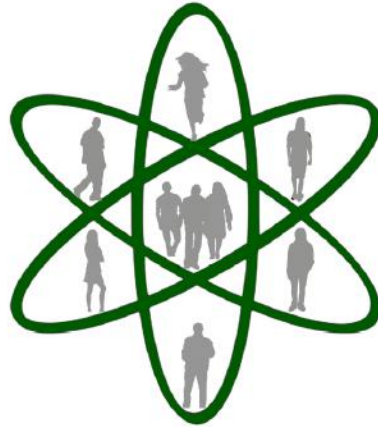# RRIL - Learning programme presentation

## Public Engagement, Gender Equality and Ethics
## in
## Responsible & Sustainable Innovation

**Karsten Krüger (Coord.)**

# *RRIL - Learning Programme Presentation*

## *Public Engagement, Gender Equality and Ethics*

## *in*

## *Responsible & Sustainable Innovation*

## Presentation of RRIL - Responsible Research and Innovation Learning

Responsible Research & Innovation is a genius concept developed by the European Commission for the governance of research and innovation processes with a view on the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products. It aims to shape, maintain, develop, coordinate and align existing and novel research and innovation-related processes, actors and responsibilities with a view to ensuring desirable and acceptable research outcomes.

In the Horizon 2020 programmes, there were and are some projects focusing on related training needs. But there is no substantial attempt observable to develop continuous higher education programmes supporting the implementation of this concept and the respective reorganisation processes in universities, research centres, research and innovation oriented enterprises and public authorities like cities or regional governments. This project pretends to fulfil this gap through the co-creation of higher education modules between different research and innovation actors.

RRIL especially focus on public engagement, gender equality and ethics (in the knowledge fields Energy and Economy) testing the learning modules in innovative environments based on interactive real-problem approaches. The modules developed are offered to research and innovation actors supporting the implementation of RRI principles in the organisations capacitating the learners to develop jointly innovative solution for societal problems.

RRIL is based on co-creation and open innovation processes giving a prominent role to the learners. The co-creation is conceived as multidisciplinary and transversal among different kinds of actors as HEI, research centres, NGO's and cities paving the way for knowledge exchange between them. It consists in informed learning among practitioners considering learners as a knowledgeable and critical partners in designing and implementation of the learning means. Under this perspective, the potential learners – programme coordinators and tutors - are considered peers working collaboratively on the project outputs

## RRIL - consortium

Universitat Rovira i Virgili (Coordinator).

Tampere University

Kozminski University

NOTUS applied social research.

Fundació Tarragona Smart Mediterranean City.

INGOS - Institute of Innovative Economy .

RRIL Team designing the learning programme and courses

| Organisation | Team Members (by alphabetic order) |
| --- | --- |
| Universitat Rovira i Virgili | Laureano Jiménez; Karsten Krüger; Alba Molas. |
| Tampere University | Jonna Hijelt; Yohannes Mehari; Mikko Mykkänen; Elias Pekkola; Jari Stenvall |
| Kozminski University | Alicja Dańkowska Agata Stasik, |
| NOTUS | Maria Caprile |
| INGOS -Institute of Innovative Economy | Natalia Kobza |

## Preface

Responsible research and innovation (RRI), as an integrated concept, is being promoted by the European Union since 2010 and forms part of the Horizon 2020 in the area of science with and for society. Although the issue of responsibility in research and innovation has been discussed for some time before especially in North America, Great Britain, and the Netherlands, it is a concept genuinely developed by the European Commission at the end of the 2000's for the governance of the science and technology complex from the political level. So far it forms part of the answer of the European Commission to the changes in the configuration of the democratic processes to steer societal processes, in which the private actors gained relevance. However, recently the RRI as guiding vision lost relevance in favour to other concepts as the Sustainability Goals of the UN, which, however, covers the core principles of RRI. For this reason, we decided to anchor RRI in sustainability and enrich it towards Responsible & Sustainable Innovation (ReSI).

RRI is formed by five strategic dimension: public engagement, gender equality, science education, open science and ethics, to which the transversal dimension of governance is added to develop harmonious governance models and institutional strategies. The project developed learning courses for three of these dimensions: public engagement, gender equality and ethics, to which we add an introductory course to ReSI.

The goal of the learning programme is to support the integration of these core aspects of RRI and sustainability in science-based innovation processes. The main target groups are academics involved in science-based innovation processes or students as future academics or agents of innovation e.g. in business, NGOs, local and regional authorities.

The integration of the programme in the learning offers of higher education will support the promotion of responsibility in innovation processes in universities. The participating Higher education institutes will do so in the next academic years. The use of the creative Commons licences Attribution-NonCommercial-ShareAlike allows other higher education institutions to integrate the whole programme (or parts of them) in their learning offers. Although the courses are designed as a holistic programme, they can be used separately.

## The learning program

| Fiche | | | |
|---|---|---|---|
| Title | Responsible and Sustainable Innovation: Learning Programme | | |
| Leading Organisations | University Rovira i Virgili, Kozminski University; Tampere University | | |
| Target group | Master Students, PhD students, others as agents of change of municipalities, NGOs, Business etc. | | |
| Nº of students | 20 | | |
| Language | English, also accessible in Spanish | | |
| Requirements of participation | Medium Level of English/ Medium Level of Spanish | | |
| Credits points | 9 ECTS | | |
| Nº of lecturing hours | 60 hours | | |
| Mode | F2F | blended | Online | MOOC |
| | | X | X | X |
| Learning Methods | Lecture, group work, workshop or others | | |
| Evaluation | Quizzes<br>Open questions<br>Group discussions<br>Case studies as group work suing problem based approaches<br>Design and realisation of interviews with experts | | |

*Objective*

The program aims at helping practitioners to understand and analyse the dynamics of science-based innovation processes and the integration of principles of responsible and sustainable innovation focusing on public engagement, gender equality and innovation ethics. The practitioner will learn the reasons of the development of Responsible Research & Innovation (RRI) and it further development to Responsible & Sustainable Innovation (ReSI). The program aims at helping the students to understand the dynamics of public engagement, the relevance of gender equality for the research processes and the tools for apply innovation ethics in science based innovation processes. It provides the students with insight so that they can (a) reflect on their research and innovation already in early career stage; (b) anticipate intended and unintended consequences of their activities; (c) apply criteria of open science making transparent the intention of the research and innovation, the actors involved and their particular interest; and (d) involve the main stakeholders including the citizens in the deliberation processes from the beginning to the end of the science-based innovation process.

*Structure*

<u>*Course: Introduction to Responsible & Sustainable Innovation (ReSI)*</u>

> Introduction.
> Lecture1: Changes in Innovation Systems.
> Lecture 2: Multi-actor configuration and open innovation.
> Lecture 3: Answer to innovation dilemmas: Responsible Research & Innovation.
> Lecture 4: Responsible Research and Innovation.
> Lecture 5: Towards Responsible & Sustainable Innovation.
> Lecture 6: ReSI in practice.

