measures. The quality of these learning opportunities is shaped indirectly by an extensive network of support and governance processes.

According to the Study and Examination Regulations of the former MBA program, teaching quality requires impulse control on different levels: faculty and student competencies, modules and lectures, supervision of students and their theses. Correspondingly, quality development focuses on the actions of those who are responsible for Learning & Education as well as on the organizational framework for ensuring high-quality postexperience studies. At the level of the modules, feedback is generated (e.g. by means of module evaluations) and linked to follow-up activities (e.g. program adjustments). Feedback processes and aggregated data provide information for the Graduate School to the Vice-Rector for Academic Affairs and to the Associate to Graduate Studies. The respective Program Coordinator monitors and develops the quality of post experience program across the university through the Graduate School. In addition to internal measures, external quality development activities (e.g. accreditations or rankings) are also pursued for any post-experience study program.

### 4.2.2. Responsibilities and Measures at GMIT

Professors and lecturers are evaluated at regular intervals. Evaluation results are made available in suitable form to faculty, students, Deans, and Rectorate. If action is required, the responsibility lies equally with the Program Coordinator, who initiates and monitors the changes derived from evaluation and with faculty, who are responsible for implementing those changes when the study program is next delivered.

A support structure for the MBA teaching quality and its development shall be implemented by the Graduate School. Language support for online and hybrid forms of teaching is offered by the Language Center (LC). In 2023, GMIT established a Faculty Development and Online Learning Center for didactics and technical support.

At the level of the university, new executive education offerings, as well as study program contents and teaching methods, are discussed among the Rectorate and Deans. The implementation of new MBA study programs has been scheduled by the GMIT Rectorate.

GMIT should be able to demonstrate that it meets the qualitative requirements for carrying out an internationally recognized Ph.D study, and is already granted to award Ph.D degrees by the end of 2026.  The prerequisite for offering Ph.D program will be research activities, qualitative research projects and at least one research-oriented master program, The Ph.D-theses based on qualitative supervision by professors should have a high internationally recognized quality.

# 5.    Research & Innovation as a Core Process

## 5.1.  Research & Innovation I: Knowledge Production and Dissemination

### 5.1.1.  Characteristics at GMIT

Research as the systematic search for new knowledge is largely based on individual researchers, their interests, and their scientific communities. It cannot be steered in any specific direction but can only be supported by providing appropriate framework conditions and freedom. Research is mainly subject to a professional self-monitoring process (e.g. peer review, competitive third-party funding, and peer evaluations).

Comprehensively developing research quality starts at different levels: research competencies, research initiatives, projects, and guidance (e.g. on research funding, research methods and their design, documentation of research achievements and publications).

Responsibility for research lies primarily within the respective faculty, followed by the Program Coordinators, the Deans, and the Vice-Rector for Research. This bottom-up dynamic is promoted across the university, in particular by applied research according to water, soil, air, and raw materials.

To develop and support young researchers over the long term, GMIT has initiated the Strategic Research Development Fund (SRDF) in close cooperation with the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) in the time period 2018-2022. This research funding program has supported lecturers and Professors at GMIT, as well as young student researchers in the following ways:

- setting up and expanding key areas of research that will further enhance the profile of GMIT;
- providing research support at all levels (B.Sc., M.Sc.);
- funding innovative research projects of GMIT students.

Regarding the research goals and content, preference will be given to interdisciplinary, applied research proposals within GMIT's Priority Research Areas:

- Mechanical Engineering and Mechatronics, encompassing automation and the safety of infrastructures, machinery, and structures;
- Mineral and natural resource processing to enhance value chains in Mongolia;
- Energy Systems in Mongolia, emphasizing electrical energy systems, renewable energy generation, and energy efficiency to promote "green growth" for sustainable economic and environmental progress;
- Environmental conservation and pollution control, focusing on water, soil, and air as vital elements for public health and socio-economic advancement;
- Industrial manufacturing processes and their management tailored to the unique needs of Mongolian industry.

The relevant standards of the respective scientific communities serve as guiding principles for ensuring scientific integrity. Within GMIT, these standards are set out in the Code of Ethics of the university. These guidelines are binding for all GMIT employees, in particular the academic staff, as a basis for action, as well as all students. Processes and structures for dealing with noncompliance have been established (e.g. the GMIT Research Committee is the central body for reviewing research projects and publications in terms of their compliance with international research standards).

