

- Univ. of Bologna, Italy
- CNR, Italy
- CEA, France
- Demokritos, Greece
- Iberdrola, Spain
- INERIS, France
- JSI, Slovenia
- NIS Gazprom, Serbia



- SINTEF, Norway
- INCDPM, Romania
- Univ. Magdeburg, Germany
- Steinbeis R-Tech, Germany
- Univ. of Padua, Italy
- Univ. of Pisa, Italy
- SWISSI, Switzerland
- Univ. of Novi Sad, Serbia

## Program

# European Master of Risk Engineering and Management and the respective Professional Certification Program

(part of iNTEg-Risk Project Education & Certification  
WP4.10)

Course IV-R16

## Life Cycle Analysis and Assessment

July 23-27, 2012

at

Steinbeis Transfer Institute Advanced Risk Technologies  
Stuttgart Germany

<http://www.sti.risk-technologies.com>

[www.integrisk.eu-vri.eu](http://www.integrisk.eu-vri.eu)

### Course Lecturer

L. Breedveld, 2B Consulenza Ambientale , Italy



European Virtual Institute for Integrated Risk Management  
Stuttgart 2012

## Short Description

The objective of this course is to give the participants the possibility to gain the knowledge about Life Cycle Analysis (LCA) and skills to perform a simplified LCA study and to analyze, discuss and comment international scientific articles on LCA. The course will give a comprehensive overview of the Life Cycle Assessment (LCA), Life Cycle Costing (LCC), International Reference Life Cycle Data System (ILCD) and European Reference Life Cycle Data System (ELCD). The focus will be on practical examples of applying LCA in industry and improving the environmental performance and sustainability of products and services.

The participants will have the opportunity

- to enjoy discussions with the main lecturer Mr. Leo Breedveld, a prominent expert in the area of LCA, and the course organizers
- to learn about the newest developments in the area of the international (ISO) standards and the EU approaches (e.g. "Life Cycle Thinking" and the "decoupling indicators")
- to participate in the hands-on breakout sessions, including use of LCA tools (SimaPro) and
- to ask about practical details of examples dealing with LCA for bio-fuels, advanced engineering materials, nanomaterials and other new technology related products.

During the course the participant will develop an LCA example using a standard LCA software, and many other LCA examples will be given, highlighting the operational character of the course. One of the examples will focus on the application of LCA in relation to emerging risks. This way, a link will be made between LCA and the field of HSE and HSSE (health, safety, security and environment).

At the end of the course students are expected to have basic knowledge about:

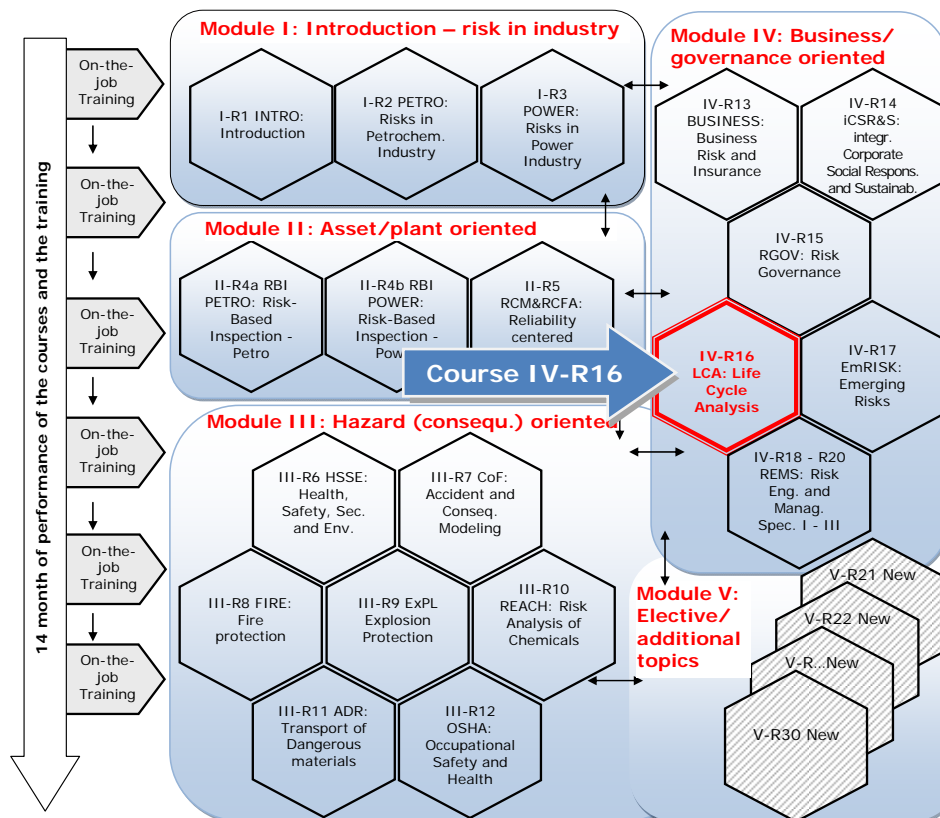
- LCA methodology and applications
- the ISO series 14040 – 14044 and international developments
- the link between LCA and HSE
- Hand-on experience using a standard LCA software.

