Harmonized University industry linkage and Technology transfer Guideline for Universities in Amhara Regional State

August, 2018

Bahir Dar Ethiopia

Prepared by:

Mr.Solomon Mesfin ---------- University of Gondar
Mr. Gosaye Sisay ---------- Wollo University
Mr.Tibebu Meride ---------- Woldia University
Mr.Yibeltal Tarekegn ----------Debre Markos University
Mr.Mekonnen Assefa ----------Debre Tabor University
Mr.Natnael Girma ---------- Bahir Dar University
Dr .Seife Getaneh ---------- Debre Berhan University
Dr. Yeshamble Mekuriaw ------ Bahir Dar University
Mr.Negalegn Alemu ---------- Debre Markos University

Contents

List of tables and figures

List of Tables

List of Figures

Acronyms

ANRS Amhara National Regional State

BiTBahirdar Institute of Technology

CS Community Service

ETB Ethiopian Birr

IP Intellectual Property

KAM Key Account Manager

KioT Kombolcha Institute of Technology

MOST Ministry of Science and Technology

SME Small and Micro Enterprise

TBIC Technology Business Incubation Center

TISC Technology Innovation Support Center

TT Technology Transfer

TVET Technical Vocational Educational and Training

UIL University Industry Linkage

UOG University of Gondar

QIP Quality Internship Program

WIPO World Intellectual Property Office

UIL-TT ED University Industry Linkage- Technology Transfer Executive Director

RCSUIL-TT VD Research, Community Service, University Industry Linkage - Technology Transfer Vice Dean

PC Principal Coordinator

1. Introduction

Universities are known as the source of knowledge and technology. On the other hand, industries are establishments with strategic orientation for survival by managing knowledge for the purpose of generating profits. Industries are mainly devoted to the development of products and processes, production, marketing and sales. In this regard, industries are assumed to demand useful solutions of problems.

It is known that, one of the objectives of higher education institutes is to support the development of the country by solving problems of industries, service providing institutions and producing skilled labor force.

University-Industry Linkage is aimed at supporting the creation of Science and Technology Innovation System in the country. This is meant to build collaborative research initiatives that would be industry driven, with the goal of technology invention, adoption or adaptation by regional industry. The goal is to move the economy towards the federal STI goals, while strengthening the university's capacity for innovative research. The Innovation System stakeholders include; Universities, other higher education institutions, research institutions, industry, TVETs, small and medium sized enterprises (SMEs), government and non-government organizations, and community.

All parties can be benefited from the linkage, if there is a clear understanding of fundamental University policies and procedures and of the complementary but differing goals of the university and research institutions, industry, small and medium sized enterprises (SMEs), government and non-government organizations, and community.

The implementation techniques of UIL could be through Internship, Externship and joint agreements. Internships are career-development activities in which students engage in learning through practical and relevant experiences at various internship sites. Internships are undertaken by students who are at or near the end of their academic program. These structured experiences involve the practical application of previously studied theory through course work. Internships are targeted to the students' meaningful future plans and allow students to explore careers that require additional knowledge, certification, or on-the-job training. While Externship is the process of

engaging university academic staffs on career development activities by assigning them in relevant industries. Moreover, technologies transfer can also be delivered through different joint agreements with industries.

The benefit of the UIL could be amongst others to transfer demand driven technologies to industries. Technology transfer is the process of transferring scientific findings or new knowledge and technologies developed that are essential for public use or for commercialization after validating their usefulness through participatory demonstration and evaluation with users. The concept of technology transfer encompasses processes like adaptation, adoption, innovation, invention and reverse engineering.

In general, University academic and research staff and students are encouraged to engage in appropriate industries. Such activites can provide the individual staff members with experience and knowledge valuable to teaching and research and also help students gain vaulable educational opportunities and experience. It also facilitates the transfer of technology to improve the well being and productivity of society and offer research opportunities through which the staff member can make a contribution to knowledge.

1.1.Definition

- **Industry:** is any organization/institution which could be governmental, non-governmental, and private and NGOs that has a potential for collaborative works such as Research, Technology transfer, Community service, Consultancy, Internship and Externship.
- **University Industry Linkage:** it is the process of deploying sustainable relations with Universities, Industries, Research Institutions and TVET on the basis of principled and transparent negotiations and agreements for realizing the mutual benefits which in turn resulted in mutual exchanges of knowledge, skill, and other transactions on Research, Technology transfer, Community service, Consultancy, Internship and Externship.
- **Technology:** shall mean knowledge, knowhow, procedures and system related to manufacturing and use of goods and services that are necessary to solve the economic and social problems of a given society and to improve its living standard.
- **Technology transfer:** is the process of transferring scientific findings or new knowledge and technologies for public use or for commercialization after validating their usefulness through participatory demonstration and evaluation with users.
- **Technology Business Incubation:** is a unit that systemizes the process of assisting the growth of successful new enterprises by providing them with a comprehensive and integrated range of technologies/services. Additionally, this unit serves as a bridge to license and commercialize technologies and research findings for industries.
- **Research:** is a systematized investigation to create new knowledge or technology and/or to use existing knowledge or technology in a new and creative way so as to generate new concepts, methodologies, understandings, and to solve new or existing problems.
- **Joint Research:** is a research undertaken between university-university, university-industry and Industry-Industry so as to solve problems of the collaborating organizations and/or communities.
- **Consultancy service:** is provision of remunerated assistance to communities or industries up on request of specific advice or technical expertise through research, advisory, extension, training, provision of services such as legal, health, material testing, supervision and other related paid activities.
- **Community engagement:** is defined as the collaboration between institutions of higher education and their larger communities (local, regional/state, national, global) for the mutually beneficial exchange of knowledge and resources in a context of partnership and reciprocity.

- **Internship:** is the process of engaging students in work related programs/activities primarily for the purpose of providing them with hands-on experience that enhances their learning or understanding of issues relevant to a particular area of study, during which period they are closely supervised by experienced company/institution supervisors and University mentors.
- **Externship**: is the process of engaging academic staff on work related activities in order to enhance their hands on skill and practice oriented teaching and increase their engagement on research, technology transfer and community service
- **Intern:** a student or trainee who works, sometimes without pay, at an industry or institute occupation in order to gain practical work experience and attitude related to his field of study
- **Mentor:**An academic staff with master degree and above who is assigned to consult students in a company who trains and counsels interns.
- **Company Supervisor:** is an experienced person who is assigned by the company or industry to consult and give direction to interns.
- **Academic unit:** refers to colleges, faculties, schools, institutes, departments or programs
- **Dean and Director:** refer to the dean of a college or a faculty and the director of an institute/directorate or a school respectively
- **Activities:** means actions taken or tasks performed through which inputs such as funds, technical assistance and other types of resources are mobilized to produce specific outputs
- **Stakeholders:** means governmental and/or non-governmental organizations and industries which take part with the university
- **University:** means Any public university in the Amhara National Regional State universities forum, Ethiopia
- **Intellectual Property:** is a term often used to refer generically to property rights created through intellectual and/or discovery efforts of a creator that are generally protectable under patent, trademark, copyright, trade secret or other law/s
- **Invention**: the creation of a unique product, method, composition, system or process for the first time.
- **Innovation:** the process of making changes to something established by introducing some- thing new. As such, it can be radical or incremental, and it can be applied to products, processes, or services.
- **Revers e engineering:** is the process of taking apart an object or a system to see how it works in order to duplicate or enhance the object or the system.

- **Technology Adoption:** is the extent by which a given technology becomes accepted, implemented and incorporated into approved public use.
- **Technology Adaptation:** is the process of adapting the adopted technology for public use

1.2.Rationale of the guideline

Previously, the focus of the University Industry Linkage was mainly on internship and related tasks. However, currently, the scope of its activities is expanded to different jobs so that new structures need to be developed to accomplish the tasks under it. Accordingly, different Universities in the region have been trying to render their activities with their own ways and structures. Even within the same university, there are also duties and responsibilities that overlap with other offices such as community service and research directorates. Due to lack of clear objectives and duties of university industry linkage and technology transfer office, there is an awareness difference on UIL among the actors of the university.

Currently, there are different working modalities implemented among universities in the region. Consequently, this affects the evaluation systems and performance of UIL and TT wings. Moreover, the universities are not getting the advantage of the geographical location to utilize common resources and share experience.

The importance of this document is to implement the UIL-TT tasks with common principles, guidelines and procedures to improve competence level of University academic and research staff and students to increase their engagement on company oriented researches and Technology transfer activities in line with MOST road map.

Thus, this guideline is prepared with the aim of solving the above variations that exist in UIL-TT office by producing uniform organizational structures to facilitate effective implementation of UIL-TT directives, and resource and effort optimization within and among universities. Besides, the guideline assists universities, colleges, faculties and schools in their relations with industry and technology transfer management. It summarizes the relationships between the University, TVET, Research institution, and industry.

1.3. Objective of the guideline

The aim of this document is to collaborate universities in ANRS to have harmonized guideline to systematically remove or minimize the mutual constraints and challenges encountered in conducting UIL and TT activities and to strengthen the regional UIL forums.

- To identify and understand the gaps of industries and service providing institutions
- To enhance quality of the externship and internship program
- To improve their competence level of externs and interns
- To bring research ideas to the university community and inputs to curriculum review
- To produce competent graduates
- To create and improve the linkage between the university and the industry
- To improve the productivity of the industry
- To make student thesis and course project based on practical problems
- To identify and understand the gaps of industries and service providing institutions
- To establish annual based business plan competitions;
- To train and develop start-ups;
- To execute technology commercialization based researches;
- To provide technology based business incubation related services to the community;
- To support local governments, SMEs and other actors in incubation related activities
- To transfer Fundamental knowledge and specific technologies to the industry
- To intensify Capabilities and accomplishments of the institute and industries
- To enhance effective dissemination and commercialization of TT projects
- To help Universities and Technology institutes to have common, simple and clear procedural work flow UIL-TT
- To promote business start-ups and networking between industries and academia

1.4. Scope of the guideline

This guideline applies to all UIL-TT activities carried out in and by the university academic and research staffs and students independently, and/or in collaboration with partners and clients/stakeholders using University's resources fully or partly. This guideline also applies to under graduate and postgraduate research works that have a potential to be transferred as a technology to partners and stakeholders.

Any article or statement of this guideline shall be harmonized with the senate legislation of the University and it shall be implemented after it is endorsed by the University Senate.

2. Organogram of UIL-TT

The UIL-TT Directorate/ Executive Directorate is accountable to the Office of Vice President for Research and Community Service. The UIL-TT has one directorate and four offices that are directly accountable to it. The four offices are UIL office, TT office, IP office and TBIC office. However, the directorate has functional relation with documentation, publication and dissemination office.

Moreover, the organogram depicts the duties and responsibilities of directors, coordinator and officers.