### 5.1.2. Responsibilities and Measures at GMIT

The research performance of GMIT is evaluated using various indicators. The Vice-Rector for Research applies suitable approaches for analyzing research performance (e.g. research rankings, acquisition of external funding, bibliometric analyses of publication output, and qualitative procedures for recognizing excellent research performance). These data are systematically collected at least once a year.

The Research Committee supports the GMIT researchers in observing the guidelines on scientific integrity. On request, the Research Committee and/or the Ethics Committee also evaluates whether research projects are ethically and legally sound.

The Research Committee awards GMIT research funding within the framework of competitive selection procedures. The Vice-Rector for Research advises researchers on acquiring external funding.

The faculties define the research portfolio, as well as support career paths and excellent research performance, by reducing the teaching loads of researchers. The Vice-Rector for Research and the Vice-Rector for Academic Affairs are responsible for the Ph.D program, in particular for compliance with quality standards.

The faculties actively seek opportunities to secure external funding and/or strategic research partnerships. They implement the requirements for scientific integrity at the operational level and regularly evaluate the research performance. They systematically introduce their junior researchers to scientific work and guarantee continuous orientation toward research excellence.

## 5.2. Research & Innovation II: Development of Faculty and Early-Stage Researchers

### 5.2.1 Characteristics at GMIT

Appointing new GMIT faculty members and ensuring their continuous development, as well as promoting early-stage researchers (at the doctoral and post-doctoral level), are university-wide tasks. The academic life cycle of faculty members spans their appointment, integration

(onboarding), performance in the areas defined in their job profile (research, teaching, leadership, external funding, involvement in academic self-administration and external impact), further training and development, and, if necessary, offboarding (*HRM-PO-001-v1.0–EN-Staff recruitment and Selection Policy*).

The Vice-Rector for Research and the Research Committee are responsible for Research (*ACA-PO-011-v1.0-EN-Research Policy*) and ensuring at the strategic level that appoints the promotion of early-stage researchers and Ph.D studies meet national and international quality criteria as well as diversity and inclusion requirements.

The faculties, represented by their Deans, are responsible for planning academic positions. They manage appointment procedures, and support faculty career paths, in particular of assistant professors, whose evaluation they are tasked with. In particular, they are also responsible for the Ph.D program (2026) and the associated quality assurance.

GMIT has five laboratories for research: The Chemistry laboratory enhances the application of theoretical knowledge, and the development of experimental and analytical skills of the students, motivates them to encourage teamwork. The Physics laboratory has a similar capacity and is used for teaching in the BEP Program. The third laboratory of GMIT is the Raw Materials and Mineral Processing Laboratory and is used for conducting modules and tensile tests. The fourth lab of GMIT is the Environmental Engineering laboratory. This lab has three main sections: water quality, soil science, and air quality. The youngest lab at GMIT is the Mechanical Engineering workshop with band saw, grinder, circular saw, desktop combo lathe machine, vibration analyzer, shaft alignment tool, arc welder, digital oscilloscope with function generator, roughness tester, universal testing machine, and desktop drill machine.

Research calls for a professionally equipped library as well. The GMIT library has a collection of almost 10.000 books in various subjects and printed journals and popular magazines like 'National Geographic', 'Mining Journal', 'Mongolian Mining'. GMIT subscribed to online databases and journals, meant for research and study – e.g. Springer eBook Collection and Springer e-Journal.

### 5.2.2. Responsibilities and Measures

GMIT established a career path model that defines clear targets and criteria for promoting early-stage researchers. This will support the needs of highly qualified new faculty members.

Faculty development at the university involves providing development opportunities that are tailored to the needs of academic positions and career progression. GMIT provides leadership training, supervision of M.Sc. (and Ph.D). students to ensure that future GMIT researchers will meet international standards. GMIT has been sharing experiences and best practices in different areas of university life with the Mongolian public, particularly with the educational sector, e.g.

keynotes at international conferences and the annual teacher's symposium. The shared examples are student-centered, learning outcome-based, and practice-oriented education, the development of general personal and professional skills, the students' representation in all bodies of academic self-governance, their participation in research projects and their employment as student assistants on campus as well as quality assessment in teaching, career advice opportunities as well as applied research involving industry. This way, GMIT contributes to the reform of Higher Education in Mongolia.

