

International Nanotechnology Olympiad (INO) Regulation

(version of 2017)

Approved by the Steering Committee
of International Nanotechnology Olympiad

as a basic set of rules and regulations for 2017 year

Spring 2017

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1. Description of the competition and Important Dates

International Nanotechnology Olympiad (INO) is a competition among university students from different involved countries being held consistently in member economies. Participants propose their competitive ideas and plans as nanotechnology based solutions for focused problems related to global challenges. In the line with a long term vision of INO as outlined in section 10, INO will aim at fully exploiting the potentials of nanotechnology in all possible application areas.

2. INO Objectives

The major objectives of INO can be summarized as follows:

- 2.1. To enhance the motivation of students towards gaining deeper knowledge of nanotechnology and acquiring skills for solving industrial challenges and fulfilling today's innovative applications
- 2.2. To improve the participants' basic knowledge and skills in innovation and commercialization processes
- 2.3. To reinforce the spirit of team work among the participants
- 2.4. To favorably affect the nanoscience and nanotechnology education in the participating economies
- 2.5. To create an international network of the contestants and participant institutions
- 2.6. To raise awareness about nanoscience and nanotechnology at national level in member economies and the international level in the future

- 2.7. To broaden the cross-cultural and international networking experiences among students
- 2.8. To create a self-sustainable system of educational material generation and new educational approaches in the field of nanoscience and nanotechnology
- 2.9. To foster and support the young and talented elites in the area of nanoscience and nanotechnology all over the world
- 2.10. To create a professional network of students, professors, government authorities, and enterprise companies with the aim to commercialize the innovative technological ideas
- 2.11. To assist the creation of a broad spectrum of new emerging businesses based on nanotechnology for students of participating economies
- 2.12. To familiarize the students with trade and business areas and how it works at the international level

3. Procedures and Time Schedule

- 3.1. INO will be held in two stages. At the first stage, each member is responsible for announcing a national level recall. After assessment and evaluation of teams by their national authorities, one of the teams from each country will be introduced to participate in the second stage of the competition.
- 3.2. Herein, a list of important dates are given for the INO:

Table 1. INO time schedule	
Date	Events
Before Mar. 1 of the year of contest	Specifying INO main theme(s)
Before Apr. 1 of the year which contest will be held	Formal declaration of readiness by Interested economies
May 1 to Sep. 1 of the year which contest will be held	<ul style="list-style-type: none"> • INO National announcement (INO 1st Stage) <ul style="list-style-type: none"> • The beginning of distance education • Finalizing of the teams selections on national level <ul style="list-style-type: none"> • INO Jury selection
Sep. 1 of the year which contest will be held	Deadline of registration of officially selected national teams in the INO 2nd stage
Sep. 7 of the year which contest will be held	<ul style="list-style-type: none"> • Finalizing and announcement of judgment criteria (incl. reporting documents structure) • INO Jury members approval by INOStC • Beginning of the reports preparation (initial overview of possible solutions within the INO annual theme)
Sep. 15 to Nov. 15 of the year which contest will be held (2 Months)	<ul style="list-style-type: none"> • Intense distance education and field research for selected teams • Mentoring & coaching for selected teams
Nov. 15 of the year which contest will be held	Deadline of sending each team's reports (initial overviews) to the Jury
Early Dec. of the year which contest will be held for 1 day	Evaluation of the reports Preparation of the teams for the in-person contest INO second stage opening ceremony
1 Day	Preliminary presentation of initial reports and teams presentation
1-2 Days	Boot Camping & On-Campus Education
1-2 Days	Plans/report/work completion and their defense
1 Day	Demo Day and Appeal
Last Day	Final Teams judgments
Last Day	Superior team announcement and award ceremony
After holding INO	Programs for facilitating collaboration among teams & stakeholders

4. Participation in INO

4.1. Participant teams should consist of up to five members and one supervisor and their members are selected according to rules settled by a national committee of the economies. Each economy has a right to suggest an independent Jury member and also a member of a INOScC for approval by the INOStC. Only official teams suggested by the economies are considered as legitimated participants of INO.