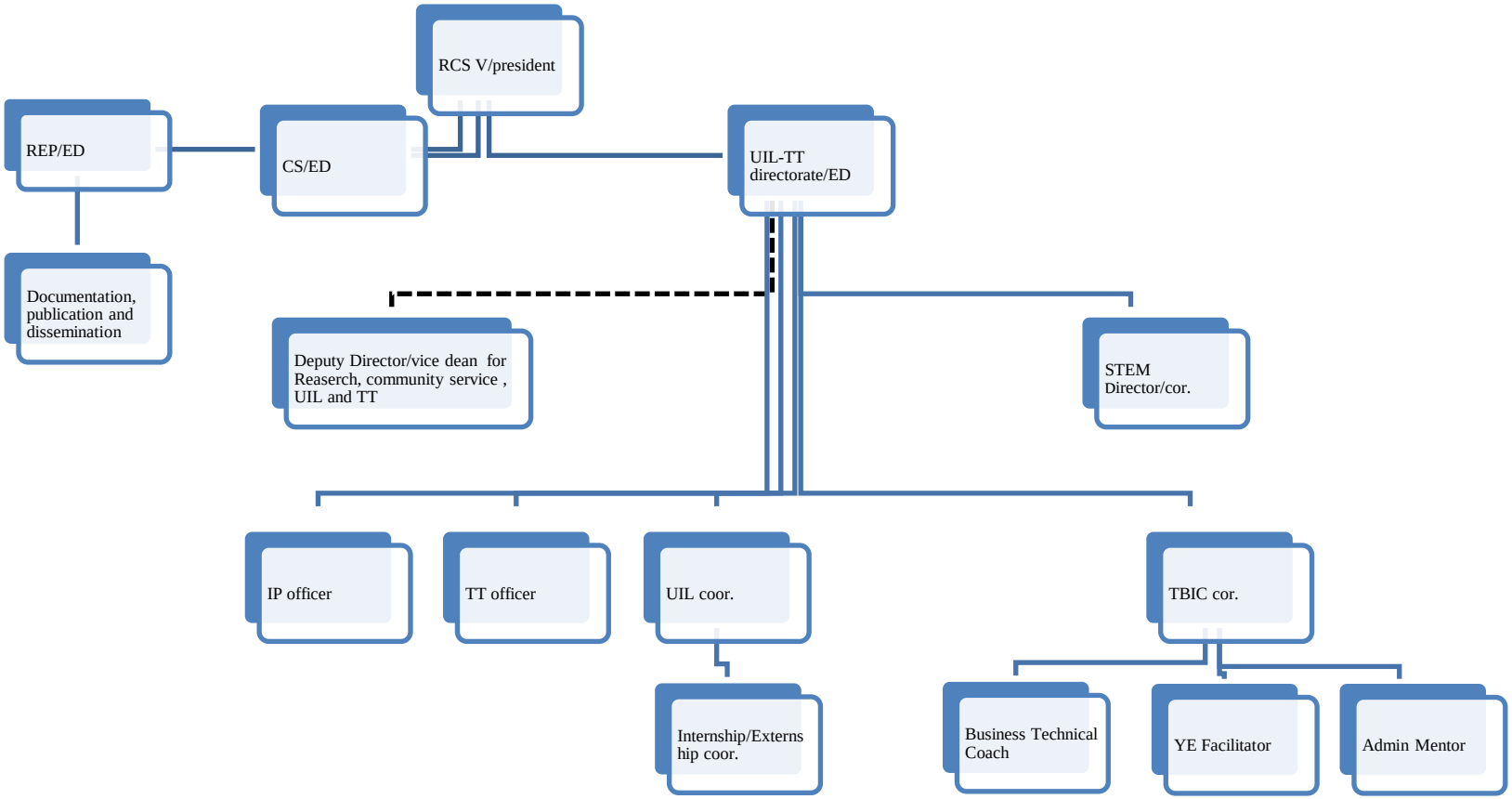

Figure 1:Organizational structure of UIL –TT at University level

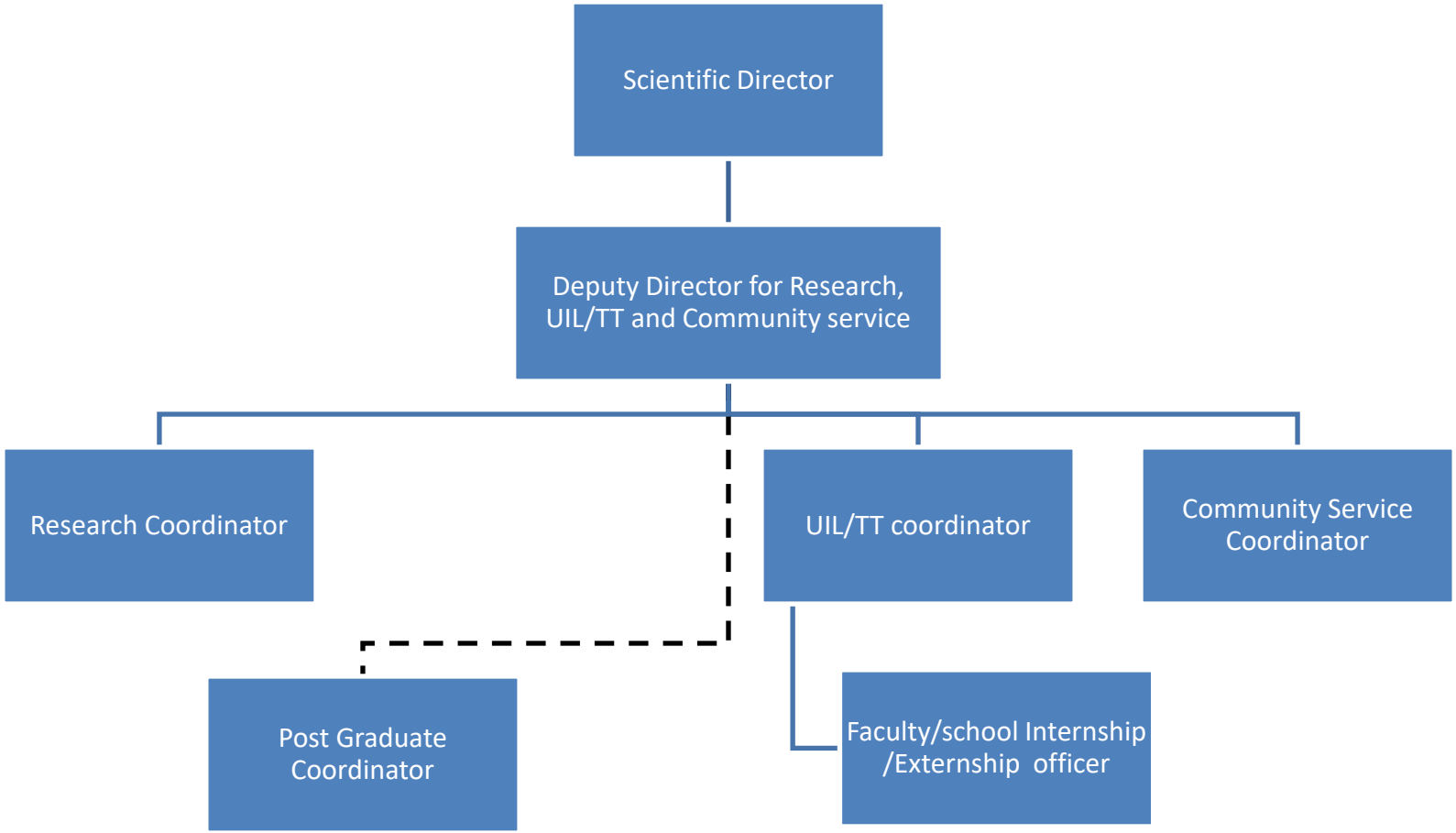

Figure 2: organizational structure of UIL-TT and Community Service at University level

2.1.University-Industry Linkage and Technology Transfer Directorate

University-industry linkage is a system through which university researchers interact with industry including, agriculture, health, manufacturing, and other sectors using a wide variety of channels such as joint research (including joint publishing), contract research (including consulting, financing of university research by industries or organizations), consultancy, community engagement, mobility (staff movement between universities and industries, joint supervision of students) and training (co-operation in education, training of industry staff at universities, lecturing by industry staff)

Both industries and Universities have never been able to exist separately; an intellectual asset of the University has either to address the problems of industries or has to largely contribute for the growth and development of various industries. Likewise, the advancement of knowledge and technology in higher education institutions/Universities can only happen with the pertinent need and support of the industry. Thus, creating a reliable partnership between University and industry has a paramount contribution for generating mutual benefits between them for the betterment of the society and the world at large.

Business incubation has been globally recognized as an important tool for economic development and job creation. The center supports Technology Business Incubators to tap potential technology ideas and innovations for venture creation by effectively utilizing expertise and existing infrastructure already available with the host institution. The office mainly facilitates and supports the transfer of technologies developed, improved/modified, or adopted by staff and students to improve performance of industries and welfare of the community at large. Moreover, the office facilitates and supports Technology Commercialization to provide a platform for speedy commercialization of technologies developed in the university, institute and research centers of the University.

Technology Innovation support center (TISC) enhance innovators' ability to innovate by offering services like: Access to online patent and non patent(scientific and technical) resources and publications, Access to industrial property related publications, Training in database search, Monitoring technology and competitors, Providing basic information on industrial property laws, management and strategy, technology commercialization and marketing, Gives innovators easy

access to locally based high quality technology information and related services, Helps innovators to exploit their innovative potential, Helps them to create, protect and manage their IPRs

The office mainly facilitates and supports linkages, transfer and commercialization of technologies (developed, improved/modified, or adopted) by staffs and students by cultivating manufacturing pathways for emerging technologies to improve performance of industries and welfare of the community at large. This helps in transferring Fundamental knowledge and specific technologies developed at the university and intensify Capabilities and accomplishments of the university which also create good opportunities for collaborating with the community

2.1.1. Duties and responsibilities of UIL and TT Executive Director

1. Coordinate the University-industry linkage and technology transfer activities (UIL-TT calls, reviewing, progress reports, etc...)
2. Establish the University-industry linkage and technology transfer database.
3. Monitor and evaluate the implementation of the University-industry linkage and technology transfer activities.
4. Facilitate local and international grant searching's
5. Facilitate University-industry linkage and technology transfer related decision Issues in respective to top management decisions.
6. Prepare and document strategic and action plans, Reports, program budgets and working guidelines.
7. Facilitate capacity building trainings related to University-industry linkage and technology transfer issue for the university community.
8. Facilitate and strengthen the student internship program/industrial attachment and Externship program
9. Asses the community/industry demand and design a strategy to bring solutions to their problem.
10. Facilitate and strengthen the establishment of science and technology support center, technology transfer center, business and technology incubation center and technology village/parks.

11. Facilitate the intellectual property right (patent, utility model, industrial design, etc...) related issues together with Ethiopia intellectual property office and world intellectual property office.
12. Facilitate the utilization and commercialization of economically valuable novel intellectual property rights connected with technology /Research results in to trade and industry working on technology transfer related consultancy.
13. Facilitate the Promotion and dissemination of the research and technology outputs through different media like radio, conference, brochures, policy briefs, proceedings, abstract booklet, etc….
14. Identifying potential partners/industries which will work with the university.
15. Prepare MoU and Create mutual partnership between university and Industries/stake holders in the area of technology transfer, research, training and consultancy.
16. Ensure the implementations of signed MoU's with stake holders
17. Lead and follow joint research and TT activities
18. Monitor and ensure the quality of internship/externship program are in line with strategic goal of the program
19. Develop strategic plan and report of each quarter for university-industry linkage and technology transfer activities at the university.
20. Strengthen team working between research and publication, community service, academic program Directors.
21. Direct, provide guidance and give information on University-industry linkage and technology transfer activities of academic staff, technical staff and students in consultation with the top management bodies and other Directors, deans and department heads of the college/faculty/school.
22. Amend guidelines and standards related to UIL, Research, TT, TBIC and TISC related activities;
23. Handle other issues coming from the Vice president for Research and community service.
24. Facilitate and Organize awareness creation workshops and seminars concerning major activities of the UIL
25. Facilitate the provision of best internship and externship program outcomes to industries

26. Facilitate the capacity building training, research, consultancy, business incubation and technology transfer activities that can able to solve the existing industrial problems services given to industries.
27. Prepare common plan with TVET, Trade and industry office, Research institutes and industry to support industry extension program
28. Search for potential national and international Grants to support joint research and TT activities
29. Initiate, coordinate and monitor joint researches Technology transfer projects between University and Industry and search for funds
30. Assist to incubate, commercialize and transfer appropriate knowledge and technology
31. Create conducive environment for university community to participate in technology transfer activities,
32. Monitor and follow call for TT proposal and on time notification of Acceptance/Rejection of submitted Proposal and sign agreement form for accepted proposals;
33. Facilitates and organizes Technology and innovation exhibition, workshops and discussion forums including demonstration of agricultural, health and other related technologies;
34. Organize and conduct tracer study on impact assessment of transferred and incubated business technologies
35. Facilitate recognition of best internship and externship experiences and assist on the continuation of the project to technology transfer and technology business incubation
36. Create conducive environment for motivating staff and students (organize trainings for transfer of new knowledge within a given setting, invite motivational speakers and senior personnel's having best experience in TT)
37. Develop and maintain collaborations with the partnering industries in order to transfer the technology based business idea in to practice;
38. Prepares and maintain a variety of records and reports related to assigned technology projects, including summaries of financial reports of funds;
39. Facilitate the creation of university affiliated companies/enterprises by graduated students and academic staff by motivating and providing necessary facilities

2.1.2. Duties and responsibility of UIL coordinator

1. Prepares UIL annual/ strategic plan and report;

2. Identify potential partners/ industries which are willing to work with the university;
3. Prepare MoU and Create mutual partnership between university and Industries;
4. Enhance and lead the linkage created between university and industries;
5. Instigate joint research and technology transfer projects with industries and other stakeholders;
6. Facilitate adequate internship places and qualified internship program;
7. Facilitate staff externship;
8. Establish and enhance Technology Incubation Center;
9. Amend guidelines and standards related to UIL and related activities;
10. Facilitate internship orientation for interns who are about to be engaged in the internship program
11. Create conducive environment for students having best internship experience to be employed in host organization and other related industries
12. Organize awareness creation workshops and seminars concerning major activities of the UIL
13. Closely monitor and follow up of internship program along with internship coordinator
14. Facilitate the provision of best internship and externship program outcomes to industries
15. Maintain and ensure the quality of internship program
16. Facilitate the capacity building training, consultancy and technology transfer activities that can able to solve the existing industrial problems services given to industries.
17. Prepare common plan with TVET, Trade and industry office, Research institutes and industry to support industry extension program
18. Facilitate the budget required for internship, externship program and other inherent activities
19. Ensure the implementations of signed MoU's with stake holders
20. Search for potential national and international Grants to support joint research and TT activities
21. Facilitate the provision of access for industrial reports, journals, news and research outputs to academic staff and students.