# 6. Knowledge transfer & Social responsibility as a Core Process

## 6.1. Knowledge Transfer & Social Responsibility I: Science to Practice Transfer (e.g. public lectures, consultations, lectures, expert reports)

### 6.1.1. Characteristics at GMIT

Service activities to the Mongolian society represent both publicly accessible activities (e.g. public lectures) and remunerated services (e.g. applied research, consultation, reports). At GMIT, these activities operate in a competitive environment in which orientation to market needs, regional anchoring, and the national and international environment play a constitutive role in achieving success. In addition, the respective expectations and standards of the professional, national, and international networks must be included in quality development.

The service activities of GMIT are very much driven by the Rectorate and faculties. Responsibility for quality development lies within the faculties and the Rectorate's Office, and is aligned with the university's fundamental principles of quality development. The Program Coordinators, Deans, and Vice-Rectors are responsible for quality development in the areas of learning, teaching and research. They define appropriate procedures and measures by GMIT's overarching understanding of quality. Strategic positions for international activities are developed by the Rectorate.

### 6.1.2. Responsibilities and Measures

GMIT-wide regulations orient both the strategic and operational design of science to practice transfer. For example, strategy developments serve as strategic guidelines for internationalization and regionalization, e.g. Memorandum of Understanding (MoU) between GMIT and international / domestic universities and industry corporations). Regarding operational implementation, all university-wide regulations apply to science-to-practice transfer activities.

Services rendered as part of science-to-practice transfer are documented in the annual report of the GMIT Rectorate. The impacts of science-to-practice transfer are monitored in regional and international terms. Appropriate procedures are used to increase the visibility of the GMIT impact. The corresponding reports estimate the effects in quantitative and qualitative terms. Science to practice transfer initiatives that make a particularly valuable contribution to the Mongolian economy and society are highlighted and awarded. In this regard, the GLEAR project is to be mentioned.

### 6.2. Knowledge transfer & Social Responsibility II: Professional Development (e.g. Non-Degree Programs, Language training)

#### 6.2.1. Characteristics at GMIT

As a core process, executive education (in terms of continuing education and training such as certificate programs, and open and custom programs) is similar to post-experience degree programs. Executive education and professional development opportunities can range from one-day events to multi-day seminars leading to a certificate of attendance. Executive education (e.g. English language training) is offered in a very market-oriented, competitive way. Clear positioning requires aligning the market needs of the Mongolian industry.

Context specificity is accounted for by defining different quality development measures, which are based on the general principles of the GMIT quality guidelines. Since the delivery of post-experience degree programs is very closely related to non-degree executive education offerings, the points mentioned above also apply to processes in the area of professional development.

The quality and quality development of executive education / professional development courses are conducted by the faculties, incl. the Language Center (LC). They focus on the following aspects: contribution to the GMIT's vision and strategy, target groups, identified needs of the target group, definition of learning objectives and outcomes, calculation of resources (e.g. required competencies, hours), didactic methods and evaluation, continuous improvement measures, etc.

#### 6.2.2. Responsibilities and Measures

The Rectorate, especially the Vice-Rector for Academic Affairs (in cooperation with the Academic Senate) is responsible for developing GMIT's executive education strategy in association with the faculties. The Vice-Rectors and the Deans develop appropriate processes and instruments for quality monitoring and development in the area of executive education.

GMIT documents its achievements in the area of executive education in the annual report that is made available to the Board of Governors and all staff (at the annual all-staff meeting). Specific risks related to executive education (e.g. market risks) are monitored and appropriate measures are taken as required. In the area of executive education, market, and customer feedback – including the monitoring of competing providers – plays a special role in securing the market positioning and attractiveness of the GMIT offerings.

Additionally, GMIT is conducting activities on ecological sustainability, e.g. protection of the environment, the sustainable use of resources, and the education of a new generation of ethical and socially responsible engineers. Moreover, GMIT is contributing to the economic well-being of Mongolia which is the core of the university's mission and is reflected in the curricula of the study programs, diverse projects, and GMIT research activities. Examples there are many, e.g. the students' plastic bottle recycling project which was done in cooperation with students from the

University of the Arts in Ulaanbaatar. Furthermore, GMIT faculty has organized Summer Schools for high school students on water supply. Finally, sustainability is reflected in research projects on soil and air pollution in Nalaikh.

At the same time, sustainability refers to the development of the university, including student numbers, human resources, and facilities, as well as to its financial independence and sustainable income.

# 7. Management as Leadership Process

## 7.1. University Planning and University Development (Rectorate)

### 7.1.1. Characteristics at GMIT

The GMIT Rectorate is responsible for shaping the university-wide framework for teaching, research, services, and executive education, including the corresponding administrative support processes, support structures, and management.