<u>*Course: Public Engagement in Responsible Research and Innovation*</u>

> Introduction.
> Lecture 7: Public Engagement in Responsible Research and Innovation.
> Lecture 8: Innovation and Innovation Models.
> Lecture 9: Conceptualising Dimensions of Public Engagement.
> Lecture 10: Commercialisation of Research and Innovation and Public Engagement.
> Group Exercise and Learning Diary: Developing sustainable public engagement strategy.

<u>*Course: Gendered Responsible & Sustainable Innovation (ReSI)*</u>

> Introduction.
> Lecture 11: Gender Bias in Economic Research.
> Lecture 12: Gender Economics and Sustainability.
> Lecture 13: Gendered ReSI (including gender bias in energy and technology innovation).
> Lecture 14: Gender ReSi in Cities (with reference to energy use and mobility).
> Lecture 15: Gender Mainstreaming and Doughnut strategy.
> Group Exercise and Learning Diary: Gendered Responsible & Sustainable Innovation.

<u>*Course: Ethics in Responsible and Sustainable Innovation*</u>

> Introduction.
> Lecture 16: Tools to ensure societal relevance and ethical acceptability of RRI outcomes.
> Lecture 17: Corporate Social Responsibility.
> Lecture 18: Smart City & Responsible Technology.
> Lecture 19: Just Energy Transition.
> Group Exercise and Learning Diary: Ethics and General programme

*Content*

The first course introduces in Responsible & Sustainable Innovation, which anchored the concept of Responsible Research and Innovation (RRI) in Sustainability and the Sustainable Development Goals. The students will learn about

- the transformations of the innovation system towards quadruple helix configuration.
- the dilemmas, which academics must face, and how the concept of Responsible Research and Innovation have academics orientations to face these dilemmas.
- the need to anchored RRI in Sustainability and the Sustainable Development Goals. proposing the concept of Responsible & Sustainable Innovation (ReSI).

Based on this concept, the courses of public engagement, gender equality and innovation ethics has been developed. All three modules take as thematic reference points: economy, energy (including mobility) and urban development. The last topic indicates that the program insists in the cooperation with municipal public administrations and policy makers considering cities as crucial to achieve the Sustainable Development Goals.
https://lor.instructure.com/resources/0c1fa583b6cb443e9b37d75403e56fbc

The course of **public engagement** aims at helping students to understand and analyse the dynamics of public engagement in the context of responsible research and innovation and its central elements. The students will be able to critically assess the strengths and weaknesses or advantage and disadvantages of public engagement in enhancing responsible research and innovation. The course insists in the relevance of public engagement for the implementation of the gender perspective and principles of innovation ethics already at the beginning of the innovation process. Students will work on a particular country/region innovation process case and analyse the major challenges and opportunities of public engagement of universities in transforming an innovation process to meaningfully respond to social, economic and political problems and come up with strategic and feasible solutions.

https://lor.instructure.com/resources/f17d06173ec14c61bccf80117e771fd8?shared

The course of **gender equality** aims to enable participants to integrate the dimension of gender equality and social vulnerability in science based innovation projects based on quadruple helix configuration, especially with the participation of municipal public administration and policy makers. Through the example of economy and technology (energy and artificial intelligence), it will arise the awareness of gender bias in science and innovation processes. The module insists in the interrelation with public engagement and innovation ethics to achieve the implementation of the gender perspective in science based innovation processes. It will reinforce the competences of the participants (defined in terms of knowledge, capacities, responsibility and autonomy) to integrate the gender and social vulnerability perspective in innovation projects and to evaluate and monitor their impact on gender equality and social vulnerability.
https://lor.instructure.com/resources/0aa23b741bac4f6a855057d12c8e17c1

The course of **innovation ethics** aims to enable students to introduce the ethical perspective in science based innovation processes, particularly in the fields of economy and energy with the focus on sustainability. It provides an overview of various tools, approaches, and methodologies such as the precautionary principle, International Standard ISO 26000, Value Sensitive Design, and participative technology assessment. It will arise the capability of the students to use in their projects, campaigns, or any other endeavours these and other tools reinforcing the ethic dimension of the innovation activities in close relation to public engagement and gender equality. It is based on the premise that to ensure social relevance and acceptability of any innovation, its impact should be evaluated at the early stages of the research process, including its possible unintended and unexpected consequences. Monitoring the innovation process could be enabled by sharing authorship and responsibility of the results with relevant social groups (citizens, policymakers, entrepreneurs, educators, etc.) who should be involved in all stages of the process while respecting the principles of gender balance.
https://lor.instructure.com/resources/eec37eb0a22d49a1bd5139b105f4194b

The programme and its four courses used video presentation to introduce to the topic and subtopics, web texts, video with experts (generally from external sources), individual exercises (e.g., quizzes and open questions), participants' learning journals, and group works (e.g., simulation of project development, interviews with experts among others) using holistic approaches combining public engagement, gender and ethic. Each course includes group exercises for its specific topic, so that they can be used separately, but maintaining the holistic approach.

For more details of the content of the program, please see the course descriptions.

### *Competencies*

This section refers to the general competences – defined, following the EQF 2018, as knowledge, skills and responsibility and autonomy - to be acquired participating in the programme. In the description of the courses, the competences will be defined in more detail for public engagement, gender and innovation ethics.

### *Knowledge*

| EQF – Learning outcomes linked to knowledge |
| --- |
| *Level 6 (Graduate):* |
| advanced knowledge of the field of work or study, involving a critical understanding of theories and principles. |
| *Level 7 (Postgraduate: Bologna Master or other higher education postgraduate programmes (Formal and informal):* |
| highly specialised knowledge, some of which is at the forefront of knowledge in the field of work or study, as the basis for original thinking and/or research. |
| critical awareness of knowledge issues in a field and at the interface between different fields. |

The objectives are to:

- understand the dynamics of modern innovation systems.
- understand the principles of Responsible Research and Innovation and the relationship between public engagement, gender equality and innovation ethics.
- know the importance of responsible innovation in enhancing the social acceptance of research and innovation.
- understand the relevance of sustainability and sustainable development goals as anchors for responsible innovation (Responsible & Sustainable Innovation).
- understand the relevance of principles of responsible & sustainable innovation for the fair transition towards a Sustainable Europe and World.
- realise the relationship between public engagement, gender equality and innovation ethics and its relevance to achieve societal sustainable impact[1] of science based innovation projects.

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[1] Sustainability is here and in the following sections used the three pillar model of ecological, economic and social sustainability, which is also the point of departure of the EU sustainability strategy (e.g., the Green Deal).

*Skills*

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EQF – Learning outcomes linked to skills

*Level 6 (Graduates):*

advanced skills, demonstrating innovation, required to solve complex and unpredictable problems in a specialised field of work or study.

*Level 7 (Postgraduate: Bologna Master or other higher education postgraduate programmes (Formal and informal):*

specialised problem-solving skills required in research and/or innovation in order to develop new knowledge and procedures and to integrate knowledge from different fields.