4.2. Participants should be qualified and meet the following requirements:

4.2.1. They should be a university student in undergraduate or graduate or PhD level.

4.2.2. They should have their own countries' passport and be covered by their health, travel, and accident insurances authorized by their own countries' assurance companies at the time of being in the host economy.

4.2.3. The members should have relevant knowledge/experience of nanoscience or nanotechnology-related fields and business-related areas.

4.2.4. They are expected to present innovative ideas which can contribute considerably to a product or service development process in a field pertinent to INO annually selected topics.

4.2.5. Participants cannot register in competition on their own; they should be introduced by credible institutions (such as a university/research centers, and other relevant local organizations) with approval of the teams by all steering committee members.

4.3. The works of the selected teams proposed for the second stage should be original and not disclosed previously.

4.4. Each team needs a supervisor assigned by the local national committee. The supervisor of a team should be fluent in English. Moreover, he/she should be at least an assistant professor in one of the nanotechnology- or business-related fields. As an alternative option, the supervisor can be a business owner (a chief manager or member of a management board) involved in fields related to the INO annually selected theme. The supervisor of the team acts as a connective link with the host economy and is responsible on behalf of the economy for the fulfillment of the current regulations by the team.

4.5. The local national committee/credible institution is responsible for providing International travel costs for its participants just before their entrance to the host economy. After their arrival, the host economy is in charge of expenditures including transportation, accommodation, meals (breakfasts, lunch, dinner, and snacks) and recreations during INO. The host economy is not responsible for providing medical and visa costs.

5. Thematic Focus of INO

5.1. The Thematic focus of INO is determined in accordance with the new emerging applications of nanotechnology in scientific, technological and industrial areas. Each period, INO StC seeks out major emerging problems and challenges around the world in order to suggest the

participants to elaborate possible innovative solutions of the problems. some of the above-mentioned areas are determined at the moment as follows:

- ❖ Water and Wastewater Treatment
- ❖ Agriculture, Food and Packaging
- ❖ Alternative Energies
- ❖ Drugs & Medication
- ❖ Information and Communication

5.2. The aforementioned topics will be considered as the main focus of INO in each period between 2017 and 2020. The host economy has the privilege to propose the next theme to the steering committee which will positively consider the proposal and will be responsible for approving and announcing the selected theme through the INO website officially.

5.3. The INO theme is announced each year prior to any team selection and should carry a general sense while it transforms latter into particular tasks formulated in details for in – person competition stage. The general theme is necessary to draw attention of the economies to a global problem and rule them in preparation and education. The task become known at the in – person stage to protect the teams from third person’s help and make all the conditions equal.

6. INO Organization and Governance

INO structure is comprised of the steering committee, scientific committee, jury, permanent secretariat and executive secretariat. As shown in figure 1,

international partners and sponsors are also a part of INO organizational structure. Each part of INO is explained below.