2.1.3. Duties and responsibilities of Faculty/School level Internship/Externship officers

1. Prepare list of industries suitable for internship as per their respective faculty

2. Prepare list of qualified students for internship along with their biographies
3. Prepare and give orientation for students of respective faculties
4. Prepare list of students which contains their ID number, Full Name, bank account number, phone number and hosting company
5. Facilitate staff allocation for mentoring of interns
6. Collect comments and feedbacks of mentors, check if mentors properly advise the allocated students in person
7. Facilitate apprenticeship student evaluation (presentation time, report distribution)
8. Search for internship places with UIL coordinator officer
9. Prepare and request program budget for internship and externship program
10. Prepare call for concept note/motivation letter for Externship program attending staff
11. Facilitate the evaluation, selection, approval and financial arrangement of Externship attending staff
12. Collect and document the externship report
13. Report of the experience, indentified problems, challenges and opportunities of the externship program results/findings
14. Facilitate the experience sharing workshop among university members and industry professionals
15. Send submitted Research/TT proposals research/TT coordinators for further review and budget approval
16. If the place for Externship program is requested based on the problem identified on the company, the officer should facilitate the call for proposal, evaluation, approval, budget allocation of proposals submitted prior to attending the program along with UIL and TT coordinator

2.1.4. Duties and responsibilities of TT Officer

1. Prepare Technology Transfer strategic and action plans, program budget and working guidelines
2. Prepares the working plans of different partnerships related to TT;
3. Identify industries which have strategic benefits to the university;
4. Identify and facilitate the preparation of common TT proposals and projects with TVET, Enterprise, industries and research institutes;

5. Coordinate and facilitate the development of new technologies,
6. Effectively facilitate the transfer of knowledge and technologies which are invented, copied, modified, and developed by staffs and students;
7. Facilitate and support Intellectual Property issue (patent, utility model, copy right, industrial design, patent of introduction, trade mark and branding) and Licensing issues;
8. Improve guidelines and standards related to UIL, Technology Transfer and Business incubation as necessary;
9. Keep records about technology transfer activities of the university;
10. Work along with Technology Business Incubation center and UIL coordinators,
11. Initiate and Coordinate Technology transfer projects between University and Industry and search for funds
12. Assist to incubate, commercialize and transfer appropriate knowledge and technology
13. Create conducive environment for university community to participate in technology transfer activities,
14. Prepare call for TT proposal and on time notification of Acceptance/Rejection of submitted Proposal and Prepare agreement form for accepted proposals;
15. Facilitate the creation of Technology transfer Data base and keep records of finished and ongoing TT projects;
16. Trace national and international call for TT projects and announce to academic staff and students;
17. Facilitate preparation of project proposal for national and international grants;
18. Organize and conduct impact assessment of transferred technologies in industries and communities;
19. Monitors, follow up, support and report status and performance of TT project;
20. Facilitates and organizes Technology and innovation exhibition, workshops and discussion forums including demonstration of agricultural, health and other related technologies;
21. Facilitate recognition of best internship experiences and assist on the continuation of the project to technology transfer and technology business incubation
22. Identify technology transfer thematic areas and agendas
23. Document and disseminate relevant technology information (patent information)

24. Motivate students for involvement in TT projects and consider them during call for proposal;
25. Create conducive environment for motivating staff and students (organize trainings for transfer of new knowledge within a given setting, invite motivational speakers and senior personnel's having best experience in TT)
26. Facilitate the preparation of technical/ machine drawings along with detail technical specifications and costs
27. Write quarterly and annual report

2.1.5. Duties and responsibilities of Technology Innovation and Technology Business Incubation support center Coordinator

1. Prepare Technology Business Incubation strategic and action plans, program budgets and working guidelines;
2. Plans, coordinate, organize, and spearhead effort for the overall operation and establishment of the technology business incubation center and ensures appropriate equipment and materials are available for the successful operations for the center;
3. Coordinates the development, evaluation and implementation of the intended goals, objectives, and activities related to the centre;
4. Facilitate the provision of basic small business coaching and business plan oversight for technology innovation owners and graduates;
5. Develop and maintain collaborations with the partnering industries in order to transfer the technology based business idea in to practice;
6. Organize seminars for business incubators regarding their pressing need, challenges and opportunities ;
7. Identifies national and international funding sources for TBIC;
8. Facilitate preparation of proposals to clients and respond to inquiries/requests from stakeholders;
9. Prepares and maintain a variety of records and reports related to assigned technology projects, including summaries of financial reports of funds;
10. Conducts research to identify emerging needs, trends, and services related to technology start-ups and potential incubator clients;

11. Serves as a conduit to a resource network of service providers that provide expert assistance to the business incubation center;
12. Represents the business incubation to the public and outside groups, organization, and industries; responds to wide variety of question, comments, and/or concerns; resolves related complaints
13. Facilitate networking activities, operating as a reference point inside and among the entrepreneurs and between entrepreneurs and resident advisors, and outside of the premises to the local community
14. Facilitate the creation of business by graduated students by motivating and providing necessary facilities before graduation
15. Facilitate the commercialization of technology transfers and research findings;
16. Facilitate income generation and sell of patented projects with an agreement to project owners;
17. Identify and incubate any marketable TT and research findings;
18. Identify and invite potential technology and research finding buyers to visit the center
19. Provide entrepreneurship/ business plan preparation training for staff and students;
20. Benchmarking of best experiences and adoption of any improvements to the existing working condition/ guideline
21. Coordinate and facilitate the development of new business based technologies and marketable ideas;
22. Facilitate conducive environment for the initiation of innovative ideas among the university and the community
23. Prepare call for technology based business proposal and on time notification of Acceptance/Rejection of submitted Proposal and Prepare agreement form for accepted proposals;
24. Write quarterly and annual report

2.1.6. Duties and responsibilities of Technology Innovation Support Center officer

1. Prepares strategic plan and report for TISC
2. Prepares working guidelines and manuals for TISC
3. Facilitate and follow intellectual property protection and related issues

4. Search for patent related information which is released for developing countries and disseminate the document to academic staff, students, industries, TVET's and other institutions
5. Collects and facilitate granting of patent, utility model, industrial design, patent of introduction with Ethiopian intellectual property office
6. Give training and consult on search of patent information to students and academic staff
7. Facilitate online learning for short and long term trainings and capacity building programs given by WIPO and assist students and academic staff to be engaged in the programs and make them certified
8. Prepare training programs and workshops on Intellectual property protection
9. Give 8/7 (eight hours for seven days a week) access to patent database service for academic staff and students

2.1.7. Duties and responsibilities of Deputy Director/Vice dean for research, community service and UIL-TT

1. Monitor, facilitate and follow research, community service, technology transfer and UIL activities of institutes/colleges/schools
2. Organize, document and report research, community service and UIL-TT related activities for concerned bodies
3. Prepares program budget, training manual, report and related documents
4. Prepare and disseminate booklet, journals, policy briefs and brochures of research, community service and technology transfer outputs
5. Plan, organize and coordinate research, community service and UIL-TT need assessment
6. Based on the result of the need assessment, the deputy/Vice dean will consult, give technical information and professional support on research, community service and UIL-TT related issues
7. Ensure and control relevancy, quality and resource utilization on research, community service and UIL-TT activities
8. Provide recommendation on the gaps of existing research, community service and UIL-TT policy, directives and guidelines enforcement/implementation for further amendment to concerned bodies

9. Facilitate and administer research centers, TT and community service stations, TBIC and TISC in collaboration with colleges/faculties/ schools, deans and directors
10. Search for potential national and international Grants to support research, community service and UIL-TT activities
11. Facilitate call for proposal, review and approval of consultancy service projects in and outside the university
12. Facilitate call for proposal, review and approval of research, community service and technology transfer projects of the university
13. Create conducive environment for effective implementation of research, community service and UIL-TT activities in collaboration with the directorates.
14. Give capacity building training for staffs involved in research, community service and TT projects based on the identified skill gaps
15. Motivate and initiate staff and students to participate in research, community service and TT projects
16. Prepare annual and action plan of research, community service, university industry linkage and technology transfer works and participate in development of strategic plan of institutes/colleges/universities
17. Facilitate, organize and coordinate different scientific seminars. Workshops, conference and consultative meetings with different stakeholders.

3. Technology transfer project management

Universities are known as the source of knowledge and technology. Hence, universities are expected to support the development of the country by solving problems of industries, service providing institutions and producing skilled labor force. Therefore, university academic and research staff and students are encouraged to be engaged in UIL-TT activities. Apparently, prioritizing UIL-TT thematic areas enables researchers and technologists to compete and efficiently utilize the limited resources available.

Technology transfer as a scientific process, it needs to pass through a number of activities like prioritizing research agenda, idea initiation, proposal development, reviewing, granting, executing, monitoring and evaluation, and dissemination. Based on the National Policy, Directives and Strategies plan of the University, Academic Units and industries shall set short and long-term UIL-TT agenda to implement TT project outputs.

3.1. Approaches to Technology Transfer

In the literature, there are two approaches of technology transfer practices; the push and pull approaches. The push approach is such that a technology developed or improved by the academics wing is tried to reach into the industries so as to solve their problems. On the other hand, the pull approach is such that the industry requests the University for Technological Solutions for typical problems and the academics invests its time, effort, and knowledge to come up with appropriate technologies. In general, industries spent their time in the basic routines focusing on maximizing profits. And Universities spent their time in searching and fetching state-of-the-art knowledge and technology. In a pull approach the need for technological solution arises from the industry side; this approach brings an active interaction between University and industry. Conversely, in a push approach, technologies or research outcomes which exist or which were newly developed at the Universities are pushed into the market.

The TT workflow has five basic phases; these are: initiation, preparation, development, commercialization, and dissemination. This guide gives a clue on the basics of each phase and indicates the components and requirements of each phase in detail.

Phase-I: Initiation

Like any business, the need and the process to transfer a technology should be initiated for some purpose. Technology transfer has to have an innovative component; and innovation emanates from idea generation. The idea generated can be either to solve one of the problems in the community or to enhance the wellbeing of the surrounding society or the global community. For this to happen, the generated idea should be properly captured and treated for further consideration. In general, this phase is where the idea for Technology to be transferred is generated and made in the required formalities.

Ideas for technology transfer can also emanate from different alternatives such as:

- request from community,
- call for proposals,
- master's theses,
- Students' internship project,
- thematic areas of institutions
- Value chain analysis, etc.

Phase-II: Preparation

As also stated in previous section, the output of the initiation phase is a well-defined proposal which is of course an input for this stage, preparation. In this phase, submitted TT-proposals are evaluated and screened. It is not only the University to finance TT projects; all stakeholders should take part in financing TT projects. However, TT-project proposals should be evaluated for their technical and financial feasibility and beyond.

This phase may have two or three steps according to the nature and complexity of the submitted TT-proposal; these are:

- Pre-screening
- Evaluation
- 2nd evaluation (optional)

In pre-screening, submitted TT-proposals can be made to be evaluated RCSUIL-TT council. The RCSUIL-TT VD, considering the feedback from the council, he/she can automatically reject proposals which are not consistent with the thematic areas or capabilities of the Institute or University or can treat as a special case to be dealt with customers or other stakeholders. Then, the UIL-TT ED office should send all the submitted proposals to respective RCSUIL-

TT councils. To realize consistency of evaluation, common pre-screening format which is generic but representative should be provided to examiners (a sample pre-screening form (form 003) is attached with this guide in Appendix-1). The evaluation criteria basically consider technical feasibility, marketability, impact on society and environment, and etc.
Furthermore, due dates should be set for the academic units to submit the evaluation results and should be aware and strictly follow the schedule.

Phase-III: Technology development

At this phase, the TT project developers can start doing the TT project. In the technology development process, it would be worthwhile to involve experts from the industry or customers from community to deal with practical implications of new developments in the technology. The underlying project could be of 100% copy, adaptation, improvement, or new innovation. Whatsoever the TT project is, the main thing in this phase is to successfully execute the technology development within the planned resource and time requirements; the TT developers should be aware and beware of completing the project on schedule. Proper utilization of time and resource are the critical issues to deal in TT project execution as these affect the performance of the UIL-TT office as well as of the University. Thus, TT developers have to have good understanding and practice of 'project management' tools.

Phase-IV: Commercialization

In current TT-related practices, the Institute or University might have little involvement in the subsequent phases, commercialization and dissemination; the successful completion of a TT project was assumed to be the successful development of prototypes. But now, it should be clear that the TBIC under UIL-TT office should act as a business unit and hence have to take care of the successful completion of TT-projects till their dissemination. The TT-office should consult the TT developers either to apply for IP right or not depending on nature of the technology and the willingness of the developers too. There are different alternative approaches of protecting an intellectual property; referring to the requirements of the Ethiopian Intellectual Property Office and other legal issues associated with coping, adapting, or improving an existing technology or protecting a new innovation, the decision to apply for IP right can be reached.

As we are in the developing economy, there could also be a possibility of getting utility IP right to protect the local market competition of the same technology; otherwise, the TT developers may also prefer not to go for IP right and can prefer entering the market without any IP

protection. In this regard, they can devise appropriate marketing strategies and start making the business out of the underlying technology. If however the TT developers decide to apply for IP right, the IP office needs to guide the application process. Furthermore, the IP policy of the institute or University should also be referred carefully before applying for IP right.

The issuance or rejection of an IP right takes its own time and may range from 3 to 6 months. During this time, the TT developers can work on devising marketing strategies, business plan development, and perform other issues related to successfully commercializing the technology prior to the IP right notification.

If IP right is issued, in consultation with the UIL-TT ED and IP office, the TT developers have to create a licensing model and distinct marketing strategy to commercialize their technology. The TBIC and UIL-TT ED office can also arrange additional awareness creation trainings on entrepreneurship and other business related skills.

If IP right is not issued and if the UIL-TT coordinator and TT developers are confident on the commercial value of the developed technology, they can go for commercializing the technology and make business accordingly. Additional business activities for the sake of successful commercialization can be also provided by the business incubation centers in each institute or University.

Phase-V: Dissemination

This is the final stage of a technology transfer project; after a TT developer realizes that the technology can be commercialized, it needs to be disseminated to the target market or customer. It is only when the target customer or market gets the technology and uses to solve the identified problem or to meet enhancing the identified demand for improving productivity or welfare of the target community that a technology can be said transferred. This signifies that the technology needs to be produced in mass and disseminated to the market.

There are many possible alternatives of disseminating a technology, the important ones being: transfer to a market where commercialization is possible, selling the technology to existing company, start-up a company, and handing over to the community.

Start-up a company: a start-up company of a technology transfer project is basically business venture which once is ensured to be commercialized. It is usually considered as a newly emerged, fast-growing enterprise which intends to meet a typical need of a target market by which the technology transfer was initiated by developing a viable business model around

innovative product, service, process or a platform. This signifies that the TT developer in collaboration with the UIL-TT office is able to open a business enterprise on the production, distribution, and other related business activities of the technology.