The course participants will receive the training material consisting of textbook and transparencies (download), as used by the lecturer during the course.

The language of handouts and course are in English.

**Overview of all modules and courses in the curriculum  
European Master of Risk Engineering and Management**

No.	Module/Course title
<b>Module I: Introduction - risks in industry</b>	
I-R1	INTRO: Introduction to Risk Management
I-R2	PETRO: Risk Analysis in Chemical/Petroleum Industries
I-R3	POWER: Risk Analysis in Power Industries
<b>Module II: Asset/plant oriented risk management</b>	
II-R4a	RBI-PETRO: Risk Based Inspection - Petro
II-R4b	RBI-POWER: Risk Based Inspection - Power
II-R5	RCM&RCFA: Reliability Centered Maintenance and Root Cause Failure Analysis
<b>Module III: Hazard oriented risks management</b>	
III-R6	HSSE: Health, Safety, Security and Environment
III-R7	CoF: Accident and Consequences Modeling
III-R8	FIRE: Fire Protection
III-R9	ExP: Explosion Protection
III-R10	REACH: Risk Analysis of Chemicals
III-R11	ADR: Transport of Dangerous Materials
III-R12	OSHA: Occupational Safety and Health
<b>Module IV: Business/governance oriented risk management</b>	
IV-R13	BUSINESS: Business Continuity Risks & Insurance
IV-R14	iCSR&S: integrated Corporate Social Responsibility and Sustainability
IV-R15	RGOV: Risk Governance
<b>IV-R16</b>	<b>LCA: Life Cycle Analysis and Assessment</b>
IV-R17	EmRISK: Emerging Risks
IV-R18 - R20	REMS: Risk Engineering and Management – Special I - III
<b>Module V: Elective/Additional Topics</b>	
V-R21 - R30	



## Agenda

### July 23, 2012

08:30 – 09:00	Registration
09:00 – 09:30	Welcome and course opening
<b>Unit 1: Introduction to industrial chemical safety issues</b>	
9:30 – 10:30	Introduction to industrial chemical safety issues <ul style="list-style-type: none"><li>• topics of Seveso, IPPC, Occupational safety and health</li><li>• explanation on different aspects of the term</li><li>• link between LCA and HSE</li></ul>
10:30 – 10:45	Coffee break
<b>Unit 2: Life cycle assessment (LCA) - Introduction and theory</b>	
10:45 – 12:15	<ul style="list-style-type: none"><li>• Introduction into LCA</li></ul>
12:15 – 13:15	Lunch break
13:15 – 14:45	<ul style="list-style-type: none"><li>• Introduction into LCA (continuation)</li></ul>
14:45 – 15:00	Coffee break
15:00 – 16:30	<ul style="list-style-type: none"><li>• ISO 14040 and ISO 14044</li></ul>
16:30 – 17:00	<ul style="list-style-type: none"><li>• Review and conclusions of the Unit 1 and Unit 2: Questions and answers</li></ul>

### July 24 2012

<b>Unit 3: Practical example</b>	
09:00 – 10:30	<ul style="list-style-type: none"><li>• Example of an LCA</li></ul>
10:30 – 10:45	Coffee break
10:45 – 12:15	<ul style="list-style-type: none"><li>• Example of an LCA (continuation)</li></ul>
12:15 – 13:15	Lunch break
13:15 – 14:45	<ul style="list-style-type: none"><li>• Creating your first LCA</li></ul>
14:45 – 15:00	Coffee break
15:00 – 16:30	<ul style="list-style-type: none"><li>• Creating your first LCA (continuation)</li><li>• Home work</li></ul>
16:30 – 17:00	Review and conclusions of the Unit 3: Questions and answers

## July 25, 2011

<b>Unit 4: Practical LCA assessment</b>	
<b>09:00 – 10:30</b>	<ul style="list-style-type: none"> <li>• Impact assessment methods</li> <li>• Normalization and weighing</li> </ul>
<b>10:30 – 10:45</b>	Coffee break
<b>10:45 – 12:15</b>	<ul style="list-style-type: none"> <li>• Impact assessment methods (continuation)</li> <li>• Normalization and weighing</li> </ul>
<b>12:15 – 13:15</b>	Lunch break
<b>13:15 – 14:45</b>	<ul style="list-style-type: none"> <li>• Monte Carlo Analysis</li> <li>• Complex end-of-life scenarios</li> <li>• Allocation and parameters</li> </ul>
<b>14:45 – 15:00</b>	Coffee break
<b>15:00 – 16:30</b>	<ul style="list-style-type: none"> <li>• Monte Carlo Analysis (continuation)</li> <li>• Complex end-of-life scenarios</li> <li>• Allocation and parameters</li> </ul>
<b>16:30 – 17:00</b>	Review and conclusions of the Unit 4: Questions and answers
<b>Unit 5: Individual LCA exercises</b>	
<b>17:00 – 18:00</b>	Feedback previous day, discussion and questions