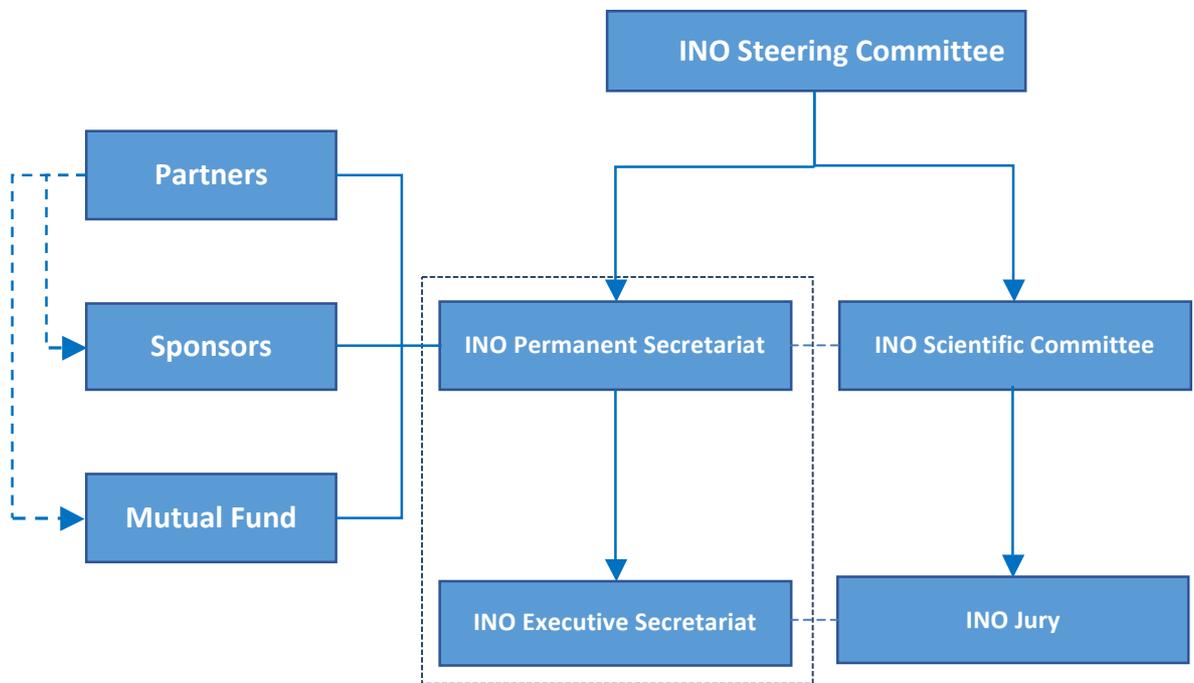


Figure 1. The organizational structure of the INO

6.1. INO Steering Committee (INOSTc)

6.1.1. The INO steering committee includes representatives of founding member institutions. Representatives of Iran, South Korea, Russia and Taiwan as the founders of INO are the initial members of INOSTc. One economy, one vote policy is adopted in INOSTc.

6.1.2. INOSTc is the superior body for decision making and responsible for determining and updating the overall perspective of INO, strategy development, drafting and compilation of INO's Regulation,

determination of thematic focus, model and content of the competition, determination of INO organizational structure, as well as supervising financial aspects.

6.1.3. INOStC can invite observers including the head of INO executive secretariat, representative of Asia Nano Forum, and other pertinent international or regional organizations to attend INOStC meetings. In special cases, INOStC may consider a vote right for observers subject to approval by all the INOStC members.

6.1.4. The chairman of INOStC is elected by an annual polling among INOStC members. The host economy has the privilege to nominate the next INOStC chairman. The official responsibilities of the chairman are as follows:

6.1.4.1. The management of decision making meeting and taking its minutes

6.1.4.2. Organizing in-person and online meetings of INOStC

6.1.4.3. Signing all of the letters and official documents in association with INOStC

6.1.4.4. Attending the international INO-related events as the representative of INOStC

6.1.4.5. The management and supervision of all official and organizational activities in INOStC

6.1.4.6. In the absence of INOStC chairman, the vice-chairman should follow the scheduled works. The vice-chairman is selected by the INOStC chairman among the INOStC members and is the subject to be approved by all the INOStC members.

6.1.5. The presence of two-thirds of INOStC members in decision making meetings is required. The final approval of all decisions needs positive vote of at least a half of the attending members. In the case of equal votes, the steering committee's chairman will adopt the final decision. Adding a new economy to INOStC needs all members positive votes.

6.1.6. The working language of INOStC is English.

6.1.7. INOStC will hold at least two in-person meetings annually.

6.1.8. Other responsibilities of INOStC are as follows:

6.1.8.1. The supervision of the execution of INO in accordance with the regulations

6.1.8.2. The assurance of proper and fair evaluation of team's performance by interacting with the INO Jury

6.1.8.3. The final confirmation of the competition results after approval the results of the INO Jury work

6.1.8.4. The selection of a host economy for future competitions

6.1.8.5. The decision making about the committed infractions and different ways to deal with them such as permanent or temporary exclusion of wrongdoer or its economy from INO

6.1.8.6. The accreditation of member economies' representatives in INOStC

6.1.8.7. The increment in the number of INOStC

6.1.8.8. The accreditation of the INO scientific committee

6.2. INO Permanent Secretariat (INOPS)

6.2.1. By the confirmation of INOSTC, Iran Nanotechnology Initiative Council (INIC) is selected for the official management of INO permanent secretariat (INOPS). This secretariat contributes to organization and fulfilling the long-term goals of INO and facilitating the connection between the INOSTC and the host economy. The management and the progress of the INOPS is reviewed annually by the INOSTC with the aim to match with its missions.