GMITs' managerial structure and its procedures are oriented towards supporting the core processes. The value consensus reached for GMIT forms the basis for its management. The Rectorate supports the quality of all core processes by promoting the university's staffing, material, and cultural framework. The Rectorate supports the GMIT teaching, research, and service activities, as well as ensures the transparency, coherence, and development of strategic priorities. It also promotes efficient and needs-oriented administrative processes.

The Rectorate is responsible for strategy development and for distributing and allocating material resources by strategy. GMIT employs its material resources in a transparent, sustainable, and development-oriented manner. Binding regulations are developed for the use of the university's resources and implemented in administrative procedures. Appropriate bodies (task forces, committees) have been established.

The Rectorate is responsible for establishing a framework for the development of academic and administrative staff. The promotion of academic staff is subject to academic standards.

The strategic orientation of GMIT attaches particular importance to the sustainability perspective. Both as a subject matter in degree programs and in institutional terms, GMIT acts by professional sustainability standards. Activities are pursued consistently within the university's strategy, resources are allocated accordingly and the actions of the university are reflected on concerning sustainability. Transparent documentation and appropriate critical reflection support GMIT as a whole in developing further in terms of sustainability.

The promotion of diversity among its members and the inclusion of all social groups are guiding organizational principles at the university. GMIT adopts appropriate measures to meet diverse needs and to raise awareness of diversity. This approach is reflected in all core processes, in particular in undergraduate and postgraduate teaching, the selection and development of faculty, and the promotion of early-stage researchers.

Further, GMIT ensures equal opportunities and nondiscrimination through its advisory and counseling services. Safeguarding diversity and inclusion is the responsibility of the Rector in support of the Diversity Liaison Officer (*more information: 7.3 Gender and Diversity*).

GMITs internal and external communications are shaped by the underlying value consensus (defined in the Statute, and in the Code of Ethics). GMITs communications reflect awareness according to the diversity of the university's stakeholders.

The Rectorate is responsible for the development and implementation of quality development. It appointed the Associate to Quality Assurance, the Internal Audit team, and the Internal Monitoring Officer (similar to the "Quality Management Representative" in the ISO 9001:2008 standard) to delegate quality development perspectives. This enables combining academic expertise (delegates possess specific professional competencies for their respective duties) with administrative tasks.

### 7.1.2. Responsibilities and Measures at GMIT

National and international accreditations have been performed at regular intervals. These accreditations as conducted to transparently document the overall level of quality that has been attained at GMIT. Additionally, they are used to communicate as an overall system and to develop it further. Frequent communications with the Mongolian Ministries, GIZ, DAAD, and other stakeholders are the daily duties of the Rectorate members.

The GMIT Rectorate, the Internal Monitoring Officer, the Associate to Quality Assurance, and the Quality Steering Committee have to provide supportive evidence of their commitment to maintain and implement the established Quality Management System (QMS) and continually improve its effectiveness by:

- ensuring that GMIT meets the customer, statutory, and regulatory requirements;
- working towards the Quality Policy and Quality Objectives;
- effectively conducting and participating in Management Review (MR) meetings;
- effectively conducting periodic internal audits;
- supporting and appreciating the commitment of the Internal Monitoring Officer, the Associate to Quality Assurance and other personnel involved in the QA implementation;
- appointing the Internal Monitoring Officer by Rector's Resolution.

The GMIT Rectorate ensures that customer requirements (students, parents, staff, industry) are determined and achieved; that customer satisfaction is periodically measured and appropriate corrective actions taken, e.g. via feedback and complaint (*ASA-PR-002-v1.1-EN-Management of Feedback and Complaint*) as well as student appeal (*ASA-PR-001-v1.1-EN-Student Appeal*); and that customer issues are discussed at the Management Review meetings -> Customer focus.

The GMIT Rectorate established a Quality Policy that ensures that it is appropriate to the purpose of GMIT and its functions, understood and followed by everyone in the university; that it includes

a commitment to comply with requirements and continually improve the effectiveness of the QMS; that it is communicated, effectively displayed and understood among the staff; that it will be periodically reviewed at the Management Review Meetings for suitability -> Commitment to quality. The Mission and Vision of GMIT are displayed at the GMIT Entrance Hall (foyer) of the main building in English and Mongolian language.