Transfer to a market where commercialization is possible: due to many reasons, the TT developer may not be able to go for new business start-up and hence need to see for other options; this is a wide-ranging option in which the TT developer can make a business without selling the full package of the technology. In this case, it is assumed that either similar products or products which give of same function are available in the market. Thus, the existing business makers can deal with the TT-developer and TBIC under UIL-TT office to jointly make the new dimension of the seemingly same business idea. With the agreed business, the two parties in agreement will last long till the life time of the business.

Selling the technology to an existing company: when the TT developer is unable to go for new business start-up, he/she can sell the technology to an existing company which has relevance and capability to produce the technology/product and the ability to make the business. This implies that the technology should, in some way, consistent with the exiting business orientation of the company. If the technology is IP protected, the two parties also should deal and agree with the selling condition of the technology to include its IP right or not.

Handing over to the community: even though the TT developer realizes that the technology can be commercialized and disseminated to the current market, if however he/she gives higher priority to delighting the surrounding community via his/her technology, he/she can provide it to a public institution which can act as non-profit making business but the target customer gets the technology appropriately. In this case, the TT developer may be required to offer adequate trainings in order to transfer the soft skills associated with the technology.

3.2. Pre-granting Processes

3.2.1. Prioritizing UIL-TT Thematic areas

The Regional Science and Technology Innovation forums, based on the socioeconomic settings of the regions and expertise available at the universities, identify technology priorities for their respective areas. The following guiding principles shall be used for prioritizing UIL-TT issues in the University:

1. TT ideas are normally required to be in line with the needs and priorities of the country, the missions and objectives of the University and the felt needs of the community at large based on push and pull approach

2. Thematic areas shall remain the guiding principles for prioritizing TT ideas;
3. Guidelines for prioritizing TT issues may be set by the RCSVPO in consultation with the AUs and industries;
4. UIL-TT Executive Director shall periodically prioritize, facilitate and/or revise its UIL-TT activities and inform the priorities to the RCSVPO, AU, RCs and industry;
5. Each AU's, RCSUIL-TT council should continuously inform, facilitate and consult UIL-TT implementers

3.2.2. Initiation of TT project ideas

The following guiding principles shall be used for initiation of TT project ideas:

1. All TT ideas shall originate from the periodically assessed thematic areas;
2. Multi-disciplinary TT projects are appreciated;
3. In projects initiated form value chain based technology transfer, the project team shall be interdisciplinary.The maximum number of project team member in any value chain based technology transfer project shall not be more than twelve;
4. In the TT proposal initiation, female members should be included taking in to account their real contribution in the project. In case there are no female investigators with real contribution in the issue, the proposal should be considered with sound justification;
5. In the TT proposal initiation, at least one TVET trainer and one enterprise/industry stakeholder should be included. Note that the stakeholders should have a credible written evidence to be included;
6. An academic staff shall not be involved in more than one TT project as a principal coordinator and in more than two as a co-coordinator at a time. However, based on the nature of the project, the RCSVP office shall give special decision;
7. The maximum number of years to complete a TT project shall not be more than one year; whereas, a maximum of two years for value chain based TT projects. However, based on the nature of the project, the RCSVP office shall give special decision;
8. In TT project proposals, the budget allocation for the proposal shall be based on the nature of the project activities and agreement;
9. TT projects shall be prepared, reviewed and made ready in the previous fiscal year;
10. In the TT project proposals the role and responsibility of each coordinators should be clearly indicated or included so as to avoid duplication of efforts or resources;
11. The team of coordinators should choose one of the coordinators in the list as the principal coordinator with consensus, or other ways, and the rest as co-coordinators;

12. If members agree that they contribute equally, that must be made clear (in writing) to both the respective Academic Unit and TT office at the initiation stage;
13. There shall always be one person who represents the team for ease of communication, even when they all agree to contribute equally;
14. In the case of value chain based technology transfer the team members shall have "team charter" on the project;
15. Contents of the TT project proposal shall follow the TT proposal format of the University
16. If the TT project proposal initiators believe that the proposal has ethical concerns, it should be submitted to the Institutional Review board.

3.2.3. TT Project Proposal Review Process

The following guidelines shall be used in the TT project Proposal Review Processes of the University:

1. TT project teams or initiators who wish to participate in TT project grant competition should submit the developed proposals to the office of Academic Unit RCS-VD/ RCSUIL-TT director as per the deadline set by the University;
2. The RCSUIL-TT Council shall check for conformity of the proposals with the guideline, thematic areas and formats;
3. In each Academic Unit, several TT project Proposal peer reviewer teams may be set up, as required, by the Academic Unit RCS-VD discussing with the RCSUIL-TT Council;
4. Peer reviewers shall be chosen based on relatedness in fields of study and professional merit;
5. The RCSUIL-TT Council can also assign anonymous reviewers instead of review team formation, if reviewer team formation is not feasible;
6. Reviewer teams shall critically review proposals based on the approved formats;
7. Anonymous review of proposals shall be practiced. However, open review of proposals shall be practiced if supported by the majority of the RCSUIL-TT council in the academic unit;
8. For each proposal, three anonymous reviewers shall be assigned;
9. The reviewers should strictly follow the guideline and submit their evaluation report according to the formats approved;
10. When bias is identified in the review process, immediate corrective action shall be taken by the RCSUIL-TT Council;

11. Project initiators shall defend the proposal in public and all members of a project proposal shall avail themselves during the proposal defense ;
12. The RCSUIL-TT Council and/or the review teams who did the reviewing shall check it out if the comments forwarded during the defense are incorporated;
13. The proposal should be reviewed by the Institutional Review Board if the proposal has ethical concerns;
14. The review process shall strictly be adhered to and no step shall be skipped unless otherwise agreed up on in writing on the basis of tangible reasons;
15. All the above forums and venues shall be arranged by the RCSUIL-TT Council led by the RCS-UIL VD of each AUs;
16. Each project may undergo the review processes in other institutions in the Region (For example: Agriculture Research Center, Health Research laboratory and others when needed);
17. The final decision of acceptance for a TT project shall be given centrally by Standing committee/council established by the RCSVP office;
18. The RCSUIL-TT Council of the respective AUs shall approve the TT project progress and final accomplishment. The hard copy (final copies) of funded projects shall be submitted to UIL-TT Director/Executive Director and copied to the publication, Documentation and Dissemination Director.
19. If there are any complaints regarding the proposal review process, the TT team will appeal to RCSUIL-TT council for a solution otherwise to standing committee of the university.

3.3.TT granting

The fund release for proposed TT projects will be done based on the following guidelines:

1. Fund release for approved TT project proposals is authorized by the RCSVPO in situations whereby funds are centrally administered or by Deans of respective Academic Units when the budget allocated is decentralized;
2. A TT project contract shall be signed between the project coordinators and the University as well as the funding agency when the project has been approved irrespective of the source of funding;
3. When there is an interest of joint ownership of TT project results, the contract shall be between the project coordinators as one party and joint financiers as the other party and the University;

4. Funds are released for approved TT project proposals in two installments (50% of the budget for first installment and 50% for second installment) for TT projects to be completed in one fiscal year;
5. If a TT project proposal has special nature and requires allocation of more than 50% of the budget for the first installment, it shall be approved by the RCSUIL-TT director;
6. Second installment shall be released up on submission of sufficient and sound progress report to the RCSUIL-TT director or AU-RCSVD, and expenses from the previous installment payment shall be settled in accordance with the relevant financial procedures of the University;
7. If a TT project is conducted for more than a year, the budget allocation will be only for each year, based on the budget breakdown of the specific year in the proposal;

3.4.Post granting

3.4.1. Administration of TT projects

The research activities in the university will be administered based on the following guidelines:

1. The progress of each TT project activity shall be reported by the Principal coordinator (PC) or the co-coordinator at the regular biannual reports and submitted to the RCSUIL-TT VD or UIL-TT ED
2. Progress reports will be prepared following the format given by UIL-TT ED;
3. If the monitoring and evaluation indicates that a project has not been going as planned or if there exists some fraud, the RCSUIL-TT VD and UIL-TT ED may enforce the return of previously taken budget, and if necessary, pursuit legal suit.
4. The financial administration of TT project funds shall be governed by the existing financial policy and procedures of the University and such other relevant guidelines as may be issued by the RCSVPO upon approval by the Senate;
5. All full-time teaching staff at University are expected to conduct TT project and disseminate to the end users.
6. Project team members from other organizations working with the university staff shall not be assigned as Principal coordinator; they shall not withdraw TT project budget or shall not request ownership of intellectual property rights arising from the TT project output, unless clearly stated initially;
7. Academic staff with accepted TT project proposal shall inform the department head and RCSUIL-TT VD of the respective Academic Unit to get the stipulated exemption of classes in a given semester and adjust teaching loads;

8. In annual Technology transfer conferences and exhibitions of the university, all of university-funded TT projects should be presented orally or in the form of poster presentation.
9. The Deans/scientific directors shall facilitate the RCSUIL-TT activities, support the RCSUIL-TT vice deans and incorporate RCSUIL-TT activities in the main report;
10. TT project results shall be communicated to responsible community members and implementers or other concerned stakeholders;
11. If a TT project is discontinued due to justifiable reasons, or if the work is not properly carried out within the planned time table, the coordinator should return the unutilized money to the university before the closing date of budget year;
12. Once TT proposals are approved, funds may be utilized according to the approved itemized budget breakdown and according to the work plan. Coordinators should strictly adhere to cost breakdowns indicated in each proposal. However, budget transfers may be allowed in consultation with RCSUIL-TT VD, UIL-TT ED and Deans/scientific directors
13. Once a TT project is approved and budget is secured, the approved TT project implementation location, the work plan, methodology or objective of the study cannot be changed without informing and getting permission from the RCSUIL-TT Council or RCSUIL-TT VD or UIL-TT Director
14. When a Principal Coordinator (PC) leaves the University, he/she has to submit self-termination permission letter to respective AU, Deans/scientific directors and they shall delegate a principal coordinators from the co-coordinators
15. A TT project implementer who has received grant either from the University or other funding agencies (who have agreement with the University) is obliged to submit hard and soft copies of the final result and settle financial matters to the RCSUILTT VPO. Unless these are proven, the individual will not receive another university grant; will be denied clearance when leaving the University in any manner (scholarship, transfer, pension, etc…);

*3.**3.1. Monitoring and Evaluation***

The ultimate aim of monitoring and evaluation is to learn what has worked and what has not. Hence, monitoring and evaluation of TT Project in the university shall be made based on the following guidelines

1. Proper implementation/execution of each project is the responsibility of those involved in the TT Project;

2. The RCSUIL-TT Council or RCSUIL-TT VD or UIL-TT ED shall ensure the steady implementation of TT project proposals on a regular basis;
3. Project team shall submit regular progress reports to RCSUIL-TT Council or RCSUIL-TT VD or UIL-TT ED;
4. The TT project implementer should submit progress report using the format to the RCSUIL-TT VD or UIL-TT ED annually;
5. Any concerned body in the University shall supervise TT project activities in the field and/or laboratory at any time for appropriate utilization of fund, correct use of methods, location, etc.;
6. The outputs of each project should be presented as progress report in exhibitions, conferences and eventually every effort shall be made for a wider dissemination;
7. Full package of Successfully completed and verified TT projects shall be disseminated or commercialized through training, demonstration, communication using various media, etc. This shall be decided by a joint validation by the project implementer, RCSUIL-TT Council or RCSUIL-TT VD or respective industries and UIL-TT ED;
8. Written feedback shall be provided for reports presented on the progress of TT projects by the RCSUIL-TT Council or RCSUIL-TT VD or UIL-TT ED as much as possible;
9. Any good practices and challenges of TT project activities will be documented and communicated for future use;
8. TT project Implementers shall validate their output before submission and dissemination;
9. RCSUIL-TT Council, RCSUIL-TT VD and UIL-TT ED shall regularly assess/evaluate the planned TT project activities;

3.3.2. Output, Outcome and Impact assessment of the TT project result

The University shall use the following two alternative approaches to monitor and evaluate the effect of TT project outputs

I. **Tracking forwards**: from the completed TT projects to see where, when and how it is communicated, and to what effect or tracking forwards, the university will decide where to look for effects and use the under listed four categories to capture the value chain based TT project output.

A. Sector benefits (e.g. impacts on specific industries)
B. Wider social benefit (e.g. economic benefits from increased population health or productivity)

C. Policy or product development (e.g. input in to official guidelines, competitive industries)
D. Capacity building (e.g. IP rights, career and skill development)

II. **Tracking background**: examining policy choices, organizational management and professional practice to explore how TT project is sought out and used in these areas and to what effect. For tracking backgrounds, the university may undertake interviews and commercialized products with TT project users by deploying different mechanisms.

3.5.TT Project Audit

A TT Project audit shall be conducted by RCSVP office once every three to five years to assess how well the theme and the AU met the university's TT project objectives. The area which the audit should focus on includes;

1. The scope and extent of the TT project activity
2. The strengths and weaknesses of TT project activity
3. A financial report on revenue and expenditure. The report should also include the names of major sponsors, clients and stakeholders
4. The focus and future direction of the TT project activity;
5. UIL relations to the university and stakeholders.

On the basis of the findings, a strategy to improve their TT project implementation performance is drawn up. The audit report and strategy are submitted to the senate for approval.

4. Internship Program

Internships are work-based activities in which students engage in learning through practical and relevant experiences at various internship sites. Internships are undertaken by students who are at or near the end of their academic program. These structured experiences involve the practical application of previously studied theory through course work. Internships are targeted

to the students' meaningful future plans and allow them to explore careers that require additional knowledge, certification, or on-the-job training.