6.2.2. The head of INOPS is proposed by INIC and would initiate her/his activities after the official confirmation of INOSTC.

6.2.3. Other responsibilities of INOPS are as follows:

6.2.3.1. Collection and publication of previous documents according to the disclosure rules related to the documents

6.2.3.2. Management and supervision of the INO official website

6.2.3.3. Establishing distance education platform

6.2.3.4. Supervision of INO executive secretariat's activity from the beginning of INO first stage to the final stage and reporting to INOSTC

6.2.3.5. Consideration of the official requests of interested economies to host the competition, evaluating the qualification of applicant economies, and presenting a report about their competency to INOSTC to be approved by this committee

6.2.3.6. Preparing the final report about holding the INO at most two months after the end of INO and presenting it then to INOSTC for discussion and planning the further work

6.2.3.7. Facilitating of INO networking with other active and effective organizations

6.2.3.8. Interacting with other international/ financial/ educational organizations in order to achieve INO goals under supervision of INOSTC

6.2.4. To facilitate initiation of INOPS activities, INIC will cover the permanent secretariat costs until the end of the first INO. However, for long term financing of the INOPS activities, it is assumed to establish a fund and financing mechanisms.

6.2.5. The URL link of INO official and permanent website is www.Nanoolympiad.org. The registration of participants, online education, online consultation about the ideas, presentation of project status review, and announcement of all competition-related news will be done through the INO official website. The INO permanent website is a platform for announcement of sponsors, partners and supporters of each period of INO. Each team has its own webpage on the website for INO-related activities such as “results announcements”, “objection to INO Jury decisions”, “receiving consultations”, “education”, and “registration”. The webpages of the teams will be archived after releasing the annual / final results.

6.3. INO Executive Secretariat (INOES)

6.3.1. National nanotechnology development bodies (like public sector institutes, S&T Parks and so forth), the Ministry of Science

(Universities etc.), or other pertinent organizations in the host economy have the overall responsibility for organization and arrangement of INO as INO executive secretariat.

6.3.2. The official responsibilities of INOES are as follows:

- 6.3.2.1. Performing online and in-person education for selected teams from the beginning to the end of the period in each stage by coordination with INOPS (Appendix 1 includes the Proposed curriculum educational content. It should be confirmed by the INO scientific committee).
- 6.3.2.2. Carrying out the Olympiad in accordance with the regulations.
- 6.3.2.3. Time planning and management before, during, and after INO.
- 6.3.2.4. Providing the regulations and the customs of the host economy and actual contacts (the address, telephone number, fax, the email etc.) of INO authorities before the start of INO for participants.
- 6.3.2.5. Providing the proper information for INOPS in order to update INO permanent website contents.
- 6.3.2.6. Facilitating the process of applying for visa including invitation letters.
- 6.3.2.7. Providing the medals, certificates, and awards.
- 6.3.2.8. Financial support (as defined in section 4.5) of the participant teams as they enter the host economy until they leave it out.

6.3.2.9. The investment attraction and financial support for holding INO.

6.3.2.10. Provision of security for all INO teams and guests.

6.3.2.11. Public announcement of official results in the closing ceremony

6.3.2.12. Holding the opening and closing ceremony of INO

6.3.2.13. Development and providing of documentation of the INO final stage including collection of photos and videos

6.3.3. The following requirements should be met till one economy is capable of hosting INO:

6.3.3.1. Capable of provision of security and safety for participants.

6.3.3.2. The applicant economy should be able to provide proper educational, operational, infrastructural facilities.

6.3.4. The applicant economy should be ready to raise a fund for running INO and financial support of teams, their representative and jury members.