The GMIT Rectorate developed Quality Objectives with each faculty/department and staff unit to meet the requirements for its educational services. Objectives shall be SMART (specific, measurable, achievable, relevant, and time-bound) and consistent with the Quality Policy. GMIT employees should know their faculty/department Quality Objectives. Action should be taken to achieve the measurable objectives. The status of the achievement of objectives shall be discussed and reviewed at the Management Review meetings -> Quality Objectives.

The GMIT Rectorate defines responsibilities and authorities for the GMIT staff by job descriptions and communicates internally, e.g. all-staff meetings. Each employee shall be aware of her/his responsibilities and areas of authority. The job descriptions (*HRM-FR-002-v2.0-EN-Job Description*) indicate the responsibilities and areas of authority of key personnel who play a role in the QA implementation at GMIT. Procedures and work instructions will indicate the responsibilities of the respective staff. The organization structure (*REC-OD-002-v2.0-EN-Organizational structure*) conveys responsibilities, areas of authority, and delegation of authority -> Responsibility and authority.

The GMIT Rectorate has formally appointed the Internal Monitoring Officer (see 7.1.1.) who effectively implements the Quality Management System at GMIT. In close cooperation with the Associate to Quality Assurance (AQA), the IMO is responsible for establishing, implementing, reviewing, and maintaining the QMS. The Internal Monitoring Officer reports the quality performance and the need for any improvements, through internal audits and the Management Review meetings, to the GMIT Rectorate -> Internal Monitoring Officer.

The GMIT Rectorate ensures an effective, documented communication mechanism (Quality Manual, Master List of Documents, Master List of Records) for all processes. Via internal communication, all GMIT staff will be informed about new, current, and obsolete documents -> Internal Communication.

The GMIT Rectorate holds Management Review meetings (MR) to discuss the outcomes of internal audits regularly at planned intervals, to ensure the continuing suitability, adequacy, and effectiveness of its Quality Management System (*QAD-PR-006-v1.0-EN-Control of Management Review Procedure, QAD-OD-009-v1.0-EN-Management Review Guidelines, QAD-FR-015-v1.0-EN-Management Review Status Report, QAD-FR-014-v1.0-EN-Management Review Implementation Checklist*).

The GMIT Rectorate reviews opportunities for improvements and any need for changes to Quality Policy and Quality Objectives. 14 topics shall be discussed at the Management Review meetings:

1. Status of actions from the previous meeting;
2. Changes in external and internal issues that are relevant to the GMIT Quality Management System;
3. Information on the performance and effectiveness of the GMIT QMS;
4. Customer satisfaction (students, parents, employees, companies) and feedback from relevant interested parties (Ministries, DAAD, GIZ, etc.);
5. The relevance of the quality policy;
6. The extent to which quality objectives (incl. KPI) have been met;
7. Process performance and conformity of services;
8. Internal Audit results (IA), incl. Non-Conformities (NC) and Corrective Actions (CA);
9. External Audit results (IA), incl. Non-Conformities (NC) and Corrective Actions (CA);
10. Monitoring and measurement results;
11. Configuration of collaboration with external providers, e.g. GIZ, DAAD;
12. Effectiveness of actions taken to address risks and opportunities;
13. Opportunities for improvement;
14. Review of action items.

These items are reflected in the meeting structure (*QAD-OD-010-v1.0-EN-Management Review Meeting Minutes*).

Additionally, the GMIT Rectorates collects data on the following items and analyses them to demonstrate effectiveness, and for continuous improvement of the system. The data includes results from monitoring and measurements, the status of the quality objectives, and other relevant sources such as:

– student complaints, student/staff/industry satisfaction;
– assessments and evaluation results according to the study programs;
– evaluation of suppliers;
– evaluation of teaching staff, lesson plans, and teaching aids;
– drop-out rates;
– employment rate of students (tracer study).

## 7.2. Quality Management

### 7.2.1. Organizational Framework

GMIT implemented a comprehensive and systematic Quality Management System (QMS) in the fields of Learning & Education, Research & Innovation, Knowledge transfer & Social responsibility, Management, and Administration. Its underlying concept is based on the Standards

and Guidelines for Quality Assurance in the European Higher Education Area (ESG), which has been published by the European Network for Quality Assurance in Higher Education (ENQA). By the process of Learning & Education, quality assurance is being organized along a "Student Life Cycle". This model takes into account the specific needs and requirements of students within the scope of different phases and levels. Each of these phases will be analyzed using the quality management cycle of "Plan-Do-Check-Act". Respective evaluation results shall be used systematically for the implementation of follow-up measures.