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The objectives are to acquire skills of:

- critically assessment of the challenges, dilemmas and opportunities of modern innovation systems (e.g., triple and quadruple helix configurations).
- implementation of ReSI principles in particular innovation processes.
- To assess innovation process from the perspective of responsible and sustainable innovation, especially in the dimension of public engagement, gender equality and innovation ethics.
- to apply critically the key principles of RRI: reflection, anticipation, openness and inclusive deliberation in own research and innovation.


*Responsibility & autonomy*

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EQF – Learning outcomes linked to Responsibility & autonomy

*Level 6 (Graduates):*

manage complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts.

take responsibility for managing professional development of individuals and groups.

*Level 7 (Postgraduate: Bologna Master or other higher education postgraduate programmes (Formal and informal):*

manage and transform work or study contexts that are complex, unpredictable and require new strategic approaches.

take responsibility for contributing to professional knowledge and practice and/or for reviewing the strategic performance of teams.

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The objective is to strengthen responsibility and autonomy to:

- adopt and develop innovative mind-set based on ReSI principles.
- commit to understand the concept and importance of ReSI in making research and innovation responsive to societal problems.
- appreciate the concept of ReSI and the role of public engagement, gender and ethics to achieving sustainable goals.
- promote principles ReSI in innovation projects to improve the quality and sustainable relevance of the results.
- Identify and understand sustainable risks of science based innovations.
- Design and implement strategies to reduce sustainable risks.

## Course: Introduction to Responsible & Sustainable Innovation

| Fiche | | | | |
|---|---|---|---|---|
| Title | Introduction to ReSI | | | |
| Leading Organisation | Universitat Rovira i Virgili | | | |
| Target group | Master Students, PhD students, others as agents of change of municipalities, NGOs, Business etc. | | | |
| Nº of students | 20 | | | |
| Language | English, also accessible in Spanish. | | | |
| Requirements of participation | Medium Level of English or Medium Level of English/Spanish | | | |
| Credits points | 1 ECTS | | | |
| Nº of lecturing hours | 3 hours | | | |
| Mode | F2F | blended | Online | MOOC |
| | | X | X | X |
| Learning Methods | Lecture, group work, workshop or others | | | |
| Evaluation | Group presentation<br>Videos<br>Case studies | | | |

### *Objective*

The introductory course aims at helping students to understand a) the dynamics of change in innovation systems and science based innovation processes towards open and user innovation, b) the implication for the researchers, c) how the European Commissions tries to steer the public funded innovation processes through the approach of Responsible Research and Innovation, d) that RRI requires a coherent anchor to steer research processes, which provides the three pillar model of sustainability and the Sustainable Development Goals (SDGs) of the Agenda 2030 of the United Nations (UN). The course provides the students with insight about the main dimension of RRI: reflection, anticipation, openness and inclusive deliberation, which are of main relevance to understand the outline of public engagement, gender equality and innovation ethics presented in the following courses.

### *Structure*

*Course: Introduction to Responsible & Sustainable Innovation (ReSI)*

  Lecture1: Changes in Innovation Systems.

  Lecture 2: Multi-actor configuration and open innovation.

  Lecture 3: Answer to innovation dilemmas: Responsible Research & Innovation.

  Lecture 4: Responsible Research and Innovation.

  Lecture 5: Towards Responsible & Sustainable Innovation.

  Lecture 6: ReSI in practice.

*Content*

Following the principles of 'Responsible Research and Innovation (RRI)', this module introduces students to the concept of RRI enriched by the Sustainable Development Goals. For this reason, we are talking about Responsible & Sustainable Innovation (ReSI). The students will learn about

- the transformations of the innovation system and processes.
- the dilemmas, which academics must face, and how the concept of Responsible Research and Innovation have academics orientations to face these dilemmas.
- the need to anchored RRI in Sustainability and the Sustainable Development Goals, proposing the concept of Responsible & Sustainable Innovation (ReSI).

The course introduce to the concept of Responsible and Sustainable Innovation through:

**1. Changes in the innovation systems**

This session explains fundamental changes in territorial anchored innovation system, for which the approaches of triple and quadruple helix are representative. It underpins one main problem of investment in innovation is the opposition of part of the society against the proposed innovation mentioning as example the atomic energy, genetically modified food among others

**2. Multi-actor configuration**

This lecture goes more in detail to the changes in the innovation processes, which is characterised by the involvement of a wide range of actors with different interest. It use the approaches of open and user innovation are examples for increasing participation of the public in innovation processes. Similar in public innovation processes citizens' participation has gained relevance.

**3. Answers to innovation dilemmas**

The lecture assumes that the changes in the innovation systems and processes create serious dilemmas especially for researchers at public universities and research centres. It underpins, as an example, the changes in the founding of public research, in which the competitive factor is more and more relevant and in which the share of private funding has increases. One answer to these dilemmas is Responsible Research and Innovation.

**4. Answers to innovation dilemmas**

Responsible Research and Innovation (RRI) introduces guiding principles in public funded research processes. This lecture explains the definition of what RRI means and its basic principles as: Reflection, inclusive deliberation, anticipation and openness.

**5. Towards Responsible & Sustainable Innovation**

The lecture criticized that RRI proposed valid principles for public research processes, but that a anchor to guide the action is missed. It identified the topic of Sustainability and Sustainable Development Goals as the most adequate anchor in time of climate change and ecological degradation. For this reason, it is proposed to talk about Responsible & Sustainable Innovation (ReSI).

### 6. ReSI in practice

The implementation of RRI has been designed generally as institutional top-down process and has not reached the level of research groups and individual researchers. This lecture inistes that implementation of RRI and ReSI must be focus on these levels so that their principles will be applied to concrete science-based innovation processes.

*Competencies*

The introductory course pretends to transmit knowledge about the basics of RRI and ReSI. The aim is not that the learners acquire a complete set of competencies as defined by the EQF 2018. It is limited to the acquisition of knowledge as the basis to develop the competencies defined in the other three courses.

*Knowledge*

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EQF – Learning outcomes linked to knowledge

*Level 6 (Graduate):*

advanced knowledge of the field of work or study, involving a critical understanding of theories and principles.

*Level 7 (Postgraduate: Bologna Master or other higher education postgraduate programmes (Formal and informal):*

highly specialised knowledge, some of which is at the forefront of knowledge in the field of work or study, as the basis for original thinking and/or research.

critical awareness of knowledge issues in a field and at the interface between different fields.

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The objectives are to:

- understand the dynamics of modern innovation systems.
- understand the dynamics of modern technological and social innovation processes in private and public spheres.
- understand the main principles and domains of Responsible Research and Innovation.
- understand the relevance of sustainability and sustainable development goals as anchors for RRI.
- understand the relevance of principles of responsible & sustainable innovation for the fair transition towards a Sustainable Europe and World.