Effective internship programs are planned, structured, and evaluated by the intern, internship coordinator, Company internship Supervisor and academic advisor/mentor/, and even parents. Effective internships provide interns with the opportunities to develop an understanding of the career area duties and responsibilities, terminology, process, protocol, and other information that will enable interns to analyze and revise their meaningful future plans. There must be agreements, understandings, instruction, and orientation for all participants; coordination by each program and office of industry linkage, evaluation of each intern's experience; and program analysis for future improvements.

4.1. Benefits of the Qualified Internship program

As per the curricula of different fields of study, the integration of the mandatory internship programis one of the most demanded activities from students, universities and industries. The higher education in the different fields had to be more demand oriented in order to strengthen the quality of education and competitiveness of the Ethiopian industries. The QIP has the ability to fill that gap in the industry. The QIP will help:

- Companies to screen personal and technical skills of the intern without any commitment to hire
- Companies to decrease costs for intensive trainee programs up to two years for fresh graduates.
- To make students familiar with the corporate culture and the used technologies in industries.
- Companies to get a chance to increase social self-image and promote its service and products to the customers.
- To make students free labor pool and minimize labor costs in a host industry.
- Students toincrease employability through: gaining knowledge of organizational structure and processes in the industry, becoming familiar with new techniques and methods, and shortening the transition period from studies to work.
- internsto exercise individual responsibility and develop strong teamwork skills,
- Interns build up a network of professional contacts for future opportunities and references,
- interns to identify opportunities for business venture creation and understand the process of entrepreneurship

- students to identify gaps on industry that will be solved through their thesis or graduate projects which intern helps them on their future career development
- universities to broaden the linkage with the industry
- universities in the process of attaining international standards in teaching-learning process
- universities to generate potential income through consulting projects

4.2. Internship program management process

4.2.1. Internship attachment industry

- The mandatory internship semester will be undertaken at host companies, which are approved by the university-industry-linkage office of the respective university, faculty/school and department.
- The internship attachment industry can also be the university itself, if the internship project is clearly defined and supervised; for example, innovative projects, installations and any development activities on campus.

4.1.2. Duration and timeline

- The duration of the internship shall be accordingly with the curriculum of respective disciplines. If the employer and the student agree, it may be done including break times without compromising the academic calendar, including the semester break. In this case, the extra time spent in the company should be remunerated by the company or based on their agreement.
- Students are not entitled for any annual leave throughout the internship periodunless; he/she must get approval from the supervisor of the host company. In the case of leave due to sickness, the student has to provide the necessary documents to justify his/her absence to the company and his/her university mentor.
- A student being absent without proofs for more than ten days during the internship period leads to exclusion from the internship program, meaning the student is considered as a failed student. As a consequence, the student has to repeat the internship program without any financial support from the university.
- The timing for internship program shall be taken based on the respective curricula of disciplines.

4.1.3. Change of Placement

- Students are not allowed to change to another internship site without prior approval of the UIL office and his/her respective department and the agreement of the host company

supervisor. They have to submit an appeal letter supported by the plant supervisor and internship officer from a new company to the UIL- office.

4.1.4. Students Eligibility Requirements

The student is eligible to conduct the mandatory internship semester upon meeting the following requirements:

1. Having accomplished a minimum requirement of respective discipline curricula.
2. Being registered as internship student
3. Successfully passed the holistic exam (if there is any in a given curricula)

4.1.5. Duties and responsibilities

4.1.5.1. Duties and responsibilities of interns

1. The student may search for industry acceptance by themselves
2. The student must submit their acceptance letter to the faculty/school internship coordinator before leaving to internship program
3. The student must be on time as a regular worker of the company/industry
4. Students must keep their faculty/ school internship advisor updated on the progress of the internship while they are away from campus
5. The student must engage himself/herself in identifying problems and giving solutions for the host industry
6. At the end of the internship program, the student must write a full report of the internship experience and their project based on the given writing format
7. The student must be able to give a brief explanation of the industry for their mentor
8. The student is expected to be professional in their respective offices, in the hours they work, in their manners of dress, in their relation with other members of the staff of the host company
9. The student must present their internship experience in the presence of instructors based on the schedule set by their respective faculties/schools

4.1.5.2.Duties and responsibilities of Students Mentor

1. The mentor should guide students on site during industry visit

2. The mentor will help students in identifying problems of the industry and give assignments to the students
3. The mentor has to meet the students on regular basis and give clear procedures about the expectations for the work to be done
4. The mentor has to provide constructive feedback regularly during the time of internship
5. The mentor must fill out students' evaluation form on time and submit to the concerned bodybased on the evaluation criteria
6. The mentor shallattend and evaluate the final presentation of the student, when the student presents his/her experiences and findings

4.1.5.3.Responsibilities of industry supervisor

1. Aware the studentsabout ethics, policies and procedures of the industries.
2. Understand the students' internship objectives
3. Prepare a basic schedule, identify working area and provide continuous technical support
4. Work with student(s) to identify responsibilities and implement skills that reflect professional experiences
5. Provide professional opportunities for the student to learn and develop and apply their career goals and objectives
6. Complete a final evaluation of the student's performance using the supplied company Supervisor Evaluation Form.
7. Give relevant information for mentor
8. Contact University Industry Linkage Office at any time when questions or concerns arise.
9. Documenting the Attendance sheet of intern students
10. The company advisor must properly evaluate students based on the evaluation form provided by the University in close and stamped envelope

4.1.6. Monitoring and Evaluation of the Internship Program

1. Thementor shall supervise students during internship period and report to the respective department and UIL officer or RCSUIL-TT VD
2. A supervision team formed by RCSUIL-TT VD or UIL-TT ED shall supervisethe interns whenever necessary and report the observation to UIL-TT ED and RCSUIL-TT VD
3. If there are inconveniences identified during supervision, UIL-TT ED or RCSUIL-TT VD shall discuss with respective industries
4. Students shall submit monthly reports to the mentor as per the format given by UIL officer/department

5. Students shall prepare complete reports as per the format given by UIL officer/department and submit to the respective department so that evaluated by the assigned evaluator
6. Students shall present their report and experience in open defense organized by the respective department and mentors/examiners should evaluate their performance using criteria developed by respective discipline/department

4.1.7. Final Grading

The final grading of the intern shall be done as per the curriculum of the respective disciplines.

4.1.8. Misconducts and measures to be taken

If an intern violets any rules and regulations set by the university and industry, disciplinary

5. Externship

In order to enhance the practice-oriented teaching, increase consultancy competence, academic rank transitions and engagement in research and TT projects, it is imperative to engage academic staff in externship program in different organizations.

5.1. Selection and placement process of externs

5.1.1. Application submission procedure

1. Academic staff apply based on the call for externship
2. The applicants must provide evidence which are related to the host industry and program objectives on their proposal/concept note
3. In the proposal, the applicant must avail the following information's; working experience, participation in other extra curricula activities of the university and performance evaluation result of two consecutive semesters
4. Letter of approval for the concept note/proposal submitted should be brought from the host company (if any)

5.1.2. Academic staff selection process

1. The first selection process will be done by respective department. Points will be given based on the scale provided in selection criteria document. Then, final selection process will be handled by the committee formed under UIL-TT ED.
2. The selection committee is comprised from college/school UIL coordinators and internship/externship officers

5.1.3. Roles and responsibilities of selection committee

1. The committee will evaluate the applicant's is submitteddocument taken from colleges/schools/departments based on the criteria [annex]
2. According to the quota given to colleges/faculties/departments, the budget allocated to the program and the priority given to thematic areas, the committee will select the candidates

5.1.4. Result Announcement/Notification

The final result organized by selection committee based on the criteria's will be approved by the vice president for Research and community service/scientific director and finally the result will be announced by UIL-TT ED/deputy director for research, community service and UIL-TT

5.1.5. Duties and Responsibilities of Extern

1. An extern who is participating on the externship program can have a right to get any chance or opportunities for any academic rewards, scholarship and incentives
2. An extern who finished the externship program can have a right to ask participation certificate after he/she presents his/her findings of the program.
3. An extern should accept and act accordingly with the duties that the host organization is going to assign within the working time of the organization.
4. An extern shall be on time as a regular worker of the company/industry
5. An extern shall respect the rules and regulations of the host industry.
6. An extern has an obligation to report the externship findings to the department and responsible offices and present in a public defense
7. The extern shall prepare a concept note regarding a request for externship
8. The extern is expected to be professional in their respective offices, in the hours they work, in their manners of dress, in their relation with other members of the staff
9. An extern should send regular progress report to externship coordinator
10. The extern shall write promising proposals for the problems identified and submit at least one proposal to university industry linkage and technology transfer office

5.1.6. Monitoring and Evaluation

When an academic staff is going to the host organization for externship, the staff should have a support letter to the host organization from the UIL-TT ED. The monitoring task will be done by respective colleges/faculties/schools and institutes.

3. A supervision team formed by RCSUIL-TT VD or UIL-TT ED shall supervise the externs whenever necessary and report the observation to UIL-TT ED and RCSUIL-TT VD

4. If there are inconveniences identified during supervision, UIL-TT ED or RCSUIL-TT VD shall discuss with respective industries
5. Externs shall submit reports to the RCSUIL-TT VD or UIL-TT ED as per the format given by UIL officer/department [to be annexed]
6. Externs shall present their report and experience in public defense organized by the respective department

5.1.7. Misconducts and measures to be taken

If an extern violets any rules and regulations set by the university and industry, disciplinary measures shall be taken according to the university code of conduct.

6. UIL Linkage forum

The following shall represent the objectives of creating linkages among the institutions:

1. Ensuring that the procedures through which practical trainings given to teachers and students in manufacturing, and service provision enterprises are in the spirit of cooperation with appropriate plans and according to procedures;
2. Facilitation of research and technology transfer activities to be operated upon the need of the industry;
3. Developing the culture of joint planning and operation among education and training institutions, research entities and the industry by bringing together their resources;
4. Improving the capacities of the actors of the linkages to implement education and training, research, consultancy and technology transfer.

The nature or type of university-industry partnership in the linkage forum maybe classified based on the country development programs:

1. Road construction linkage forum
2. Rail way construction linkage forum
3. Water, Irrigation and energy
4. Food, drinks and pharmaceuticals industry linkage forums
5. Health and development linkage forum
6. Chemical and construction inputs industry linkage forum
7. Leather Industry linkage forum
8. Textile industry linkage forum
9. Sugar Industry linkage forum
10. Agricultural development linkage forum
11. Metal Industry linkage forum

12. Mining Industry linkage Forum
13. Energy industry linkage forum
14. Construction work and Housing development industry linkage forum
15. Electronics, communication and ICT Industry Linkage forum
16. Culture and Tourism Industry linkage Forum
17. Meat and Dairy industry linkage forum

6.1. Hierarchical relations of organizations under the linkage Forums

The linkage shall have the following three levels of hierarchy:

1. National linkage Forum to be organized under the National Council for Science, Technology and Innovation ;
2. Regional linkage Forum to be organized under the Regional Council for Science, Technology and Innovation
3. Zonal linkage forum to be formed based on growth corridors.

6.2.Organization and major functions of Zonal Linkage forum

Zonal linkage forum shall have the following members:

a. University president…….. Chair person
b. Heads of zonal administration……. Secretary
c. Heads of Poly Technique colleges…..Member
d. Mayors of the cities near the university …. Member
e. Directors of Research institutions……. Member
f. Endowment and private industry managers…….. members
g. Zonal chambers of commerce and unions of professional association leaders…….. member

The Zonal linkage forum shall have the following duties and responsibilities

a. Shall prepare an annual joint plan for the integration of the resources of education and training institutions, research entities and industries in the zone and for the establishment of linkages among them;
b. the zonal forum shall also notify to regional and the National Linkage Forum of such plan;
c. Shall identify issues that have proven to be obstacles against the implementation of the linkage and search for solutions; shall notify the concerned organ of same.
d. Shall conduct annual linkage forum workshop
e. Shall monitor, evaluate and support the activities and report to regional and national linkage forums every three month.

f. Shall coordinate and leads research, Innovation and technology transfer activities.
g. Shall encourage and support practical teaching and learning

6.3.Procedural system of the linkage forums

The national and zonal forums shall implement the following, as appropriate, to make their activities effective and swift:

1. Shall sign joint memorandum of understanding indicating the detailed procedures of the organs of the linkage forum;
2. Shall design terms for joint utilization of budget, human resource requirements and various infrastructures;
3. Shall put in place a system of joint monitoring and evaluation of plans;
4. Shall form sub-committees to follow-up the issues of training, research, consultancy and the creation of innovative enterprises as deemed necessary;
5. Shall elect a chairperson and secretary for the linkage forums. The election of the chairpersons of the forums shall take place every two years.

6.4.Implementations of University-Industry collaborations

University-industry collaborations are often complex, as they are multi -party and these parties have multiple and different goals. Therefore it is very important for all the stakeholders, internal and external to the university to have a clear understanding of these principles. Standard operating procedures, education and training, and communications strategies can help to establish strong and fruitful university-industry partnerships.

Creation of theme based working groups

A. These working groups are based on the prioritized technologies, and their purpose is technology testing, adoption, improvement, and/or creation;
B. They will consist of representation from the Innovation System Stakeholders; development partners, community, industries, university, research institutes, relevant government departments, Technical and Vocational Education and Training institutes (TVETs), and small and medium sized enterprises (SMEs);
C. In building the teams, we have to ensure, diversity in experience, areas of expertise, age, gender, and representation from companies and other stakeholders.
D. The partners for each of the Working groups will sign an Agreement of Collaboration, which will outline the goals, expectations/commitment from each partner, processes and anticipated outcomes.

Assessing the Technical Gap

Creating a matrix to evaluate research projects for technological innovation is the beginning of creating a solid foundation for success.