The successful implementation of a sustainable Quality Management System is given priority by the GMIT Rectorate and the Academic Senate. The following issues describe important components of the GMIT approach:

1. definition of quality standards (quality of the input, quality of the process, quality of the output respectively quality of the expected learning outcomes);
2. organization of the quality management system (Document Control Procedure with Master List of Documents; Record Control Procedure with Master List of Records; Internal Audit Procedure; Non-Conformance Procedure; Corrective and Preventive Actions Procedure);
3. management responsibilities for quality and quality assurance, incl. resolution for the Internal Monitoring Officer, resolution for the Quality Steering Committee, resolution for the Internal Audit team;
4. monitoring the teaching and examination processes;
5. analyzing data and act on results.

The GMIT Quality Management System is in accordance with its mission / vision / value statements (Quality Policy) and its profile. These aspects are also decisive for the definition of the quality standards (learning outcomes) of the different degree programs as well as the qualification of the graduates. The description of the expected learning outcomes is linked to the requirements of knowledge, skills and competence of the future relevant professional experience and to the contribution to the personality development. The quality of a degree programs depends decisively on the quality of the teaching staff. GMIT is seeking to ensure highest standards of staff development and continuous professional development of the lecturers as part of the scope of a comprehensive quality management system.

These Quality Management Guidelines put emphasis on the GMIT Process Map, incl. PCDA. In this manner the GMIT QMS implementation and consolidation of systematic procedures reflects the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG). The precise description of the core policies and procedures are important elements of the Quality Management System.

GMIT ensures that staff recruitment procedures comply with international standards. Special key performance indicators and procedures to address performances of GMIT Professors and lecturers, and staff in general, are in place. An important issue will be the opportunity for lecturers to gain further scientific qualification. In this context the preparation and implementation of

research projects (especially the implementation of application-related and empirically research projects) will play an important role. Furthermore, particular attention will be given to foster the GMIT Alumni Network. The Department of Academic and Student Affairs (ASA) is in charge to provide the GMIT tracer study (semi-annual updated) according contact details of the graduates and current employment situation. This tracer study shall be provided to the Rectorate.

### 7.2.2. GMIT evaluation procedures and data analysis

An important aspect of the internal evaluation process of GMIT is the student's assessment of modules and the assessment of the didactic skills of the academic staff. Since 2015, GMIT has standardized the procedure based on the workshop "Teaching Evaluation"; finalized by a task force in the aftermath of the workshop.

Since 2017 the module and lecturer evaluation are conducted in a digital way via the Campus Management System (CMS) orchestrated by the GMIT Information Technology Department. It is an important component to establish an open discussion process on a regular basis – therefore, GMIT publishes the overall-results (summary) digital on the CMS, which is accessible for students and staff.

In general, the students' assessment of the quality of the modules and of the didactic skills of the instructors have improved steadily from the first to the last evaluation. The qualification and preparation of the academic staff, the quality of the teaching materials and the forms of teaching have always received a positive evaluation. The students are appreciating the high academic standard and are confirming that they have improved their knowledge and skills. On top of that, the small size of the classes and the facilities and the equipment have received a high score and students evaluate the attitude of their peers rather positive. The students' participation in the module evaluation surveys is highly appreciated, but voluntary.

The evaluation of the learning outcomes is necessary to ensure the quality of GMIT degree programs and the quality of the implemented policies and procedures. It is relevant that the internal evaluation has to deal with the structure, the implementation, the requirements and the results of the student's evaluation. This is an important process to enable a reliable assessment of the learning outcomes of the students. Ensuring an effective implementation of the internal evaluation is essential to collect and analyze qualitative data. The IMO informs the Deans and the individual professor/lecturer (internal moderation) about the evaluation results and share a summary with the Academic Senate, and communicates the anonymized summary to the students. The goal is to improve the quality of the degree program (module and lecturer's performance), and to develop „Conversational Culture", which will improve transparency and remove existing obstacles. The student evaluation has not been the only attempt to ensure the quality of the degree programs. Starting with the Curriculum Development Workshops in 2014, a tradition of development and revision workshops was established, that included GMIT academic staff, professors of German partner universities and the implementing partners DAAD and GIZ.

Since then, the Curriculum revision workshops took place frequently (*retaining documented information: meeting minutes*). Study programs have been discussed and numerous changes in module name, credit points, and workload were carried out. The Module Handbooks for all Bachelor's and Master's Programs have been regularly updated, and endorsed by the Academic Senate.

