



Republic of the Philippines
OFFICE OF THE PRESIDENT
COMMISSION ON HIGHER EDUCATION



CHED MEMORANDUM ORDER

No. 57
Series of 2016

**SUBJECT: IMPLEMENTING GUIDELINES FOR THE ENGINEERING FACULTY
TRAINING ON TECHNOPRENEURSHIP 101**

In accordance with the pertinent provisions of Republic Act (RA) No. 7722, otherwise known as "Higher Education Act of 1994 and by virtue of CEB Resolution No.913-2016 dated October 25, 2016, the Commission hereby issues the Implementing Guidelines for the Engineering Faculty Training on Technopreneurship 101.

I. BACKGROUND AND RATIONALE

Science, technology, and innovation have always been recognized as an essential component for national development. These fields can also be used to answer market demands and social issues and to diffuse wealth through entrepreneurship. However, it is crucial to create ecosystems to support innovation and entrepreneurship to fully reap the benefits of these fields as significant drivers of economic development. The academe is a good start to spur entrepreneurial mindset among students to spur innovations that can be globally scalable while answering local needs.

The Commission on Higher Education is mandated to advance learning and research, on top of its primary goal to provide quality and accessible higher education.

Several initiatives have been instigated to infuse entrepreneurship in the Science, Technology, Engineering, Agriculture, and Mathematics (STEAM) disciplines. Notably, the MOU signed between CHED and PhilDev, signed on February 17, 2015, is one of these initiatives. The MOU represents the commitment of both the government and the development sectors to create a vibrant and sustainable entrepreneurship ecosystem in the country. A key element of the MOU is the integration of Technopreneurship in all engineering programs, in the form of a mandated General Education course in engineering, entitled "Technopreneurship 101" which will be implemented in the academic year 2018-2019.

Technopreneurship 101, a new general education course in engineering, aims to expose undergraduate engineering students to the entrepreneurial mindset and the fundamentals of entrepreneurship. This also ties into the on-going educational reforms that include the implementation of R.A. 10533 or the Enhanced Basic Education Act through the K to12 program and in consideration of the College Readiness Standards the Commission on Higher Education issued CHED Memorandum Order (CMO) No. 20, series of 2013, the "General Education Curriculum: Holistic Understandings, Intellectual and Civic Competencies."

Given that Technopreneurship is a relatively new and emerging field in engineering, CHED shall implement a Technopreneurship 101 Faculty Training and Certification for engineering professors to assist capacitate higher education institutions (HEIs) in the teaching of Technopreneurship 101.

II. OBJECTIVES OF THE FACULTY TRAINING FOR TECHNOPRENEURSHIP

General Objectives:

The Engineering Faculty Training on Technopreneurship 101 aims to:

1. Develop entrepreneurial mindset and thinking among engineering faculty;
2. Enable the engineering faculty to teach Technopreneurship;
3. Enable qualified engineering faculty members to serve as Trainers of other engineering faculty; and
4. Recognize, share, and disseminate best practices in Technopreneurship.

Specific Objectives:

Specifically, the training program shall:

1. Train and certify engineering faculty as Master Trainers on how to teach other engineering faculty on Technopreneurship education
2. Train and certify engineering faculty from around 539 higher education institutions on how to teach Technopreneurship to engineering students
3. Develop and utilize a monitoring and evaluation tool for HEIs to monitor the progress of a new course, such as Technopreneurship 101.
4. Facilitate the adoption and integration of Technopreneurship 101 in the respective engineering programs of HEIs nationwide.

III. COVERAGE

The Faculty Training for the Technopreneurship course shall cover the following core engineering disciplines:

- | | |
|-----------------------------|--------------------------------|
| 1. Aeronautical Engineering | 9. Geodetic Engineering |
| 2. Agricultural Engineering | 10. Industrial Engineering |
| 3. Ceramic Engineering | 11. Mechanical Engineering |
| 4. Chemical Engineering | 12. Metallurgical Engineering |
| 5. Civil Engineering | 13. Mining Engineering |
| 6. Computer Engineering | 14. Sanitary Engineering |
| 7. Electrical Engineering | 15. Engineering Technology |
| 8. Electronics Engineering | 16. Other engineering programs |



IV. COMPONENTS AND DELIVERY

The engineering faculty trainees will explore in detail a host of related topics (e.g. entrepreneurial mindset, building confidence, developing trust, taking risks, making industry connections, etc.). They will learn the importance of using games and competitive group exercises as a teaching pedagogy.