***Assessment and learning products***

*Assessment*

Standardised quizzes for each lecture

*Learning products*

## Public engagement

| Fiche | |
|---|---|
| Title | Public engagement in responsible research and innovation |
| Leading Organisation | University Tampere |
| Target group | Master Students, PhD students, others as agents of change of municipalities, NGOs, Business, etc. |
| Nº of students | 20 |
| Language | English, also accessible in Spanish. |
| Requirements of participation | Medium Level of English or Medium Level of English/Spanish |
| Credits points | 3 ECTS |
| Nº of lecturing hours | 19 hours |

| Mode | F2F | blended | Online | MOOC |
|---|---|---|---|---|
| | | X | X | X |
| Learning Methods | Lecture, group work, workshop, Learning diary | | | |
| Evaluation | Group presentation, Videos; Case studies, Open questions | | | |

*Objective*

The course aims at helping students to understand and analyse the dynamics of public engagement in the context of responsible research and innovation and its central elements. The learners will be able to critically assess the strengths and weaknesses or advantage and disadvantages of public engagement in enhancing responsible research and innovation. Besides, practitioners will work on a particular country/region innovation process case and analyse the major challenges and opportunities of public engagement of universities in transforming and innovation process to meaningfully respond to social, economic and political problems and come up with strategic and feasible solutions.

*Structure*

*Course: Public Engagement in Responsible Research and Innovation*

 Introduction.
 Lecture 7: Public Engagement in Responsible Research and Innovation.
 Lecture 8: Innovation and Innovation Models.
 Lecture 9: Conceptualising Dimensions of Public Engagement.
 Lecture 10: Commercialisation of Research and Innovation and Public Engagement.
 Group Exercise and Learning Diary: Developing sustainable public engagement strategy

*Content*

Public engagement is a key dimension of Responsible Research and Innovation (RRI), aiming at making science, technology and innovation more transparent, interactive and responsive. It mainly focuses on creating the platform for ethical value-laden issues to be explored and targets for inclusiveness, transparency, diversity, and creativity into the RRI process (EC, 2009). In other words, societal engagement is key pillar of RRI that focuses on making science, technology, and

innovation relevant, transparent, interactive, and responsive (Bauer, et al., 2021). Public engagement has five distinct dimensions under the umbrella of Responsible Research and Innovation:

1. The purpose of public engagement,
2. The actor groups that should become engaged,
3. The aspect of timing, and
4. The framing of STI in engagement processes.

Even though public engagement is the central dimension of RRI, studies show that the concept lacks clarity in terms of use, requirements, and application in the context of RRI. Therefore, this course, under the umbrella of the defining dimensions of public engagement, provides the opportunity for students to understand and assess the key challenges in fostering effective public engagement strategies in research and innovation endeavours of public and private organisations, and identify opportunities that could support the integration and participation of public in innovation and research activities and improving the institutionalisation and sustainability of public engagement strategies in organisations. To achieve the overall objective of the course, the course is divided into five main lectures and an group exercise:

## 1. Public engagement in Responsible Research and Innovation

This lecture presents the overall concepts of the key components of Responsible Research and Innovation vis-a-vis the role of public engagement. The lecture also introduces a brief introduction of the Finnish national innovation processes from the perspective of the role of major stakeholders. Creative exercises and quizzes to help students map the guiding concepts and dimensions of RRI and public engagement are also presented.

## 2. Innovation and innovation models

Provides the basic concepts of innovation and innovation models. The contents of the lecture focus on explaining the key concepts and models that guide our understanding of innovation and innovation processes. Historical development of innovation and its ever-changing dynamics to respond to emerging national socio-economic challenges is presented. Popular innovation models, including, but not limited to, Triple Helix, Quadruple Helix and Quintuple Helix are discussed extensively. To further concretise the models of innovation, an example of Tampere region innovation process is presented.

## 3. Conceptualising dimensions of public engagement

This lecture specifically focuses on explaining the key dimensions of public engagement and the challenges associated with it in institutionalising public engagement strategies in public and private organisations' research and innovation endeavours. It presents specific institutional examples of higher education institutions' role in research and innovation activities and their institutional sustainable public engagement strategies. The lecture also provides an interesting case of Finnish innovation project—Hiedaranta as urban living lab.

### 4.  Commercialisation of research and innovation, and public engagement

This lecture explores practices, problems, and strategies of various valorization of research and innovation activities. It addresses EU valorization policies and the involvement of key stakeholders in promoting research and innovation results. It also presents the societal impact of research and innovation and the practices of knowledge transfer to a wide audience. Practical Finnish universities and companies' commercialisation of research and innovation strategies are discussed.

### Group Exercise and Learning Diary: Developing sustainable public engagement strategy

The section provides the opportunity for the students to analyse various public engagement strategies in RRI. First, a brief presentation about sustainable public engagement strategies is presented. Second, selected cases are explored in a bid to integrate public engagement strategies. The aim is to support the comprehensive understanding of students about sustainable public engagement strategies in ReSI. The students are called to drawn out a simulation of an urban project based on public engagement procedures and having in mind the future integration of gender and ethical principles. For this reason, the students are encouraged to look for cases, which could be used also for the gender and ethic courses, so that, at the end of the programme, a holistic approach will be applied.

Finally, this section briefly summarised the contents of the previous lectures based on the learning journals of the learners.

*Competencies*

*Knowledge*

| EQF – Learning outcomes linked to knowledge |
| --- |
| *Level 6 (Graduate):* |
| advanced knowledge of the field of work or study, involving a critical understanding of theories and principles. |
| *Level 7 (Postgraduate: Bologna Master or other higher education postgraduate programmes (Formal and informal):* |
| highly specialised knowledge, some of which is at the forefront of knowledge in the field of work or study, as the basis for original thinking and/or research. |
| critical awareness of knowledge issues in a field and at the interface between different fields. |

The objectives are to:

- understand the concepts and dynamics of public engagement and its relationship with responsible research and innovation.
- know the importance of public engagement in enhancing the social acceptance of research and innovation.
- understand the role that public engagement would play in bringing research and innovation closer to society.

-   realise the relationship between public engagement, universities service function and commercialisation of research results and innovation.

*Skills*

EQF – Learning outcomes linked to skills

*Level 6 (Graduates):*

advanced skills, demonstrating innovation, required to solve complex and unpredictable problems in a specialised field of work or study.

*Level 7 (Postgraduate: Bologna Master or other higher education postgraduate programmes (Formal and informal):*

specialised problem-solving skills required in research and/or innovation in order to develop new knowledge and procedures and to integrate knowledge from different fields.

The objectives are to acquire skills:

-   critically assess the challenges and opportunities of public engagement in enhancing innovation process.
-   analyse and evaluate a particular country's innovation process from the perspective public engagement.
-   apply the key pillars of public engagement in brining research and innovation closer to the society.

*Responsibility & autonomy*

EQF – Learning outcomes linked to Responsibility & autonomy

*Level 6 (Graduates):*

manage complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts.

take responsibility for managing professional development of individuals and groups.