GMIT takes care about student progression and success rate of the student (e.g. drop-out rate, incl. actions to reduce the drop-out-rate as well). In the focus of continuous improvement, further collection, analysis and usage of relevant information are conducted to increase the quality and the effective management of the study programs. The following measures are implemented:

- analysis of student progression and success rates (e.g. drop-out-rate, duration of study);
- evaluation of GMIT graduates' satisfaction with their (former) study program;
- evaluation of employability of GMIT graduates (tracer study);
- analysis of an appropriate workload calculation per module.

The Associate to Quality Assurance supports the process of internal evaluation in close cooperation with the Department of Academic and Student Affairs, the Faculty Development and Online Learning Center, the Graduate School, and both faculties, plus the Language Center.


### 7.2.3. Activities to improve the GMIT Quality Management

Quality Assurance experts are members of the Rectorate's Office. Related to the area of Learning & Education, this unit works closely with the Vice-Rector for Academic Affairs and with the Department of Academic and Student Affairs, and has the following responsibilities and duties:

- preparation and implementation of all measures linked to quality assurance issues, including those related to the Program (Re-)Accreditation (degree programs), and the Institutional Accreditation;
- developing and supervising a comprehensive QMS (policies, procedures, forms, and other documents) in administration
- QMS awareness-building and internal/external communication about Quality Assurance;
- lead the quality steering committee;
- conduct Internal Audits and Monitoring, and organize Management Review meetings.

## 7.3. Gender and Diversity

### 7.3.1. Gender Justice

Within the framework of GMIT's early beginnings, one focus was to support young female students, i.e. particularly high-performance girls, to get enrolled at GMIT and study successfully in the field of STEM. Currently, 32.7% of the GMIT students are female in Fall semester 2023-2024.

Furthermore, special care was taken to ensure that there was a balanced relationship between women and men in academic and administrative management positions at GMIT. In 2024, 58.5% of administrative staff and 56.6% of academic staff are women.

Since 2017, plenty of gender/diversity related activities took place, like:

- Training and excursion on "Women's participation in Science and Engineering" in cooperation with Women in Science, Engineering and Mathematics (WSTEM) of Mongolia;
- "Girls in STEM" event for high school students of Nalaikh, Ulaanbaatar and Baganuur;
- "Ensuring Gender Equality in Higher Education"

Additional activities are highlighted in the Gender Report 2024.

In 2021, the German-Mongolian Institute for Resources and Technology (GMIT) was awarded as the best "Gender conscious organization" in Mongolia by the Mineral Resources Women's Association and the Ministry of Mining and Heavy Industry. Since its foundation, GMIT focused on gender-conscious behavior in education, operations, and policies. The GMIT Statute promotes diversity and gender equality as one of its core values.

### 7.3.2. Barrier-free Campus

Access for disabled persons: The GMIT Campus is designed as a barrier-free facility: wheelchair-access ramps, elevators, handicapped accessible toilets, as well as accessible housing for disabled people. Furthermore, a doctor is on campus.

## 7.4. Cooperations (academic & industry)

### 7.4.1. German Academic Cooperation Partners

GIZ and DAAD are the most important German partners of GMIT. Whereas GIZ provides support to the Rectorate, the organizational development, and the development of contacts with industry, DAAD is responsible for the support on the academic side of the university, including curriculum development and revision, recruitment of long-term professors and lecturers (fly-in faculty). The Rectorate meet regularly with the GIZ Program Manager.

Important German academic partners are the DAAD Partner universities, TU Bergkademie Freiberg, RWTH Aachen, and BTU Cottbus-Senftenberg. In addition to these partner universities, individual German Professors from other universities, e.g. TU Darmstadt, Martin-Luther-University Halle-Wittenberg, THGA Bochum (THGA), HTW Dresden, and University Wuppertal have supported GMIT with teaching, joint research projects, sponsoring for library and labs, know-how and advice in curriculum development, quality assessment, management and more; and have also given talks or workshops offered by GMIT for Mongolian partners, e.g. Ministries, Mongolian universities, company representatives, or the wider public.