Template for Project Proposal Development

I. Define the problem that needs to be addressed
   - Is this societal, environment or economic? (I.e. boosting performance and improving competitiveness for an important industry in Ethiopia).
   - What is the scientific and technological problem?
   - Does this fit within the science and technology priority areas?

II. Determine probability of solving
   - Availability of expertise within the university, throughout regional innovation system, nationwide or worldwide.
   - Ability to build a committed team to address the critical problem

III. Determine which elements are to be studied, new technologies, processes, operations, business models

IV. Critical Selection
   - Reduce to a manageable few, what is the most important criteria
     - Cost and potential funding
     - Acceptance by the end users; ease of use, cost to adopt.

Project Implementation

Science-Technology Innovation Centers for University-Industry Linkages Technology Innovation Hubs are created to serve the Working Groups, to accomplish the research. These hubs may be located in different places during different phases of the research project. For example, the research could take place in a lab at the university, the prototype development at the TVET Centre and piloted at one of the companies within the Working Group

7. Incubation process at TBIC

7.1.Pre-incubation phase

The incubation framework of TBIC is based on the following business development model (shown in Figure below). It clusters development stages into three stages of pre-incubation this stage includes the application and selection process stage, incubation stage and post-incubation stage.

7.2.Application Process

The applications process starts by free advertising messages through different medium will be posted at the university and colleges /faculty as well as in the open places. After the registration of interested incubators on the platform, TBIC provides consulting and advise services in the

form of orientation training regarding entrepreneurship, business plan development and other preliminary incubation services.

After this training, interested students are required to submit their business idea as applicant on the platform to be candidates. Business ideas will be reviewed and assessed by a selection committee according to a pre-defined set of criteria. This stage assessment results in short list screening to identify phase 2 participants.

7.3.Selection process

The focus of this stage is to give an overview of Phase 2 of the incubation process. It serves as a reference for the whole team and assures that all parties have a common understanding of Phase2. Furthermore, it should support the team in developing concrete tasks that have to be undertaken in order to successfully complete Phase 2. See annex C

7.4.Submission of business idea concepts

Once the open innovation platform closes and the discussion of the posted business ideas comes to an end the University students who have been pre-selected and allowed to submit an official business idea formally for final selection. During this stage candidate can ask formal questions and the assigned technical experts will provide feedback as soon as possible. At the end of the period the Young Entrepreneurs selection committee will work on the submitted business concepts to make short list for the second time.

Winning teams will be informed via email and posted on the website. Those not selected for the next phase, will receive a message that should motivate them not to give up and encourage them to try again somewhere else or to contact winning business idea owners in order to be admitted to their team.

This phase targets students with innovative business idea passed through the process of idea generation, competition and final selection. The ideas shall be viable to technology and other innovation with potential to commercialization and benefit the community. The activities include individual advisory and support to develop simple but later become a comprehensive business plan, training on entrepreneurship, and technical and business coaching on business plan development. The process shall help to select future incubation start-ups.

7.5. Incubation phase

The incubation phase starts with successful fulfillment of the following condition in Young Entrepreneurs stage:

(1) Engineering *design* (product or service demonstrations/ workable business concept)

(2) Preliminary market assessment ready to commence in-depth market research;

(3) Business concept tested for its economic feasibility; and

(4) A developed business model that demonstrate the capacity to implement the business/innovation plan.

The incubation phase includes the feasibility, development, go-to-market and growth stages. The new start-ups (together with TBIC) shall set millstones for each stage, which shall serve as benchmark to assess the progress of the start-ups. Upon their graduation from TBIC, the start-ups shall have a developed product/service prototype. Start-ups shall continue their business development (go-to-market, and growth) in their post-graduation incubation service arrangement.

TBIC shall provide coaching (both technical and business), counseling and monitoring service. Business development training is also part of the support from TBIC. Necessary facilities such as office, internet, copier machine, printing, media access, promotion, exposure to networking and financing shall be facilitated. Seed money in the form of student loan shall be included as one component of the incubation service package.

Those successfully passed through the four stages shall enter to the graduation stage of the incubation process. The TBIC graduates shall have mature product or service and create promising market and business links. The graduation criteria will be separately prepared.

7.6. Post-incubation service

TBIC shall allow students to continue to get incubation service to let their business grow and mature. Post-incubation service include legal establishment of the businesses and to operate in the normal business environment. Start-ups can continue receiving the service (resources and services, crucially, business and legal advising) in two modalities: -

1. full-TBIC incubation service with premium-level service fee to a maximum duration of one years
2. Virtual-TBIC service for graduated clients one or two more years at their selected address.

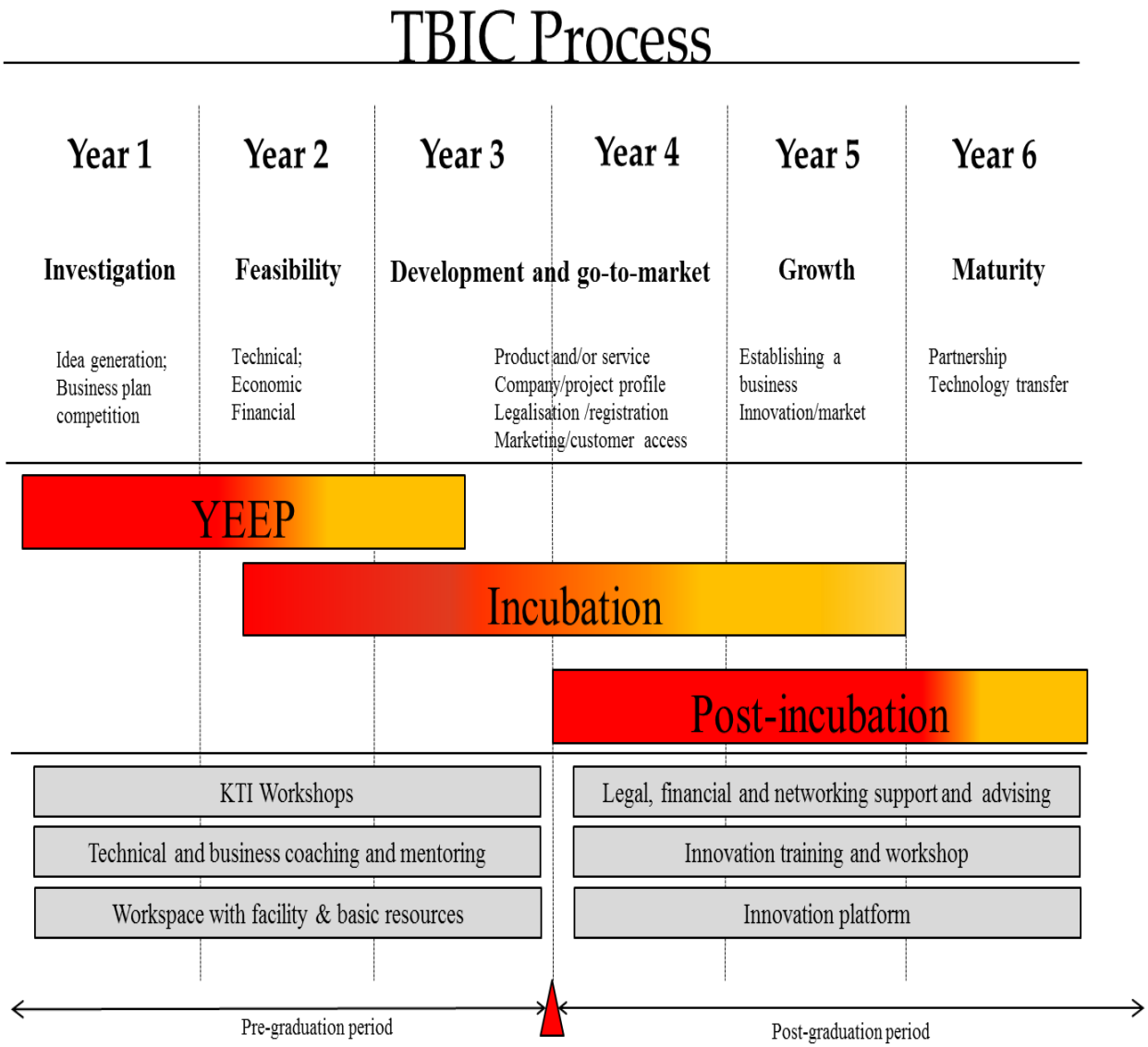

Figure 3: TBIC Business development model

7.7. Organizational Structure

In order to enhance its activities, make the centre effective and efficient, and properly link with university leadership and the project initiatives; the following organizational structure is proposed.

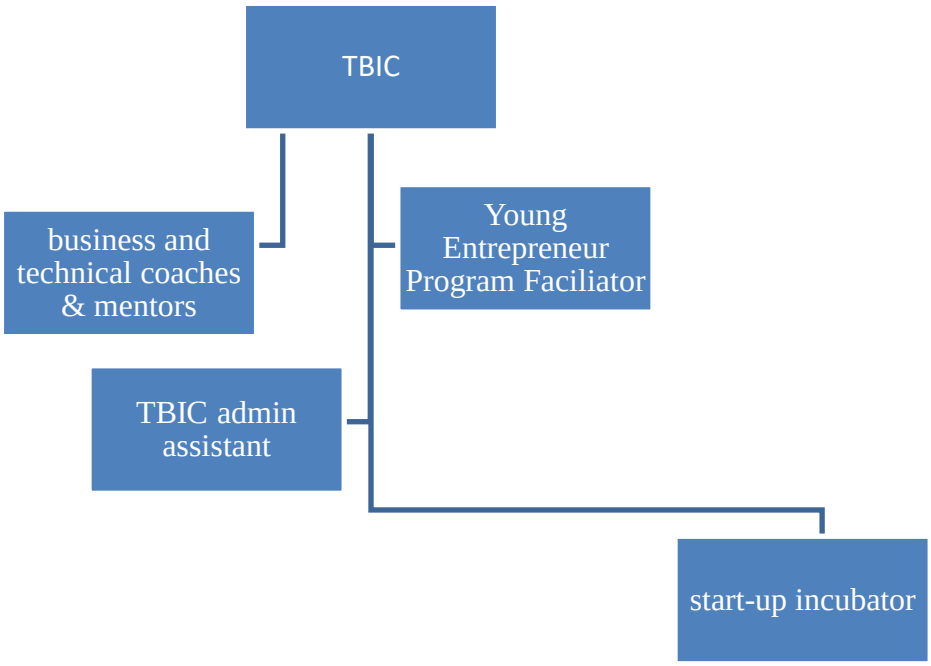

Figure 4:TBIC Structure (with functioning Young Entrepreneurs Project)

7.7.1. Duties and Responsibilities

7.7.2. Young Entrepreneurs Program officer

Young entrepreneur program officer works with start-ups to support in the areas of business plan development, financial feasibility, market analysis, and selection of start-up's business models and registration of start-up's businesses

1. serves as incubation centre business developer
2. Facilitate market access and linkage to the market.
3. work collaboratively with technical coaches in the area of:

a. Development of financing strategy and business development plan with each Client as appropriate, including equipment lease I purchase.
b. Facilitating interactions among start-ups, specifically taking advantage of opportunities to develop supplier and customer relationships.
c. Development of financial strategy and business development plan with each start-up as appropriate, including equipment lease I purchase.

7.7.2.1. Duties and responsibilities of Technical coaches

Technical coaches report to TBIC coordinator. Coaches will closely works with TBIC facilitators (in areas of event organisation and resource requirements for the start-ups) and with Young Entrepreneurs project facilitator (in area of business development). A technical coach shall be responsible for one or more start-up teams as technical advisors.

A technical coach shall:

- Link Clients to university laboratory faculty and facilities for research analyses, testing, prototype development, etc.
- ensure the development of the start-ups business (in terms of schedule and quality)
- Identify training and development needs of start-ups

7.7.2.2. Duties and responsibilities of Administrative assistant;

An administrative assistant is critical to the success of the incubator. S/he is responsible for all bookkeeping and controlling activities of the incubation Center, S/he will provide training and on demand advisory for the Clients on their internal financial processes. Additionally, s/he will support the Clients in their needs for financial support and provide linkages to the respective finance institutions.

7.7.3. TBIC Services to start-ups

TBIC service planning takes into consideration that the start-ups are university students (Much of their time is meant for education and they need both business and technical support). On the basis of this, the service shall include:

- Business development (training, coaching and mentoring)
- Technical competence development (coaching and mentoring)
- Office facilities with Internet connectivity
- Shared access to conference room and print services
- Advisory and networking support (legal and financial)
- Networking and marketing support

7.7.4. Progress Monitoring

In order to monitor Client development, each company is required to comply with the reporting format. Standardised reporting templates are provided by TBIC coordinator and need to be

submitted by the 5th of each month reporting on the previous month. The reporting template content will be:

- Overview of key activities over last month
- Product / Service Status (potential quality improvements, new developments etc.)
- Incubation services and support used/ how do you rate the services
- Number of clients /Business contacts/ orders
- Revenue reporting and adjusted forecast
- Client satisfaction
- Progress against business plan milestones
- Next month millstones

8. Incentive packages

8.1.Incentives of Technology transfer

After effective completion and transferring of technologies, the work will be evaluated by the end user and council of experts and scored based on the evaluation criteria (see annex E)

- [80% and above will be considered as Equivalent with 300 points for academic rank promotion stated on university legislation
- [60% -80%) will be considered as Equivalent with 200 points for academic rank promotion stated on university legislation
- [50%-60%) will be considered as Equivalent with 100 points for academic rank promotion stated on university legislation.
- When there are multiple participants, 75% of the total points will be allocated for principal coordinator and 65% of the total points for each co-coordinator.
- Acknowledgment and Certificate of appreciation shall be given for coordinators
- Gains support for technology competition and recognition in different events
- Gains Support for Intellectual Property Right and Licensing
- Technology promotion will be done in different Medias and Magazines
- Give a chance to coordinators to participate in different trainings related to technology development and dissemination
- A 3 lecture equivalent hour reduction will be given per project per semester according to time frame of the proposal for principal coordinator and 1 lecture equivalent hour reduction for each co-coordinator.
- For academic staffs who evaluate/review the TT proposal, 0.75CHr/reviewer/proposal will load will be reduced.