*Level 7 (Postgraduate: Bologna Master or other higher education postgraduate programmes (Formal and informal):*

manage and transform work or study contexts that are complex, unpredictable and require new strategic approaches.

take responsibility for contributing to professional knowledge and practice and/or for reviewing the strategic performance of teams.

The objective is to strengthen responsibility and autonomy to:

-   adopt and develop innovative mind-set.
-   commit to understand the concept and importance of public engagement in making research and innovation responsive to societal problems.
-   appreciate the concept of responsible research and innovation and the role of public engagement in achieving its objectives.

### Assessment and learning products

*Assessment*

<u>Group work and presentations</u>

Groups of 3–4 students will be formed before the first lecture. Group division and the two assignments will be presented to the students on the first lecture. The assignments are both a group presentation on the basic concepts and theories of public engagement in the context of Responsible Research and Innovation. This constitute 30% of the grade.

The second assignment is analysing a case study of an innovation project in their country. The groups are supposed to work with the case during the whole course and develop an strategy for a case institution. The idea is that the groups apply the concepts and theories from the lectures, course literature and apply what they have learned from the other modules to the practise of Responsible Research and Innovation.

The groups present the solutions of their group work (case study) on the workshop sessions. All students are expected to participate actively in class discussions and other course activities. It is also expected that students have critically read the assigned pre-lecture readings and they should be prepared to discuss, critique and raise questions regarding the materials when necessary. Moreover, students are expected to write a learning journal at the end of the course and submit it. In the learning journal, students will reflect on their overall experience in participating in the course.

<u>Group paper based on the case study</u>

The students will write the group paper. They will further elaborate their presentations of the group work and write a 5,000–6,000-word paper (public engagement strategy in innovation process for a case institution and the implementation plan for the strategy).

Papers will be assessed by using the following criteria:

- Thoroughness of analysis.
- Clear understanding of the links between theory and practise.
- Persuasiveness of arguments.
- Innovativeness of the solution for the problem of case institution.
- Organization and clarity of writing.
- Grammar, spelling, and other indicators of accuracy.

*Learning products (deliverables)*

1. Presentation, which is critically analysed, and feedback provided by other groups and the teacher.
2. A group paper based on the case study: written strategy and the implementation plan for enhancing public engagement in innovation process in the case institution or country.
3. Debate on selected topics.
4. Learning journal - reflection on the overall experiences of students in participating in the course.

## Gender equality

| Fiche | | | |
|---|---|---|---|
| Title | Integration of gender perspective in processes of social digital innovation | | |
| Leading Organisation | University Rovira i Virgili (Tarragona) | | |
| Target group | Master Students, PhD students, others as agents of change of municipalities, NGOs, Business etc. | | |
| Nº of students | 20 | | |
| Language | English, also accessible in Spanish. | | |
| Requirements of participation | Medium Level of English or Medium Level of English/Spanish | | |
| Credits points | 3 ECTS) | | |
| Nº of lecturing hours | 19 hours integrated part of the programme | | |
| Mode | F2F | blended | Online | MOOC |
| | | X | X | X |
| Learning Methods | Lecture, group work, workshop or others | | |
| Learning products | Lecture, group work, workshop or others | | |
| Evaluation | Group presentation, Videos; Case studies, Quizzes, Open questions | | |

*Objective*

Following the principles of ReSI, this course aims to enable participants to integrate the dimension of gender equality and social vulnerability in science-based innovation projects-based on multi-actor configuration, especially with the participation of municipal public administration and policy makers.

The course introduces the students how gender is conceived in conventional and gender economic approach and to the linkage between gender and ecological economics. It enables the practitioner to apply broader multi-disciplinary approach to evaluate the sustainable impact of their research and innovation activities based on the three pillar model: ecological, economic and social sustainability, but also to assess policy impact.

The course introduces the learners in the topic of gender equality as a guiding principle of responsible and sustainable research enabling them to apply the gender perspective in the processes of social and technological innovation, taking here the fields of economy, energy and artificial intelligence, especially in urban planning as pivotal points.

It underpins the linkage of the gender perspective with public engagement and innovation ethics to achieve sustainable impact of science based innovation enabling the students to apply holistic innovation approach using the three-pillar model of sustainability.

The course insists on the implication for urban policy development taken energy and mobility as examples enabling the students to bring in the holistic gender perspective in specific innovation processes and measure its consequences.

The course enables the students to identify, understand and integrate the perspective of gender and social vulnerability when a process of social or technological innovation is initiated, in order to make them visible and correct "blindness" with respect to gender and social vulnerability in general.

### *Structure*

The course is divided in 6 lectures:

Introduction.

Lecture 11: Gender Bias in Economic Research.

Lecture 12: Gender Economics and Sustainability.

Lecture 13: Gendered ReSI (including gender bias in energy and technology innovation).

Lecture 14: Gender ReSi in Cities (with reference to energy use and mobility).

Lecture 15: Gender Mainstreaming and Doughnut strategy.

Group Exercise and Learning Diary: Gendered Responsible & Sustainable Innovation.

### *Content*

Gender equality is one of the guiding principles of RRI and it is also present in alternative concepts of guiding research and innovation processes, such as the UN Sustainable Development Goals. Gender equality has two dimensions:

1. the promotion of equal participation of men and women in research activities (the staff management dimension); and
2. the inclusion and integration of gender perspectives in the content of research and development and the exposition of results.

A brief review of the H2020 gender projects and training material shows that more emphasis has been placed on the first aspect, while the second has been less relevant. However, there are relevant projects of references as the project Gender innovations in Science, Health, Medicine, Engineering and Environment[2] lead by the University Stanford or the EU-project Libra[3], which aims to build and promote excellence in life sciences including the dimension of 'Sex and gender dimension of research'. In Spain, the Network Vives[4] has elaborate a series of material to introduce the gender perspective in the learning processes of different academic fields.

Our course puts the focus on the process dimension, contributing to answer the following question: How to introduce the perspective of gender and social vulnerability in the processes of social and technological innovation, taking as case-studies the fields of economy and energy? It is important to emphasize that we are talking about science-based innovation, which is framed in multi-actor configurations as the triple or quadruple helix.

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[2] https://genderedinnovations.stanford.edu/index.html (accessed August 2021).

[3] https://www.eu-libra.eu/ (accessed August 2021).

[4] https://www.vives.org/programes/igualtat-genere/guies-docencia-universitaria-perspectiva-genere/ (accessed August 2021)

The course is divide in 5 lectures and an Group Exercise:

### 1. Gender Bias in Economic research

This lecture exposes by the example of the conventional definition of 'work' as remunerated productive activity the underlying gender bias as it considered the domestic work as consumptive, excluding so the (re)productive activities from the economic analysis. This conduce to critics of economic micro-foundation, especially the ideal-typical assumption of the *homo-oeconomicus*, but also macro-foundation, especially the conventional assumption of economy as a close system independent from its environment delegating reproductive or restoring activities outside of the economic system.