6.3.5. If no economy volunteers for hosting INO is suggested, INOSTC will choose one of their members as the future host. The economy which has not been the host for a long time will be given priority to be chosen as the next host.

6.3.6. In the case of force majeure condition in the host economy, it is obliged that INOES inform INOPS within a week. Under such

conditions, a special meeting in INOStC will be held and one of the following decisions will be made:

- INO will not be held in a certain period.
- As the first priority, the holding of INO will be delegated to a volunteer economy and as the second priority, to the next host economy holding of competition might be postponed to another date in these conditions.

6.4. INO Scientific Committee and Jury

6.4.1. INO Scientific Committee (INOScC) members are proposed by the INOStC members annually and are confirmed in INOStC meetings. Once the INOScC members are assigned, INOPS sets a INOScC meeting.

6.4.2. The chairman of INOScC is annually elected by its members followed by approval by the INOStC. His/her presence is obligatory in all official meetings of INO Jury.

6.4.3. Responsibilities of INOScC are as follows:

6.4.3.1. Clarifying and formulation of final version of task/problems for INO competition based on suggestions of INOStC

6.4.3.2. The evaluation and modification of criteria for judgment in the regulation.

6.4.3.3. Declaration of the technical results of competition to INOStC.

6.4.4. INO Jury is responsible for the judgment of the team reports/works of the competition based on the criteria and indicators verified by INOScC. The jury members will be proposed by INOScC and approved by INOStC. The expertise of the jury should cover at least the following areas:

- ❖ Science
- ❖ Technology
- ❖ Market and business
- ❖ Skills

6.4.5. Annually the INOScC will determine the specific educated curriculum in accordance with the annual theme of the INO.

6.4.6. INOScC decides about the number of members of the INO jury annually (6 to 10 members).

6.4.7. Every year, INOES is responsible for funding all/local costs of INO Jury (for supporting local expenditures like accommodation costs and etc.).

7. Competition model

7.1. After announcing INO main themes for the year, the interested economies have at most a one-month period of time to declare their readiness for attending the competition to INOPS.

7.2. INO will be held at two stages. In all of two stages, the participant teams are looking for solving a problem related to a global challenge using nanotechnology (nanoscience). In addition to the scientific and technical issues, the participants should also empower their business and teamwork skills.

7.3. The first stage of competition will last for 4 months. The second stage of INO consists of 2-3 month online Education & consultation and in-person competition lasting for 5 to 7 days.

7.4. At the first stage of INO, every economy will announce a recall at the national level and invite the participants to cast some light on their own technological ideas and plans with the aim to address the problems and challenges of interest. The way the participants should disclose their ideas depends solely on the overall policies of the participant economy. It is allowed to provide a fundamental idea and its possible practical implementations or an industrial / laboratory prototype. The ultimate outcome of this stage will highlight the selected teams which are eligible for their entrance to the Final stage.

7.5. The teams who are eligible to attend the Final stage of the competition should register on the official INO website and fill the required forms.

7.6. INOES is responsible for online education on scientific and technical issues whose focus is put on the competition topics, business-related subjects, creativity- and innovation-related topics. The online education procedure should be done for two months after the teams are introduced by the participant economies.

7.7.

7.8. After 2 months from the beginning of the online education courses, the participant teams should upload preliminary/initial reports of their own works related to the INO problem/task on the INO official website. As a general recommendation the reports should consist of an introductory / summarizing 2 – 3 -minute video and a 2000 – 3000 words illustrated plan description. The video can be produced in their native language, but it must benefit from English subtitles. The report must be written in English. The short videos should contain the basic introduction of idea, a suggested solution for a challenge, and a proper explanation of its importance. The report should include short abstract, introduction, goals, stakeholders, target audiences, brief technical explanations of the plan, a possible financial model, and a future-oriented outlook / perspectives. However, the concrete criteria for the structure of the reports and their evaluation are determined finally by the INOScC.