- **If a Staffcreates partnership among stakeholders** and brought a joint project, the incentive mechanism will be based on the joint agreement

- A teacher on externship program can get the double payment of his/her monthly salary on the days of the externship period that means the daily salary of an extern multiplied by the number of days the teacher conducts his/her externship program.
- If the extern attain the externship program in the normal academic schedule (from September-to-June), he/she will be paid periderm only.
- Based on the project proposal he/she delivers to UIL office, an extern will get a certificate of participation
- If an extern brings a witness letter stating that he/she have made positive contribution on the hosting company income and capacity building of workers through modification of working procedures, giving training, consulting on different matters an extern will get a certificate of recognition and his/her work will be considered as community service
- A mentor will get 0.5 cr hour reduction per intern
- Based on the feedback of mentor, Acknowledgment and Certificate of appreciation will be given and this will be counted as 10% of total scholarship point for any scholarship call (short term training up to M.A or M.Sc) by Host University (2 semester supervision get 5% and 4 semester supervision will get 10%) : [N.B. to have a certificate of appreciation, a supervisor must supervise at least 5 students]
- Free scholarship will be given by nearby university based on the quota given to the program for company supervisor who serves at least for four consecutive semester supervising service. This award will be based on competition among supervisors of different companies
- Technical coach working in the TBIC will be paid the value of 2crhr per semester

Note: This payment scheme includes payment for motivational speeches, public lectures, and training on key areas of expertise, seminars and key note speech.

Home institution	Training hrs/day (maximum for a day)	Training hours paid for	Professional fee per hour	Total professional fee/day	Remarks
Home University	8	8	250.00	2000.00	

External	8	8	300.00	2400.00	

9. Appendix

Table 1:Detail values of points of criteria's are listed in ta

No.	Evaluation criteria	Values given to criteria's	Remark
1.	Detail work/action plan provided	35 %	Staffs who provide clear and tangible work/task plans which is feasible within given period to time will get full marks
2.	Work experience on the higher institution	10 %	2 point will be given for one year service
3.	Academic Rank	15 %	Assistant professor and above 15 % Lecturer 12 % Assistant lecturer -10 % Graduate Assistant II - 8 % Graduate Assistant I - 6 %
4.	Participation in other extra curricula activities	20 %	Leadership 3 % Involvement in committee 2 % Community Service 7 % Research engagement 8 %
5.	Performance evaluation result of two consecutive semesters	20 %	
	Total	100 %	

Weekly Staff Industry Attachment Report Format for Externship Program

Name of Extern: - …….

Institute/ College /Department:-……

Externship place/ organization:-……

From Date:-……. To: - …….

1. The Main activities Done in the Last Week in the Date Range Mentioned Above

   ……

   ……

2. Problems Faced in the Date Range Mentioned Above

   ……

   ……

3. Remedial Measures to Solve the Above Mentioned Problem

   ……

   ……

4. Recommendation on Your Work

……

……

……

Table 2:Evaluation for Awarding Transferred Technologies

E- Evaluation for Awarding Transferred Technologies

S.N	Measuring criteria	Weight	Total Points obtained
1.	➡ Does the transferred Technology focused on his previous finding/observation of the research that s/he did	5%	5%
	➡ If it is other source	3%	
2.	➡ Does it brought new knowledge that can be disseminated to the community	10%	10%

	➡ Do not brought new knowledge that can be disseminated to the community	5%	
3.	Does it solved the real problem of the community		15%
	➡ If it addresses >70% of the targeted community problem	15%	
	➡ If it addresses >50% of the targeted community problem	10%	
	➡ If it addresses >30% of the targeted community problem	7%	
	➡ If it' < 30% of the targeted community problem	3%	
4.	Is it innovative idea		10%
	Intellectual property patent from Ethiopian intellectual property right	10%	
	Utility model development	5%	
	Patent of introduction	5%	

5.	Full package of the technologies to be transferred(design, drawing, methodology, manual of any project)	15%	15%
6.	TT projects initiated from value chain analysis	5%	5%
7.	Contribution to the country's development		20%
	➡ Create job opportunity,	10%	
	➡ income generation,	5%	
	➡ saving foreign currency in substituting imports and export future of the technology or commodity branding and geographical indication	5%	
8.	Alignment with the priority of the institute thematic area	5%	5%
9.	Feasibility (marketing, financial feasibility, technical feasibility and environmental friendly)	15%	15%

N.B: The end users and/or council of experts will use the above criteria to evaluate the transferred technologies. *[The council of expert may set their own selection criteria plus the above criteria's will be converted to 60%*

Table 3:TBIC JOB DESCRIPTION

TBIC JOB DESCRIPTION

Title:- **Coordinator**

Qualification

- Successful candidates will posses a BA/B.Sc or MA/M.Sc in relevant technology or business discipline
- Evidence of strong organizational, interpersonal and communications skills
- demonstrated ability to network with in the business community

- ability to work with diverse groups including businesses, entrepreneurs,
- major corporations, universities, the public and economic development organizations
- ability to operate as abusiness professional and an effective educator,and show evidence of a willingness to fulfill both rolesStronglydesired:
- Experience in working with start-ups
- Experience in being part of growing company management team with supervisory experience and being a team player
- Technical background with Masters; or bachelor degree in technology/business with 3– 5years experience
- Previous record of building strong networks with business leaders
- Experience desired in anyaspectofsmallbusinesssuchbanking, or personally owning and/or operating a commercial venture

Working

- Maintain a rapport with clients, mentors, support staff, and administration as needed to carry out job responsibilities in a professional manner

E. UIL-Technology Transfer Project Proposal Submission Format

UIL-Technology TransferProject ProposalSubmission Format

1. Organization name:
2. Full Title, Name and Address(College/faculty/school/ Department/Unit/E-mail/Telephone) of Principal Project coordinator:
3. Name and Roles of Co- coordinators
4. Duration of the Technology Transfer Project:
Expected Date of Commencement: DD/MM/Year
Expected Date of Completion: DD/MM/Year
5. Amount of Grant Requested in Birr:
6. Full Title of the Technology Transfer Project:
7. Executive summary
8. Background for the Proposed Project:
9. Statement of the need:
10. Objectives of the Project:
10.1 General Objective
10.2 Specific Objectives
11. Materials and Methods:
11.1 Methods of technology transfer: (Is it Innovative, Imitation, Introduction, Adaptation, Reverse Engineering or any other else…?)
11.2 Adaptation, Developments, Fabrication or Manufacturing Methods for the prototype (system) development (Techniques for development)

11.3 Materials required for the project

11.4 Method to test the technology (system)

12. Benefits and Beneficiaries of the Project

13. Technology Transfer Plan: Include a brief statement of goals, approach and deliverables.

14. Proposed strategies to measure impacts.

15. Feasibility of the technology: (Can we make, fabricate or manufacture the technology with affordable price? Is the cost of the technology expected to be less than the imported technology? etc.)
16. Description of facilities available at sites of performance:
17. Component Stages of the Project
PHASE I:
Duration: (From DD/MM/YY – To DD/MM/YY)
Description:
PHASE II:

Duration: (From DD/MM/YY – To DD/MM/YY)
Description:

PHASE III:

Duration: (From DD/MM/YY – To DD/MM/YY)
Description:

18. References

19. Cost of The Project: (Give an Itemized Listing of The Direct Costs Involved in the Project)

19.1 Equipment and Consumable

19.2 Equipment and Consumable

Item	Unit	Number/Amount	Unit price in Birr	Total price in Birr
Total				

19.3 Personal Costs

Work type	Unit	Number/Amount	Unit price in Birr	Total price in Birr
Total				

19.4 Transport cost:

19.5 GRAND TOTAL COST In Birr

PHASE	COST BY PHASE
Phase I	
Phase II	
Grand total	

20. Assurance of project coordinators

The undersigned coordinators in this project agree to accept responsibility for the provision of required progress reports and submission of the final outcome (if any) as per terms and conditions of the RCSCP in effect at the time of grant if grant is awarded as the result of this application.

Name of project coordinators	Signature	Date
_____	_____	_____

F.Technology Transfer Grant Contract Form

Section One: General

Article 1. This Technology Transfer grant agreement is made as between the University of Gondar (hereinafter "The University") and the Coordinators (hereinafter the "Coordinators") for the scientific and technical conduct of the technology transfer project entitled:

"_____
____
_____
____
_____
__".

Accordingly, undersigned herby agrees to undertake the following obligations:

Section Two

Obligation of the University

Article 2. The University agrees to award _____amount of money (ETH BIRR) for the total project duration in two phases per fiscal year (upon release of the first grant up to the date of report submission for the staff student annual research conference) in the form of technology transfer grant for the scientific and technical conduct of the technology transfer from the period of _____to _____as per the details indicated in the project proposal. If the project is cross sectional in nature, 75% of the budget is released upon completion of the contractual agreement. 25% of the budget is released after completing 75% of the project activities and the financial and physical reports are duly submitted to the office. If the technology transfer is longitudinal in nature, the amount of budget allocated is:

- The first year _____ (_____)
- The second year _____(_____)
- The third year _____(_____)
- The forth year _____(_____)
- The fifth year _____(_____)

Article 3. The University also agrees to provide appropriate assistants for Coordinators to complete the technology transfer project including but not limited to the use of library sources, available laboratory facilities(non consumables and chemicals) and facilitation of financial settlement unless precluded by uncontrollable factors.

Section Three

Obligation of the Principal Coordinator and Co- coordinators

Article 4. The **Coordinator**s accept the responsibility for the scientific and technical conduct of the technology transfer project, the provision of progress report (on bi annual bases) and the presentation of reports and posters at an annual research conference or workshop/Exhibition organized by the University or the grant awarding project or office.

Article 5. The **Coordinator**s must complete the project on the specified time and submit the output to the respective college/school/faculty university industry linkage technology/knowledge transfer coordinator office/Department/ or to any other appropriate offices within a maximum of one month after the completion of the specified period.

Article 6. The **Coordinator**s accept the responsibility to acknowledge Gondar University for its financial and technical support during all scientific presentations, publications or any other similar activities related with this project output. The university jointly owns patentable outputs and commercialization of the proceeds thereof.

Article 7. The **Coordinator**s shall have the responsibility to disseminate/Transfer the output of the Technology project to enterprises/Industries/technical and vocational colleges by training or jointly working together as well as to relevant development oriented or extension institution, stakeholder and the intended community through manuals, easily understandable local language texts, leaflets and any other similar mechanisms.

Article 8. The **Coordinator**s accept responsibility for the proper utilization of the fund for the scientific and technical conduct of the proposed project as per the approved budget breakdown.

Article 9.**Coordinator**s accept the obligation to present valid documents on utilized fund for settlement before the end of the fiscal year according to the legal requirements indicated in the applicable Financial and Property Administrative Proclamations or Regulations or Directives of the Federal Government of Ethiopia or any other similar applicable laws.

Article 10. After the completion of the proposed Technology transfer project, the **Coordinators** should return unutilized funds or any other equipment or materials or chemical and other consumables acquired from this project fund to the University.
Article 11. The **Coordinator**s without any delay accept the responsibility to hand-over the technology transfer project to one of the senior team members upon informing Office of Research and Community Service Vice President, University Industry Linkage and Technology Transfer directorate, his /her college/faculty/school/institute/ and University Industry Linkage and Technology Transfer coordinator if he/she leaves the University during the project phase or before dissemination of the project output or unable to commence the technology transfer project for any other reason.

Article 12. Team members accept the responsibility to diligently perform the scientific and technical aspects of the project assigned to them under the project proposal. The team member who is assigned by the **Coordinator** as per the requirements of Article 11 of this section shall also assumethe responsible to take-over the project as a principal **Coordinator** or Coordinator.

Article 13. Any changes in the objective(s) or methodology or work plan or any other similar conditions capable of altering the original project proposal shall be reported to the office of Research and Community Service Vice President or other appropriate offices to acquire further approval. That is, contemplated changes in project site or key personnel, or major changes in Grant focus or direction must have prior written approval from the office of University Industry Linkage and Technology Transfer directorate or VPRCS.

Article 14. The Principal coordinator should engage all the Co-Coordinators in the project activities (physical and financial) so that all the responsibilities specified above equally work for Co-Coordinators as well. Whenever the office needs, the Coordinators shall allow onsite visits.

Article 15: When and if the university believes that purchasing the items required for this project is more efficient to be purchased centrally, the university can decide to buy and provide the items to the project team. In this case, the university is entitled to deduct the amount equivalent to the cost of the purchased items from the budget allocated for this project.
Article 16: For longitudinal study, the next year(s)' budget is released if and only the previous year(s)' financial and physical reports are properly settled. Every year must have its output which will be disseminated/ presented in the annual staff-students conference. Article 17 Coordinators accept the necessity of including the small and micro enterprises and technical and vocational college trainers as team members from the design stage to the project implementation. Failure to obtain this may result in suspension of the grant coordinators shall also notify the directorate if it is found necessary to involve parties other than those mentioned herein above.

Article 18: A coordinator must accomplish all the activities mentioned in the project proposal submitted during contractual agreement.