### 2. Gender Economics and Sustainability

It introduces the conventional economic models to achieve sustainability (circular and bio-economy) on which the Green Deal is based. It exposes the criticism of gender and ecological economics against these models as a step forward, but insufficient to mitigate really the climate change. It introduces also to alternative holistic models as the (re)productive or care economy or the doughnut economy. Especially the last one visualise the interrelation between economic policies, ecological and social environment.

### 3. Gender ReSI

The lecture makes a short introduction to the concept and highlights the linkages between public engagement, gender and ethics especially for urban innovation policies. It also introduced into gender biases in technology fields as energy and artificial intelligence (AI). Especially the gender bias of AI is relevant as it is more and more used for urban sustainable policies as for instance the Smart City approach.[5]

### 4. Gender ReSI in cities

The lecture goes in some more detail into the questions of sustainability and gender in the field of energy and later of mobility as a subfield to reduce the carbon footprint of the cities. It introduces to the question of the digitalisation and massive application of AI will really contribute to mitigate the climate change as digital tools and AI application are extremely energy hungry. On the other side, it talks about the scare gender studies on gendered patterns of energy use in highly industrialised countries, but also to the gender blindness of studies about energy poverty. Regard mobility, it introduces to proposal to analyse urban mobility data under a gender perspective of the care economy. This is a part of the increasing number of studies on gender patterns of mobility behaviour, especially the acceptance of smart mobility and public transport offers. Another essential aspect of mobility under the gender perspective is the question of safety of public spaces and public transport.

### 5. Gender mainstreaming and Doughnut strategy

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[5] This lecture will be reduced in time, when this course is used in the frame of the whole learning programme including the course introduction to ReSI.

It introduces to the topic of gender in urban planning highlighting that in many EU-cities it is widely integrated in the internal procedures of urban planning. For a gendered sustainable city planning, the Amsterdam Doughnut model is presented as an example of holistic urban planning combining public engagement (stakeholder and citizen participation), gender and ethic principal to design strategies and measures based on the three pillar sustainable model. It suggests a circular process based on citizen participation with the stages of: a) elaboration of a city portrait, b) insights as product of reflecting on the opportunities and challenges, synergies and tensions, of policy options, possible specific actions and to evaluate their sustainable impact based on the city portrait, c) make a choice of the policies and specific measures; d) and to evaluate the sustainable impact of the policy and measures. The last would be the starting point to reinitiate the process. The model suggests to ask for the sustainable impact of urban measures at global and national level as well as for the cities, neighbourhoods and households.

### Group Exercise and Learning Diary: Developing sustainable public engagement strategy

The section provides the opportunity for the students to analyse various gender strategies in RRI. First, a brief presentation about sustainable gender strategies is presented. Second, selected cases are explored in a bid to integrate gender and public engagement strategies. The aim is to support the comprehensive understanding of students about public engagement and strategies in ReSI. The section includes workshops and seminars prepared by students. The students are called to drawn out a simulation of an urban project to integrate gender topics and public engagement procedures and having in mind the future integration of ethical principles of innovation. It is based on the cases selected in the previous course about public engagement

Finally, this section briefly summarised the contents of the previous lectures based on the learning journals of the learners.

### *Competencies*

*Knowledge*

EQF – Learning outcomes linked to knowledge

*Level 6 (Graduate):*

advanced knowledge of the field of work or study, involving a critical understanding of theories and principles.

*Level 7 (Postgraduate: Bologna Master or other higher education postgraduate programmes (Formal and informal):*

highly specialised knowledge, some of which is at the forefront of knowledge in the field of work or study, as the basis for original thinking and/or research.

critical awareness of knowledge issues in a field and at the interface between different fields.

The objectives are to know

- about the relation of gender and other factors of social vulnerability.
- about risk assessment from a gender and social vulnerability perspective.

- the potential social impact of digital social innovations not only in the gender dimension, but also according to other linked social vulnerability dimensions as income, family structure, age, ethnic origin, place of residence (city - country - neighbourhood), etc.: exposure to social risks according to degree of social vulnerability.
- approaches and strategies that allow inserting the gender and social vulnerability perspective in social and digital innovation projects.
- broad concepts of social and digital innovation processes by integrating the gender and social vulnerability perspective.
- about indicators to measure the social impact of the project from the perspective of gender and social vulnerability.
- approaches and methodologies to evaluate the social impact of social innovation projects according to gender and social vulnerability.

*Skills*

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EQF – Learning outcomes linked to skills

*Level 6 (Graduates):*

advanced skills, demonstrating innovation, required to solve complex and unpredictable problems in a specialised field of work or study.

*Level 7 (Postgraduate: Bologna Master or other higher education postgraduate programmes (Formal and informal):*

specialised problem-solving skills required in research and/or innovation in order to develop new knowledge and procedures and to integrate knowledge from different fields.

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The objectives are to acquire skills:

- to apply a perspective of gender equality and social risk work in social and digital innovation projects.
- to assess innovation policies from a gender and social vulnerability perspective.
- to establish indicators to monitor the project development in all its phases from a gender perspective.
- to design a summary evaluation of the project development in all its phases from a gender perspective.
- to evaluate and monitor digital social innovation projects according to their impact on gender equality and social vulnerability.

*Responsibility & autonomy*

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EQF – Learning outcomes linked to Responsibility & autonomy

*Level 6 (Graduates):*

manage complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts.

take responsibility for managing professional development of individuals and groups.

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*Level 7 (Postgraduate: Bologna Master or other higher education postgraduate programmes (Formal and informal):*

manage and transform work or study contexts that are complex, unpredictable and require new strategic approaches.

take responsibility for contributing to professional knowledge and practice and/or for reviewing the strategic performance of teams.

The objective is to strengthen responsibility and autonomy to:

- Promote gender-balanced teams, ensuring gender balance in decision-making bodies and always considering the gender dimension in research and development to improve the quality and social relevance of the results.
- Identify and understand social risks of digital social innovations according to the degree of social vulnerability linked to gender.
- Design and implement strategies to reduce social risks related to gender.
- Design and implement strategies to incorporate practitioners in gender and social vulnerability issues in the innovation process, reinforcing the gender perspective (see the public engagement module).
- Design and implement strategies to measure the social impact of the project from the perspective of gender and social vulnerability.

### Assessment and learning products

*Assessment*

Quizzes

Within lectures, the participants can take part in the quiz that allows him/her to check if him/her understood the concepts introduced in the given lecture. This assessment method may serve as the main method if the course is used as MOOC.

Open questions

Each lectures have a number of open questions, which serves two main goals. First, it allows participants to check if they can apply the most important facts presented during the lecture and in learning materials. Second, they allow the participants to apply the concepts to explore different real-life challenges and develop intended skills.

It is thought mainly for the mode of tutored course, but also can be used by students of the MOOC mode revising again the content of the lecture checking if he/she has expressed well the main concepts.

Group work and presentations

Groups of 3–4 students will be formed before the first lecture. Group division and the two assignments will be presented to the students on the first lecture. The assignments are both a group presentation on the basic concepts and theories of public engagement in the context of Responsible Research and Innovation. This constitute 30% of the grade.