7.9. The Final stage of competition will be held in-person for 5 - 7 days in the host economy. In this stage, teams will communicate with the international experts in business with presentation of a market - oriented document connected with technical feasibility advanced description in the demo day and in the presence of INO Jury, possible investors and / or managers. Teams must prepare a presentation file and present it for the referees. It is noteworthy that the teams will experimentally present their ideas at the beginning of competition.

Therefore, they can alleviate the potential shortcomings of their own plan/work by the help of experts in the remaining time.

7.10. The presented plans/works at least should have the technical readiness level (TRL) 2 and manufacturing readiness level (MRL) 1.
[A definition for these can be find here: http://www.nextflex.us/wp-content/uploads/2016/05/NextFlex_PC2.0_MRL-TRL_Definitions.pdf]

7.11. The presentation scene and hall should be decorated in an attractive and professional way.

8. Competition Judgment

8.1.The competition judgment is completed in two stages and the performance of participants is evaluated as a teamwork skill.

8.2. The participant economies are responsible for the judgment of INO first stage and selection of the official teams.

8.3.At the final stage, the judgment will be done in-person and INO Jury is responsible for analyzing the competition. This stage of judgment is competitive and will distinguish the superior teams from other ones (The judgment criteria will be determined after the formation of INO Jury).

8.4.After the results of involved teams are determined, the supervisor of each team is allowed to appeal the decision of the Jury to INOScC for

reviewing the supervisors' objections of each team and voting for the final decision. In the case of equal votes, the chairman of INOScC will set the final decision. After the results are confirmed by INOSTc, the overall ranking of teams will be announced and then can not be objected / changed.

9. Awards

9.1. The awards for the final stage of INO include medals/statues and a prize for the superior teams suggested by the host and approved by the INOSTc.

9.2. The first to third teams should receive gold, silver, and bronze prizes / awards, respectively.

9.3. The first to third teams should receive prizes worth at least 3000, 2500 and 2000 euros, respectively.

9.4. The participant teams who have not won the competition should receive official honorary diploma.

9.5. Each team may attract the investors in the demo day and receives a seed fund or job offer for his plans.

10.Long Term Vision

- 10.1. Initially, INO is inclined towards promotion and education. As time proceeds, the importance of solving problems (in particular, environmental and industrial issues), commercialization, and business aspect will be highlighted. It is also envisaged that the expected technical readiness level and manufacturing readiness level of each teams' plans will be increased. TRL 5 and MRL 4 may be targeted for later INO periods.

- 10.2. Creation of an international acceleration network among member economies is a part of the long term vision. The objectives behind this network are as follows:
 - 10.2.1. The identification of venture investors and making a connection between them and winners of the competition.
 - 10.2.2. The identification of technology buyers
 - 10.2.3. The familiarity with industrial challenges through categorized information of related organizations and using them as central topics in INO.

11.Validity of regulation

- 11.1. The content of this regulation is amendable and can be changed only by the INO steering committee. All of the probable changes will be available on the INO official website.

11.2. This version of regulation is revised and approved during the second meeting of INO steering committee in Tehran on 19 and 20 April.

11.3. The participants of INO and other authorities must obey the regulation. Therefore, the violation of any prescription of that regulation might give rise to the expulsion of a part or whole the team by INO steering committee.

Signature of the representative of economies

Appendix 1: Curriculum Educational Content

The education of participants will be performed for two months through an online platform. During the online education phase, a group of consultant experts or mentors will help the teams. They try to guide teams to tackle the problems and challenges before the main competition. This consultation will be done through the Internet. Education phase after the first period of INO is divided to 6 parts:

1. Education of technical issues about the application of nanotechnology in the field related to competition theme.
2. Business related issues including validation of customers, marketing, product development, prototype and Business platform
3. Education of issues about creativity and innovation including:
 - 3.1. Intellectual property and patent
 - 3.2. Open and close creativity platform
4. Visiting the relevant companies and industrial sites
5. Field research including Interviews with customers