Section Four

Effect of Breach of Obligations

Article 19. The coordinators who failed to complete the project and submit the result(s) on the specified timeshallbe obliged to return the allocated money in addition to its legal interest to the University.

Article 20. Notwithstanding the contractual liability indicated under Article 18 of this section the coordinators or team members in the absence of good cause shall be liable to administrative disciplinary measures under the relevant laws or the code of conduct of the University for the failure(s) to undertake the responsibilities listed under Articles (4-18). Deceitful practice by a member(s) of the team will be borne by the remaining team member (s) unless s/he reports in advance and prove the case to the office.

Section Five

Effective Date of the Contract

Article 21. This contract shall come into effect on the date of its signature this day of _____

Article 22. The Principal coordinator/Project Coordinator

Name _____Signature _____Address _____Date _____

Article 23. Co- coordinators/Team Members

1. Name _____Signature _____Address _____Date _____
2. Name _____Signature_____Address _____Date _____
3. Name _____Signature _____Address _____Date _____
4. Name _____Signature _____Address _____Date _____
5. Name _____Signature _____Address _____Date _____
6. Name _____Signature _____Address _____Date _____
7. Name _____Signature _____Address _____Date _____
8. Name _____Signature _____Address _____Date _____
9. Name _____Signature _____Address _____Date _____
10. Name _____Signature _____Address _____Date _____
11. Name _____Signature _____Address _____Date _____
12. Name _____Signature _____Address _____Date _____
13. Name _____Signature _____Address _____Date _____
14. Name _____Signature _____Address _____Date _____
15. Name _____Signature _____Address _____Date _____
16. Name _____Signature _____Address _____Date _____

17. Name _____Signature _____Address _____Date _____

18. Name _____Signature _____Address _____Date _____

19. Name _____Signature _____Address _____Date _____

Article 24. Approved byUniversity Industry Linkage and Technology Transfer Coordinator

Name: _____Signature: _____ Date: _____

Article 25. Authorized by Dean Office
Name:_____Signature: _____ Date: _____

Article **26**. University Industry Linkage and Technology Transfer Directorate Director
Name: _____Signature: _____ Date: _____

Article 27. Witnesses

1. Name _____Signature _____Address _____Date _____
2. Name _____Signature _____Address _____Date_____
3. Name _____Signature _____Address _____Date_____

Table 4:Pre-selection Criteria for TT Project Proposal

			Form 003
Date(d/m/y): ___/___/_____	**Pre-selection Criteria for TT Project Proposal**		Page ___ of ___
S.N	**Evaluation Criteria**	***Rate (1-5)**	**Remark**
1.	The proposed TT-project has new/innovative idea which can be disseminated to the community so as to improve its quality of life		
2.	The proposed TT Project can solve the pressing problem of the community or can address current needs of the community		
3.	The proposed TT Project can provide the required skill and knowledge to the community consistent with their level of understanding &which they can use		
4.	The proposed TT project can address the local and national demand of the country		
5.	The proposed TT project is feasible interms of its content and consistent with the thematic areas of the University/Institute		

6.	The proposed TT project is a continuation of previous TT project executed in the last three years within the college /institute		
7.	All the team members have submitted their report timely(if they previously have involved in TT project)		
If the proposal scored more than 60%, the proposal will be considered for the next step ****5=Very strong, 4= Strong, 3= Moderate, 2= Weak, 1= Very weak***			

Table 5:Evaluation Criteria for TT Project Proposal

Form 004				
Date(d/m/y): ___/___/_____	**Evaluation Criteria for TT Project Proposal**			Page ___ of ___
S.N	**Major Criteria**	**Sub-Criteria**		**Points (%)**
1	Relevance of the proposed technology to transfer	It is an innovative idea		5%
		The technology is consistent with thematic areas of the University/Institute		5%
		The proposed technology can solve a problem of the community/industry		5%
		Team members have relevant professional background with area of the proposed TT project		5%
2	Professional mix of team members related to the project			
		• If good composition,	10%	
		• If fair composition,	7%	
		• If poor composition,	5%	
3	Clarity of project goals and objectives			10%
4	Appropriateness of methodology to be used	Clarity of the methods and tools for technology development		10%
		Availability of materials in local market		5%
		Easiness of the technology design and development		5%
5	Commercial value of the technology	Availability of adequate local demand		5%
		Easiness of manufacturability/ implementation		5%
		Easiness of business establishment (start-up, sole proprietorship, etc)		5%
		Easiness of marketability		5%

6	Relevance of project activities and budget requirement	Appropriateness of project activities with the scope & theme	5%
		Appropriateness of budget requirements with project activities	5%
		Attainability of requested budget	5%
7	Attainability of project outcomes in the stated time duration		5%
8	Successful completion of previous TT project, if any (Bonus)		5%
		Total	**100%**
Proposals scoring ≥60 will only be considered for funding			

Annex ___: Outline for an Internship Report

1. **A cover page describing the following items:**
    - Your name
    - The names of your University, Institute and School
    - The name of your internship hosting company
    - The duration of your internship
    - The date of the submission of your report

1. **3-5 Inner preliminary pages describing the following items:**
    - Declaration of the student and the approval of the mentor and the supervisor - one page
    - Acknowledgements (If any) – only one page
    - An executive summary – only one page
    - List of tables and figures (if any)
    - Table of content

2. **7-10 Pages on how your project selected and worked out: -**
    - Project title & short summery of the project
    - Problem statement & Justification
    - Objective of the project
    - Methodology

- Literature review (related to your specific work/problem)

3. **7-10 Pages describing the background of your internship hosting company, including:**
   - Its brief history
   - Its main products or services
   - Its main customers or the end users of its products or services
   - Its organizational structure
   - Its work flow
4. **15-20 Pages describing your overall internship experience and your specific work, including:**
   - Why do you select this company
   - In which section of the company you have been working and why?
   - What does the work flow in this section look like
   - Which work piece or work tasks you have been executing
   - What types of Mechanical Engineering methods, tools and techniques you have been using while performing your work tasks.
   - What major challenges and problems you have been facing and identifying while performing your work tasks.
   - What measures you have taken (propose as a solution for the selected problems) in order to overcome these challenges and problems, etc.
   - Result & Discussion
   - What type of recommendations have you made regarding to the identified problems.
5. **5-10 Pages describing the overall benefits you gained from the internship, including:**
   - What you gained in terms of improving your practical skills

- What you gained in terms of upgrading your theoretical knowledge
- What you gained in terms of improving industrial problem solving capability
- What you gained in terms of improving your team playing skills
- What you gained in terms of improving your leadership skills
- What you gained in terms of understanding about work ethics issues, industrial psychology and related issues.
- What you gained in terms of entrepreneurship skills
- What you gained in terms of improving your interpersonal communication skills

6. **3-5 Pages describing your overall/general conclusion and your recommendations for the company : -**
7. **References** (including company documents and reports)
8. **Appendices**

Annex 3: Performance Evaluation to be filled by Company supervisors

Table 6:Performance Evaluation to be filled by Company supervisors

Student Name:			
Student Department:			
1. General performance	**Max points**	**Points obtained**	**Remarks**
Punctuality	[5%]		
Reliability	[5%]		
Independence in work	[5%]		
Communication skills	[5%]		
professionalism	[5%]		
2. Personal skills (25%)			
Ability to learn and speed of work	[5%]		
Commitment	[5%]		
Accuracy	[5%]		
His/her contribution to your	[5%]		
Cooperation with colleagues	[5%]		
3. Professional Skills (50%)	**N.B the interns are fourth year students they are not**		
Technical skills	[5%]		
Organizational skills	[5%]		
Support of the project tasks	[5%]		
Responsibility in the task	[15%]		
Quality as a team member	[20%]		
Result out of 100 %			
Company Name:			

Supervisor name and signature_____

Company stamp

NB:*This evaluation should be submitted in a sealed post to the academic mentor through the student. It is the student's responsibility to maintain the confidentiality of the evaluation or no marks will be earned from non sealed post.*

Annex---: Internship Attendance Sheet

Intern full name _____

Company Name _____

Month _____

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1					
Week 2					
Week 3					
Week 4					

Total absent day in the month_____

Supervisor name and signature_____

Company stamp

NB: Please continue in the same way until the end of the internship and it should have a company seal!

Annex --: INTERNSHIP Program Student Evaluation

(To be filled by academic mentor)

INTERNSHIP student's name: _____

Date:____/____/_____

TECHNICAL OUTCOMES

1. Overall performance of the student. (10%)

The Intern student's initiative, organization and planning ability, ability to learn new skills and expertise, quality of work, dependability, responsiveness to feedback, leadership qualities, attendance and punctuality was…

Excellent (8-10] % ___ Above average (5-8] %___

Satisfactory [4-5] % ___ Unsatisfactory (<4%) ___

2. Problem Solving Skills (10%)

Such as their ability to: Identify a real-world problem as a member of a certain class of problems; solve the resulting engineering problems through analysis; see the underlying connections between concepts from different subject areas.

Very High (8- 10] % ___ High (5-8] %____

Moderate [4-5] % ___ Low (<4%) ___ Unknown ___

3. Level of Design Skills (10%)

Such as their ability to: Meet project design objectives or functional specifications; see the overall ("Big") picture of a design; break a large complex design into more manageable sub-tasks; foresee potential design problems at the beginning of a project; brainstorm with others to come up with new ideas; be creative and practical in their solutions to problems.

Very High (8- 10] % ___ High (5-8] % ____

Moderate [4-5] % ___ Low (<4%) ___ Unknown___

4. Level of Experimentation Skills (10%)

Such as their ability to: Design and conduct tests to explore a problem in a system or process; analyze the results of testing to solve or give insight into a problem.

Very High (8- 10] % ___High (5-8] % ____

Moderate [4-5] % ___Low (<4%) ___ Unknown___

5. Level of Knowledge Application (10%)

Such as their ability to: Apply mathematical, scientific, and engineering knowledge to solve real-world problems; independently search for and apply knowledge from online, library resources or co-workers

Very High (8- 10] % ___High (5-8] % ____

Moderate [4-5] % ___Low (<4%) ___ Unknown___

6. Level of Computer Skills (10%)

Such as their ability to: Use standard computer software effectively, e.g. word processors, CAD/CAM pakage, spreadsheets, databases, programming languages, data acquisition, etc.

Very High (8- 10] % ___High (5-8] % ____

Moderate [4-5] % ___Low (<4%) ___ Unknown___

7. Level of Tools & Skills (10%)

Such as their ability to: Use test and measurement equipment; use modern development techniques, skills and tools to aid in the development of systems.

Very High (8- 10] % ___High (5-8] % ____

Moderate [4-5] % ___Low (<4%) ___ Unknown___

NON-TECHNICAL OUTCOMES

8. Level of Teamwork Skills (10%)

Such as their ability to: Function as a productive member of a team; give and receive constructive criticism; take charge of, be committed to, and successfully complete assigned tasks.

Very High (8- 10] % ___High (5-8] % ____

Moderate [4-5] % ___Low (<4%) ___ Unknown___

9. Level of Communication Skills (10%)

Such as their ability to: Communicate effectively with other engineers; communicate technical information with non-engineers; communicate effectively in presentations and reports

Very High (8- 10] % ___High (5-8] % ____

Moderate [4-5] % ___Low (<4%) ___ Unknown___

10. Innovation Skills (10%)

Such as their ability to: Develop innovative ideas to solve problems and/or develop new methods of completing required tasks; think "out of the box" to perform daily duties.

Very High (8- 10] % ___High (5-8] % ____

Moderate [4-5] % ___Low (<4%) ___ Unknown___

Total percentage (100%): _____

Mentor's Name_____

Mentor's Signature_____ Date: ___/___/____

Annex - Company Critiques about the student

Table 7:Company Critiques about the student

Does the student:	Yes	Most of the time	Need improve ment	N/A
Maintain a regular weekly work schedule?				
Organize & maintain their work area appropriately?				
Show understanding and observance of company policies and procedures?				
Exercise care and practice safety in the workplace?				
Exhibit enthusiasm for the tasks of the job?				
Show improvement in accuracy and speed?				
Demonstrate appropriate reading, writing, and math skills?				
Pay attention to detail while performing tasks?				
Shows initiative, look for things to do?				
Accept constructive feedback and suggestions for improvement?				
Complete an appropriate amount of work?				
Show promise to move to the next stage of training?				
Work well with co-workers? Clients/Customers?				
Ask for assistance, if needed to complete a project? Dress appropriately for the job setting?				

Annex 7 Student critique about the Company

Please return this evaluation to the INTERNSHIP Coordinator.

STUDENT NAME: _____ FIELD OF STUDY: _____

Table 8: Student critique about the Company

RATING OF INTERNSHIP EMPLOYER:	Very good	Average	Poor
Gives clear explicit instructions			
Willing to help, discuss things			
Encourages and supports career objectives			
Sensitive to problems, work attitudes			

RATING OF FACULTY FACILITATOR:	Very good	Average	Poor
Listens to my ideas and problems			
Helps clarify my goals, assignments			
Available, office hours convenient			
Shows fairness and flexibility			

RATING OF INTERNSHIP PROGRAM:	Very good	Average	Poor
Challenging, varied or new tasks			
Learning my strengths and weaknesses			
Building confidence in my abilities			
Experience will help me in the job market			

RATING OF WORKSHOPS::	Very good	Average	Poor
Informative and interesting			
Instructor was competent and prepared			
Acquired new skills and competencies			
Offered at convenient times with fair alternatives			

PLEASE MAKE COMMENTS BELOW FOR HOW WE MAY IMPROVE THE FACULTY INTERNSHIP PROGRAM:

_____

_____

_____

STUDENT SIGNATURE: _____DATE:___/____/_____

Students Name: _____Students Major: _____