The second assignment is analysing a case study of an innovation project in their country. The groups are supposed to work with the case during the whole course and develop a strategy for a case institution or project (fictive). The idea is that the groups apply the concepts and theories from the lectures, course literature and also apply what they have learned from the other modules to the practise of Responsible Research and Innovation.

The groups present the solutions of their group work (case study) on the workshop sessions. All students are expected to participate actively in class discussions and other course activities. It is also expected that students have critically read the assigned pre-lecture readings and they should be prepared to discuss, critique and raise questions regarding the materials when necessary. Moreover, students are expected to write a learning journal at the end of the course and submit it to the course. In the learning journal, students will reflect on their overall experience in participating in the course.

Group paper based on the case study (70% of course grade)

The students will write the group paper. They will further elaborate their presentations of the group work and write a 5,000–6,000 words paper (gender strategy in innovation process for a case institution or innovation project and the implementation plan for the strategy).

Papers will be assessed by using the following criteria:

- Thoroughness of analysis.
- Clear understanding of the links between theory and practise.
- Persuasiveness of arguments.
- Innovativeness of the solution for the problem of case institution.
- Organization and clarity of writing.
- Grammar, spelling, and other indicators of accuracy.

Self-assessment

- learning diary or learning journal as reflection on the overall experiences of students in participating in the course and feedback to the mentor.

*Learning products (deliverables)*

- Presentation, which is critically analysed, and feedback provided by other groups and the teacher.
- A group paper based on the case study: written strategy and the implementation plan for enhancing public engagement in innovation process in the case institution or country.
- Learning dairy or journal: reflection on the overall experiences of students in participating in the course.

## Ethics in Responsible and Sustainable Innovation

| Outline of the course | | | | |
|---|---|---|---|---|
| Title | Understanding societal relevance and ethical acceptability of R&I outcomes in responsible and sustainable innovation | | | |
| Leading Organisation | Kozminski University (Warsaw) | | | |
| Target group | Bachelor Students, Master Students, PhD students, representatives of business (esp. start-ups community) and local communities engaged in innovation process | | | |
| N° of students | 20 | | | |
| Language | English with some additional material in Polish | | | |
| Requirements of participation | Medium Level of English | | | |
| Credits points | 3 ECTS (as standalone course) | | | |
| N° of lecturing hours | 20 hours as standalone course/ 19 hours integrated part of the program | | | |
| Mode | F2F | blended | Online | MOOC |
| | | X | X | X |
| Learning Methods | Lecture, reading, group work. | | | |
| Learning products | Group presentation<br>Videos<br>Case studies | | | |
| Evaluation | | | | |

*Objectives*

The main objective of the course is raising awareness on ethical dimension of conducting research and innovation development, as well as providing inspiration, knowledge and learning tools related to ethical considerations in research and innovation processes.

The course introduces the students to various approached applied to ensure societal relevance and ethical acceptability of R&D+I outcomes in the context of business activity, energy research, and urban development. In this understanding, an ethical reflection is closely related to other concepts, such as sustainability, transparency, the precautionary principle, social responsibility of science, impact assessment, or design for values.

The course is based on the premise that to ensure social relevance and acceptability of any innovation, its impact should be evaluated at the early stages of the research process, including its possible unintended and unexpected consequences. Monitoring the innovation process could be enabled by sharing authorship and responsibility for the results with relevant social groups (citizens, policymakers, entrepreneurs, educators, etc.) who should be involved in all stages of

the process while respecting the principles of gender balance. Therefore, the course stresses the connections between ethical dimension of R&D+I with public engagement and gender perspective, and present them as complementary concepts.

Such an approach to ethics is the least known among researchers and innovators in Spain, Finland and Poland, and rarely implemented in a systematic way in the processes of innovation development[6]. These issues have become even more important and troublesome in light of emerging new ethical challenges related to new technologies, such as cutting-edge applications of AI and increasingly complex global problems, such as climate crisis, or raising social inequalities. Therefore, this course aims at contributing to answer the following question: How to introduce the ethical perspective in research and innovation development processes on these cutting edge domains?

### *Structure*

The course is divided in 4 Lectures and a Group Exercise.

    Introduction.
    Lecture 16: Tools to ensure societal relevance and ethical acceptability of RRI outcomes.
    Lecture 17: Corporate Social Responsibility.
    Lecture 18: Smart City & Responsible Technology.
    Lecture 19: Just Energy Transition.
    Group Exercise and Learning Diary: Ethics and General programme

### *Content*

Ethical reflection is one of the guiding principles of the Responsible Research and Innovation framework. Ethics in research and innovation development can be understood as an umbrella concept that encompasses various ideas and can be divided into three broad categories:

1. Research integrity and good research practice;
2. Research ethics for the protection of the objects of research;
3. <u>Societal relevance and ethical acceptability of R&I outcomes.</u>

While the first two categories apply first of all to the process of research, the third one considers its outcomes. The course focuses on the third category, that "*(…) aims to ensure increased societal relevance and acceptability of research and innovation outcomes. Ethics should not be perceived as a constraint to research and innovation, but rather as a way of ensuring high quality results*" (European Commission, 2012). In this understanding, an ethical reflection is closely related to other concepts, such as sustainability, transparency, the precautionary principle, social responsibility of science, Corporate Social Responsibility, or designing for values, among others. The course invites its participants to reflect to what extent these concepts, which are commonly associated with responsible innovation, actually respond to current social, economic, and environmental problems. It also invites participants to reflect on how to make innovations developed within the Corporate Social Responsibility (CSR), Smart City, or just energy transition more socially relevant and ethically acceptable.

After presenting the introduction to the course, its content is divided into 4 lectures and Group exercise:

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[6] Kruger et al., 2020

1. **Tools to ensure societal relevance and ethical acceptability of R&D+I outcomes.**

This lecture presents different disciplined approaches which serve to ensure societal relevance and ethical acceptability of R&I outcomes: the precautionary principle, International Standard ISO 26000, Value Sensitive Design, and participative technology assessment. The lecture includes discussions on the assumptions on which these approaches are based, and reflects on their strengths and weaknesses. It shows how these tools may be used by participants in innovation development processes, in campaigns, or other endeavours, ensuring that they meet the criteria for responsibility.

2. **Corporate Social Responsibility**

This lecture explores how the concept and various practices related to Corporate Social Responsibility (CSR) may ensure societal relevance and ethical acceptability of R&D+I outcomes. For that purpose, it starts with the introduction of the CSR concept and how it evolved over time. Next, it presents the discussion on the need, limitations, and ethical dilemma of CSR. It pays especially close attention to the CSR in the world of technological corporations, where the role of societal relevance and ethical acceptability of R&D+I outcomes is highly relevant. It also explores the role of CSR during the COVID-19 pandemics.