The delivery higher education institutions (DHEIs) will engage the services of an Implementing Partner (IP) who will provide the resource persons, develop training modules, and the conduct of monitoring and evaluation. The IP will be chosen based on its expertise on Technopreneurship and commitment to deliver Technopreneurship-related activities with high standards.

The Technopreneurship 101 Faculty Training and Certification shall be of two (2) Components: Component 1 for the Masters Training and Component 2 for the Trainers Training.

COMPONENT 1

Phase 1: Masters Training Certification

During the seven-day Masters Training, with a total of fifty-six (56) hours of training, 200 lead engineering professors will experience the Entrepreneur's Journey as students of the course. One (1) DHEI will organize the Masters Training. The resource persons will come from experts and successful entrepreneurs from the Silicon Valley and professors from universities based in the United States. Other resource persons may also include experts from the local industry and academe.

The Master Trainees will experience first hand what it is like to be a student taking the Technopreneurship 101 subject. They will learn how to:

1. generate creative ideas that solve real problems;
2. validate ideas with customers and the broader market;
3. understand the key components of a business enterprise including business and revenue models;
4. develop and rapidly iterate prototypes;
5. learn the importance of storytelling and pitching a new venture to investors; and
6. become a more socially aware global citizen. The goal is to prepare students for any number of opportunities: new technology startups, family run enterprises, social businesses and large multinational companies.



Key Topic Areas that will be covered:

1. Introduction to Technopreneurship
2. Team Formation, Leadership, and Mindset Ideation
3. Opportunity Recognition and Needs Analysis
4. Value Proposition
5. Customer and Market Validation (Lean Startup Methods)
6. Project Management and Execution
7. Prototyping and Prototyping Your Solution
8. Business Fundamentals
9. Storytelling and Pitching
10. Risk Management: Legal and IP Issues
11. Raising Capital
12. Ethics and Social Responsibility

In the middle portion of the seven-day training, the Master Trainees will learn how to teach Technopreneurship 101 subject to students. A full day will be dedicated to mentor methodologies where they will learn how to mentor students and train industry mentors how to work with students.

In the final day of the Masters Training program, they will localize Technopreneurship 101 for their SHEIs.

Master Trainers will be required to undergo immersion for at least 8 hours, with a local startup or technology-based incubator, after the Phase 1 training.

Phase 2: Developing a Trainers Training and Certification Program

Before returning to their SHEIs, the Master Trainers will form 10-person teaching teams with other participants in the Phase 1: Masters Training Certification. Upon their return in their SHEIs, the Master Trainers will work remotely in their groups to develop a five-day trainers training program similar to the one they just experienced. Entrepreneur experts will assist each teaching team on developing their curriculum to prepare for Component 2.

COMPONENT 2

Trainers Training Certification

The Trainers Training and Certification Program will involve all 2,000 Technopreneurship professors in a five-day intensive course similar to Phase 1, with a total of 40 hours of training. However, the Masters Trainers will lead the Trainers Training Certification as they teach the rest of the engineering professors. Ten (10) CHED-approved universities in strategic locations in the Philippines will serve as DHEIs.



This Component will be conducted in 10 cohorts (per DHEI) in separate weeks in consideration of facility management and logistical support. With the assistance of a team of experts, two sets of Master Trainers (total of 20) will teach a cohort of at most 200 Trainers per DHEI. Actual number of trainees will be determined per DHEI based on the university density in the area, number of engineering programs being offered, and projected number of enrollees and engineering faculty in the SHEIs that will be assigned to specific DHEI.

Upon completion of Phase 3, Master Trainers will receive a "Master Trainer Certificate" and the Trainers will receive a "Technopreneurship Instructor Certificate." Absence in the training is strictly discouraged. Any faculty who missed one day of training will not receive a certificate.

Trainers will be encouraged to undergo an industry immersion for at least 8 hours, with a local startup or technology-based incubator.