### 7.4.2. Mongolian Industry & Academic Cooperation Partners

Essential partners for the implementation of practice orientation in education and of applied research at GMIT are the Mongolian companies, especially in Mining and downstream industries, which will, in most likelihood, be the future employers of GMIT graduates. GMIT (or GMIT students have) has signed internship contracts and various other cooperation agreements with more than 50 companies and professional associations, e.g. APU, Anglo American LLC, Baganuur Mining Corp., Boroo Gold, Clean Energy Consulting LLC, Darkhan Thermal Plant, Erdenes Mongol LLC, Erdenet Mining Corp., Gerege Group LLC, Khutul Cement Factory LLC, MAK LLC, MERA, MIAT, Mongolian National Mining Association, Oyu Tolgoi LLC, TRANSWEST Mongolia, South Gobi Sands LLC, Soyolon International, and Wagner Asia Equipment LLC.

GMIT invites periodically company representatives to the campus and organizes student excursions to the companies, sometimes as part of a module. GMIT students need to complete a 6-week basic internship as an admission requirement, as well as a 14-week professional internship (in the 3rd program year) which is part of their Bachelor curriculum. Furthermore, GMIT explores opportunities for its students to write their Bachelor-/Masters' thesis in cooperation with industry, as one of the GMIT benchmarks is that more than 30% of the graduates will have completed their thesis that way, and to engage with companies in research projects.

In addition to that, GMIT developed close relationships with Mongolian universities and research institutions. Individual professors and lecturers of the Mongolian National University (NUM) or the Mongolian University of Science and Technology (MUST) were invited as guest lecturers to GMIT during the past semesters or participate in lecture series, e.g. in Open Pit Mining, Mineral

Processing, Ecology of Mongolia or Scientific Methods. There is cooperation in research (e.g. with NUM), an exchange in students participating in Olympiads at other universities, GMIT has invited other Mongolian universities for workshops and vice versa, and students organize joint sports competitions. Cooperation agreements have been signed (e.g. School of Geology and Mining at MUST, Central Geological Laboratory, Institute of Physics and Technology at the Mongolian Academy of Sciences, National University of Mongolia, Erdenet University of Technology, Institute of Transport, New Mongol Institute for Technology and the Mongolian University of Defense. The main objectives are faculty exchange, common research, support in faculty development, incl. exchange of lab facilities.

Finally, GMIT is cooperating with the Governor's office of the district of Nalaikh, where the university is located, as well as with high schools in Ulaanbaatar and in Nalaikh or in other provinces to recruit well qualified students and to support the development of teachers by organizing school visits, Open day(s), and symposiums every year.

# 8. Administration as Support Process

## 8.1. Characteristics at GMIT

GMIT's administrative structures and procedures are oriented towards supporting the core processes. To this end, all key principles developed at GMIT appeal to the university administration and are used as a framework for action. This covers the value consensus too, incl. the promotion of administrative staff.

The Vice-Rector for Finance and Administration is in charge of the support process at GMIT, and manages all financial matters and administrative processes of the university, incl. the Rectorate's Office.

The core responsibilities are as follows:

- developing financial and administrative policies and regulations of GMIT;

- supervising their implementation by the GMIT Statute and applicable legislation;

- developing, promoting, and monitoring a culture of efficient, result- and customer-oriented corporate services;

- preparing the annual global budget, and developing and implementing plans to increase GMIT's financial resources;

- reporting, together with the Rector, on budget issues to the Board of Governors (BoG);

- managing the maintenance and development of GMIT's campus infrastructure;

- planning and coordinating administrative and technical staffing;

- concluding employment contracts with administrative and technical staff.

## 8.2. Responsibilities and Measures at GMIT

To ensure the internal development of the administrative staff, GMIT has developed professional development opportunities that are needs-based, future-oriented, and continuously adapted to requirements. The GMIT administration and its services for managing the core processes are evaluated using regular surveys and, if necessary, by peer reviews (e.g. staff surveys, surveys on individual departments, audits), as well as supported by staff development processes (e.g. staff appraisals, performance reviews: *HRM-PR-006-v1.0-EN-Appraisal meeting and Evaluation process, HRM-PO-003-v1.0-EN-Training and Development Policy*).

Next to the Human Resource department (HRD), the Department of Academic and Student Affairs (ASA), and the Rectorate's Office (REO), following administrative departments support the core areas of Learning & Education, Research & Innovation, and Knowledge transfer & Social responsibility:

- Information Technology department (ITD);
- Campus and Infrastructure department (CID);
- Finance and Procurement department (FPD).

The administration departments are monitored via internal audits. Additionally, the FPD is monitored by external audits as well (*retaining documented information: audit reports*).

Each department in administration conducts team meetings frequently, at least once in a month (*retaining documented information: meeting minutes*).

This Quality Manual has been developed from the *QAD-OD-001-v3.0-EN-Quality Management Guidelines.*