3. **Smart City and Responsible Technologies.**

This lecture allows to understand the ethical dimension and challenges of the innovations developed for the smart cities. It explores the idea of the Smart City in connection with the ethical and societal challenges of the urbanization and digitalization. It presents the example of Smart City projects from all over the world and from Poland and shows how they relate to the problem of ethical acceptability of innovations.

4. **Just energy transition.**

This lecture explores the challenge of developing responsible and sustainable innovations necessary to avoid the catastrophic climate change. For that reasons, it introduces the concept of the climate change and explains why the political actions are essential to tackle it. Then, it presents the role of innovations in searching for solutions for just energy transition and discusses ethical aspects of the process of creating these solutions.

**Group Exercise and Learning Diary: Developing sustainable public engagement strategy**

The section provides the opportunity for the students to analyse various strategies of to apply principles of ethics of innovations. First, a brief presentation about sustainable ethic strategies is presented. Second, selected cases are explored in a bid to integrate ethic strategies in urban innovation project in conjunction with public engagement and gender. It is based on the cases selected in the previous course about public engagement

The aim is to support the comprehensive understanding of students about ethic strategies in ReSI and to design holistic strategies integrating public engagement, gender and ethic principles in one strategy. The section includes workshops and seminars prepared by students. Finally, this section

briefly summarised the contents of the previous ethic lectures and of the whole programme based on the learning dairies of the students.

The students are called to drawn out a simulation of an urban project to integrate gender topics based on public engagement procedures and having in mind the future integration of ethical principles of innovation.

Finally, this section briefly summarised the contents of the previous lectures based on the learning journals of the learners.

### *Competencies*

*Knowledge*

EQF – Learning outcomes linked to knowledge
*Level 5:* Comprehensive, specialised, factual and theoretical knowledge within a field of work or study and an awareness of the boundaries of that knowledge.
*Level 6:* Advanced knowledge of the field of work or study, involving a critical understanding of theories and principles.
*Level 7:* Highly specialised knowledge, some of which is at the forefront of knowledge in the field of work or study, as the basis for original thinking and/or research. Critical awareness of knowledge issues in a field and at the interface between different fields.

The objectives are to:
- understand the concept of ethics and its relationship with RRI.
- understand the importance of implementing ethical considerations in research and innovation processes.
- recognize and understand different dimensions of ethics in research and innovation processes.
- understand the risks related to negligence of ethical reflection in research and innovation processes.
- learn about different approaches and strategies of implementing ethics in research and innovation processes.
- learn about different approaches and methodologies to evaluate the ethical dimension of research and innovation processes.
- learn about the relationships between ethics, gender mainstreaming and public engagement in research and innovation processes.

*Skills*

EQF – Learning outcomes linked to skills
*Level 5:* A comprehensive range of cognitive and practical skills required to develop creative solutions to abstract problems.
*Level 6:* Advanced skills, demonstrating innovation, required to solve complex and unpredictable problems in a specialised field of work or study.
*Level 7:* Specialised problem-solving skills required in research and/or innovation in order to develop new knowledge and procedures and to integrate knowledge from different fields.

The objectives are to:
- critically assess the challenges and opportunities of ethics in enhancing research and innovation processes.
- implement various ethical dimensions in a particular innovation process.
- analyse and evaluate a particular innovation process from the ethical perspective.


*Responsibility & autonomy*

EQF – Learning outcomes linked to Responsibility & autonomy
*Level 5:* Exercise management and supervision in contexts of work or study activities where there is unpredictable change; review and develop performance of self and others.
*Level 6:* Manage complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts. Take responsibility for managing professional development of individuals and groups.
*Level 7:* Manage and transform work or study contexts that are complex, unpredictable and require new strategic approaches. Take responsibility for contributing to professional knowledge and practice and/or for reviewing the strategic performance of teams.

The objective is to strengthen responsibility and autonomy to:
- adopt and develop innovative mind-set.
- commit to understand the concept of ethics in making research and innovation responsive to societal problems.
- appreciate the concept of responsible research and innovation and the role of ethics in achieving its objectives.

### Assessment and Learning Products

*Assessment*

Quizzes (30% of course grade)

At the end of each of the four lectures, the participants can take part in the quiz that allows him/her to check it he/she understood the most important concepts introduced in the given lecture. This assessment method may serve as the main method if the course is used as MOOC.


Open questions (40% of course grade)

Each lectures have a number of open questions, which serves two main goals. First, it allows participants to check if they remember the most important facts presented during the lecture and in learning materials. Second, they allow the participants to apply the concepts to explore different real-life challenges and develop intended skills.


Group work and presentations (30% of course grade)
Groups of 3–4 students will be formed before the first lecture. Group division and two assignments will be presented to the students on the first lecture. The groups are supposed to work on a chosen case during the whole course and develop a strategy for a case institution or project.

The idea is that student groups apply concepts and theories from the lectures, course literature and material from the other modules on Responsible Research and Innovation.

The groups present the solutions of their group work (case study) on the workshop sessions. All students are expected to participate actively in class discussions and other course activities. It is also expected that students have critically read the assigned pre-lecture readings and they should be prepared to discuss, critique and raise questions regarding the materials when necessary. Moreover, students are expected to write a learning journal at the end of the course. In the learning journal, students will reflect on their overall experience on participating in the course.

*Learning products*

- Presentation with case studies prepared for workshop sessions, which will be critically analysed, with feedback provided by other groups and the teacher (unless conducted in MOOC mode).
- Written individual reflection guided by the open questions, with the feedback from the teacher (unless conducted in MOOC mode).
- Learning journal (self-assessment) as a reflection on the overall experience of participating in the course and feedback to the teacher.
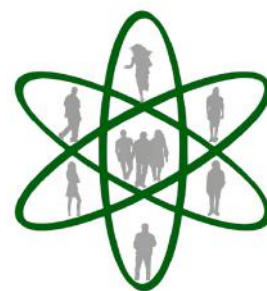
Responsible Research & Innovation (RRI) is a genius concept developed by the European Commission for the governance of research and innovation processes with a view on the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products. It aims to shape, maintain, develop, coordinate an align existing and novel research and innovation-related processes, actors and responsibilities with a view to ensuring desirable and acceptable research outcomes.

RRIL – Responsible Research and Innovation Learning has developed and tested a learning programme on RRI anchoring it in Sustainability and Sustainable Development Goals. talking about Responsible & Sustainable Innovation. Fior the development of the learning programme , RRIL focus on three core dimension of RRI: public engagement, gender equality and ethics based on interactive real-problem approaches.

It is based on a previous analysis of the degree of the implementation of RRI in the R&I systems of Finland, Poland and Spain (Catalonia) and of the close cooperation with innovation stakeholders, especially from local authorities

This publication presents the learning programme and its fours course: (a) introduction to Responsible & Sustainable Innovation (ReSI); (b) Public engagement, (c) Gender equality and (d) ethics. It can be online consulted, download and imported to other learning platforms at:
https://lor.instructure.com/resources/3d459de396ba4ad59e5f6b87a306d5e6