V. FINANCIAL PRIVILEGES

Master Trainers' Training and Certification

CHED shall allocate an estimated amount of about Php104,589.00 for each engineering faculty participant for the entire duration of the training. This amount will be transferred to the DHEIs. The total training grant that a DHEI will receive shall cover the expenses for the resource persons (module development, honoraria, food, travel, and accommodation) and all of the faculty participants (tuition fee, course materials, travel, accommodation, and food during the training period). An additional 10% administrative cost shall be provided to support the operation of the identified DHEIs in planning and implementing the training. An additional monitoring and evaluation cost shall also be provided to the DHEI. The IP will ensure that the objectives and desired outcomes of the training are achieved.

Trainers' Training and Certification

CHED shall allocate an estimated amount of about Php32,562.00 for each engineering faculty participant for the entire duration of the training. This amount will be transferred to the DHEIs. The total training grant that a DHEI will receive shall cover the expenses for the resource persons (module development, honoraria, food, travel, and accommodation) and all of the faculty participants (tuition fee, course materials, and food during the training). An additional 10% administrative cost shall be provided to support the operation of the identified DHEIs in implementing the training. An additional monitoring and evaluation cost shall also be provided to the DHEI to ensure that the objectives and desired outcomes of the training are achieved. The IP will ensure that the objectives and desired outcomes of the training are achieved.



VI. ELIGIBILITY REQUIREMENTS FOR FACULTY PARTICIPANTS

Master Trainers' Training and Certification

The faculty participants in the Master Trainers' Training must come from HEIs with CHED-designated Centers of Excellence (COEs) or Centers of Development (CODs) in engineering, private HEIs granted Autonomous or Deregulated Status by CHED offering Engineering programs, Public and Private HEIs with Level III and IV Accreditation on Engineering Programs.

The head or duly authorized official of the concerned HEI must recommend the faculty participants, to be known as Sending Higher Education Institution (SHEI). Preference should be given to the faculty member with the relevant skillset, keen interest in Technopreneurship, and designated faculty to jumpstart and/or lead the Technopreneurship initiatives in the university. Due consideration will also be given to faculty members who have been displaced by the K to 12 Transition.

Qualified participants must have at least five (5) years of cumulative teaching experience from all HEIs served. Qualified participants may also be the designated Technopreneurship leads in their respective HEIs. In addition, faculty participants should be academically and physically fit to undergo the training and must be competent to conduct a similar training and train other engineering faculty members.

Trainers' Training and Certification

Any tertiary full-time permanent faculty member who shall be teaching Technopreneurship as it is rolled out in 2018 is qualified to participate in the Trainers' Training. Depending on the number of engineering programs offered, all 539 HEIs that offer engineering programs must send at least one engineering faculty in the Trainers Training Certification.

VII. DELIVERING HIGHER EDUCATION INSTITUTIONS FOR THE MASTER TRAINERS' TRAINING AND TRAINERS' TRAINING

The University of the Philippines, Diliman (UP Diliman) shall conduct the Master Trainers' Training. As the national university and pioneer institution of Technopreneurship in the Philippines, UP Diliman has been selected as the DHEI for the Masters Training. The UP College of Engineering will lead and host the Master Trainers' Training.

The Trainers' Training shall be conducted by CHED-approved DHEIs, which must come from HEIs with CHED-designated Centers of Excellence (COEs) or Centers of Development (CODs) in engineering, private HEIs granted Autonomous or Deregulated Status by CHED offering Engineering programs, Public and Private HEIs with Level III and IV Accreditation on Engineering Programs.



The major considerations to become a DHEI will be its strategic location and the capability of the institution and willingness to manage the training program (e.g., availability of adequate and suitable facilities, preferably air-conditioned classroom; dormitory to accommodate the desired number of participants, whenever applicable).

VIII. PROCEDURE: MASTER TRAINERS' TRAINING AND TRAINERS' TRAINING

A Memorandum from the CHED Chairperson shall be issued to announce the call for the submission of application to become a delivering higher education institution (DHEI) for the Technopreneurship 101 Faculty Training and Certification. The Office of Programs and Standards Development (OPSD), through the Technical Working Group (TWG) for Technopreneurship, shall screen and evaluate applications to become DHEIs based on the set qualifications for DHEIs. OPSD will recommend to the Commission en banc the list of qualified DHEIs for the Technopreneurship 101 Faculty Training and Certification. The CHED shall issue a CHED Memorandum on the list of identified DHEIs for Trainers' Training. Thereafter, a Memorandum of Agreement shall be executed between CHED and the identified DHEI.

A Memorandum from the CHED Chairperson shall also be issued to announce the call for the submission of application to participate in the Master Trainers' Training program. The application for Master Trainers will be open to HEIs with CHED-designated Centers of Excellence (COEs) or Centers of Development (CODs) in engineering, private HEIs granted Autonomous or Deregulated Status by CHED offering Engineering programs, Public and Private HEIs with Level III and IV Accreditation on Engineering Programs.

After the list of DHEIs have been finalized and approved by CHED and TPET, a Memorandum from the CHED Chairperson shall be issued to announce the call for the submission of application to participate in the Trainers' Training program. The Trainer's Training application is open to all HEIs offering engineering programs in the Philippines.

The DHEIs, with the approval of OPSD and TWG for Technopreneurship, will engage an Implementing Partner to provide the expertise and conduct the monitoring and evaluation of the training.

General Procedures

CHED shall issue a Memorandum to announce the conduct of the Faculty Training for Technopreneurship: Master Trainers' Training and Trainers' Training.

The first announcement includes the call to apply as a DHEI and to participate in the **Master Trainers' Training** program.



Faculty trainees must submit the following documents directly to OPSD:

1. Accomplished Application Forms for the Faculty Training for Technopreneurship: Master Trainers' Training. Forms shall be available at the OPSD or these may be downloaded from the CHED website;
2. Recommendation of the head or duly authorized representative of the SHEI; and
3. Accomplished Training Contracts (to be executed by the faculty trainee and the head of the SHEI upon CHED's approval of the concerned faculty as a participant in the training program).

The SHEIs and OPSD must ensure that only qualified faculty members are recommended to attend the Master Trainers' training (i.e. skillset, keen interest and/or experience in Technopreneurship, and designated faculty to jumpstart and/or lead the Technopreneurship initiatives in the university). Due consideration will also be given to faculty members who have been displaced by the K to 12 Transition.

The applications of institutions to become DHEIs shall be reviewed by the TWG for Technopreneurship and will be endorsed to the Commission en banc for approval. The OPSD shall collate the faculty applications for review and approval by the TWG for Technopreneurship.

The approved list of faculty participants shall be the basis of the funds to be transferred by CHED to the DHEIs.

CHED shall then issue a Memorandum to announce the call for applications to the **Trainers Training for Technopreneurship**. This shall include the list of approved DHEIs and the number of slots per DHEI.

Faculty trainees must submit the following documents directly to OPSD:

1. Accomplished Application Forms for the Faculty Training for Technopreneurship: Trainers' Training. Forms shall be available at the OPSD office or these may be downloaded from the CHED website;
2. Recommendation of the head or duly authorized representative of the SHEI;
3. Accomplished Training Contracts (to be executed by the faculty trainee and the head of the SHEI upon CHED's approval of the concerned faculty as a participant in the training program).

OPSD collates the applications for Trainers' Training and assigns them to a designated DHEI. This shall be the basis of the funds to be transferred by CHED to the DHEI.

CHED shall review and approve the final list of participants in the Trainers' Training.

Funds will be released by CHED to the host DHEI based on the number of faculty to be trained as indicated in the Work and Financial Plan (WFP). Other modes of releasing funds to grantees shall be subject to the approval by the Commission.



Mechanics of Issuing Certificates for Master Trainers' Training and Trainers' Training

A faculty participant shall be assessed by the Resource Persons/Trainers to merit the issuance of Technopreneurship Master Training Certificate (for Master Trainer participants) or Technopreneurship Instructor Certificate (for Trainers' Trainer participants). The assessment shall be in the form of a grade, derived from classroom activities that include:

1. Fulfillment of the required training, activities, and other requirements of the Technopreneurship 101 Master Trainers' and Trainers' Training Certification
2. Passing of assessment tools and examination
3. Completion of the respective five-day Trainers' Training and seven-day Master Trainers' Training
4. Other requirements as required by the Resource Persons/Trainers

A grade of 80% and above merits the issuance of Technopreneurship Master Training Certificate (for Master Trainer participants) or Technopreneurship Instructor Certificate. Below this grade level a certificate of participation will be issued, provided that a faculty participant must not have incurred more than one (1) day of absences for any reason.

IX. RESPONSIBILITIES OF IMPLEMENTORS: MASTER TRAINERS' AND TRAINERS' TRAINING

Responsibilities of CHED

The CHED shall:

1. Issue the Implementing Guidelines for the conduct of the training
2. Issue the Call for DHEI application, Master Trainers Application, and Trainers Application
3. Identify the Delivering Higher Education Institutions (DHEIs)
4. Allocate training slots and trainees to DHEIs
5. Approve the final list of resource persons for the Technopreneurship Faculty Training
6. Review the Technopreneurship course outline and other materials prepared by the IP for the training of engineering faculty
7. Review the list of faculty participants based on documents submitted by the DHEI and other materials at CHED's disposal
8. Provide/release the financial requirements of the DHEI and SHEIs based on the number of approved faculty trainees
9. Verify the correctness of the liquidation reports submitted by the DHEIs



Responsibilities of Delivering Higher Education Institutions (DHEIs)

The DHEI shall:

1. Engage the services of an Implementing Partner (IP) who will provide additional resource persons, training modules, and mechanisms for monitoring and evaluation.
2. Assign a program coordinator who will act as liaison officer between the SHEIs, DHEI, IP, and CHED regarding the conduct of the Masters and Trainers Training Certification.
3. Screen faculty trainees recommended by the SHEIs to make sure they qualify and prepare necessary documents for submission to CHED
4. Provide air-conditioned classroom/laboratory facilities equipped with at least a DLP/LCD projector and screen/white board
5. High-speed Internet access for the trainer and participants
6. Pay the expenses to be incurred by the faculty trainees and resource persons/trainers (food, accommodation, travel, and honoraria)
7. Conduct post-training evaluation of the participants
8. Submit to CHED and the IP a record of the participants' performance based on the assessment tool developed by the IP.
9. Submit to CHED a complete report and proper accounting of all expenses incurred based on the released grant
10. Return to CHED all unexpended balance of the training fund and interest thereon together with a complete and proper accounting of expenses incurred as per the project budget
11. Perform other functions as may be requested by CHED under the projects
12. DHEIs will submit to CHED and the IP a monthly, quarterly, and annual report about the planning, implementation, and monitoring and evaluation status of the trainings and the trainees, as applicable.

Responsibilities of Implementing Partner (IP)

The Implementing Partner shall:

1. Prepare the Technopreneurship 101 course outline
2. Develop training module for Master Trainers' and Trainers' Training Certification
3. Identify international and local experts to conduct training
4. Ensure that the quality of content, training materials, exercises, and assessment tools meet the CHED-accepted learning plans for the Technopreneurship 101
5. Issue certificates to the successful Master and Trainers' Training participants in coordination with CHED and the DHEIs



6. Develop monitoring and evaluation tools
7. Monitor and evaluate the progress of the implementation of the training
8. Submit to CHED and DHEIs a monthly, quarterly, and annual report about the tasks assigned to them

Responsibilities of Sending Higher Education Institution (SHEI)

Sending higher education institutions (SHEIs) with authority to operate higher education programs offering engineering programs are encouraged to recommend and send their best faculty members with keen interest and/or experience in Technopreneurship who will undergo the training.

The **SHEI** shall:

1. Identify and recommend qualified engineering faculty participants to undergo Master Trainers' and Trainers' Training Certification
2. Ensure that the GE faculty sent for training shall successfully complete the Technopreneurship training
3. Ensure that the trained engineering faculty will render to the SHEI at least four semesters of return service by teaching Technopreneurship to engineering students
4. Ensure that the trainers will conduct echoing session to the rest of the engineering faculty members in their respective universities
5. Ensure that the trainers will take the lead in the adaptation and integration of Technopreneurship 101 in various engineering curricula offered in their university

Responsibilities of the Engineering Faculty Grantee

The **Grantee** shall:

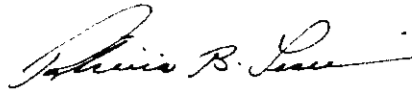
1. Enter into a Training Contract with his/her SHEI
2. Participate in the Faculty Training for Technopreneurship: Master Trainers' Training
3. Render the required return service of at least four (4) semesters to teach Technopreneurship



X. EFFECTIVITY

This CMO shall take effect immediately and remain in force until otherwise revoked.

Issued this 22 of November 2016 in Quezon City, Philippines



Patricia B. Licuanan, Ph.D.
Chairperson