## July 26, 2012

<b>Unit 6: LCA application and wrap-up</b>	
<b>09:00 – 10:30</b>	<ul style="list-style-type: none"> <li>• Examples of LCA application in relation to emerging risks</li> </ul>
<b>10:30 – 10:45</b>	Coffee break
<b>10:45 – 12:15</b>	<ul style="list-style-type: none"> <li>• LCA application of Metal-ceramic functionally graded materials (FGMs) in a brake disc</li> </ul>
<b>12:15 – 13:15</b>	Lunch break
<b>13:15 – 14:45</b>	<ul style="list-style-type: none"> <li>• LCA application of Metal-ceramic functionally graded materials (FGMs) in a brake disc (continuation)</li> </ul>
<b>14:45 – 15:00</b>	Coffee break
<b>15:00 – 16:30</b>	<ul style="list-style-type: none"> <li>• LCA application of Metal-ceramic functionally graded materials (FGMs) in a brake disc (continuation)</li> </ul> Wrap-up
<b>16:30 – 17:00</b>	Review and conclusions of the Unit 5: Questions and answers
<b>Unit 5: Individual LCA exercises (continuation)</b>	
<b>17:00 – 18:00</b>	Feedback previous day, discussion and questions

**July 27, 2012**

<b>Unit 7: Other examples of LCA application</b>	
<b>09:00 – 10:30</b>	Other examples of LCA application
<b>10:30 – 10:45</b>	Coffee break
<b>09:00 – 10:30</b>	Review of the main course topics
<b>12:15 – 13:15</b>	<b>Lunch break</b>
<b>13:15 – 14:45</b>	Preparation for the exam
<b>14:45 – 15:00</b>	<b>Coffee break</b>
<b>15:00 – 16:30</b>	Exam
<b>16:30 – 17:00</b>	Final discussion and closing the course

## Venue

**Steinbeis Transfer Institute  
Advanced Risk Technologies**  
Seminarraum 7  
Filderhauptstraße 142  
70599 Stuttgart, Germany



The special prices are indicative – please check with the hotel in each particular case.

Hotel Name Telephone Nr.	Web	walking distance (min) to Haus der Wirtschaft	Regular price (€)	“Stein- beis” price (€)
For the hotels below indicate “ <b>Steinbeis Stiftung</b> ” as the keyword				
Hotel Unger Tel. +49 711 2099-0	<a href="http://www.hotel-unger.de">www.hotel- unger.de</a>	3	125	86
Hotel Wartburg Tel. +49 711 2045-0	<a href="http://www.hotel-wartburg-stuttgart.de">www.hotel- wartburg- stuttgart.de</a>	5	88	79
Hotel Rega Tel. +49 711 619340	<a href="http://www.rega-hotel.de">www.rega- hotel.de</a>	10	115	101
Hotel Azenberg Tel. +49 711 225504-0	<a href="http://www.hotelazenberg.de">www.hotelazen- berg.de</a>	10	105	96
For the hotel below indicate “ <b>SEZ152</b> ” as the keyword				
Maritim Hotel Tel. +49 711 942 1210	<a href="http://www.maritim.de/typo3/english/hotels/hotels/hotel-stuttgart.html">www.maritim.d e/typo3/english /hotels/hotels/ hotel- stuttgart.html</a>	5	152- 189	130- 160

For further hotels and/or info you may find useful to consult [http://www.stuttgart-tourist.de/ENG/hotels/hotels\\_buchen.htm](http://www.stuttgart-tourist.de/ENG/hotels/hotels_buchen.htm). No special conditions would apply to these hotels.

Further information about hotels:  
Stuttgarter-Marketing GmbH  
70173 Stuttgart  
Tel.: 0711/22 28 240 Fax: 0711/22 28-217

## Registration/Fees

**Registration** for the course is open at:

<http://www.eu-vri.eu/fwlink/?LinkID=361>

NOTES:

If you are partner in iNTeg-Risk project please, use your iNTeg-Risk credentials for registration.

**Registration Fees** (+ VAT if applicable):

- 500 €, for regular registration
- 400 €, for ETPIS members
- 200 €, for iNTeg-Risk partners, members of the International Advisory Board and EU-VRI members (cost of catering and handouts) and for students enrolled in universities not mentioned above

- free of charge for students enrolled in the program “European Master of Risk Engineering & Management” as well as for the students of University of Stuttgart covered by the agreement on education in the area of risk governance and management between University of Stuttgart and Steinbeis University Berlin.

The registration fee covers handouts, coffee breaks, lunches, the course reception on July 23, 2012, info service, on- and off-site (web, mail, phone).

The course is intended for 20-25 participants. The registration will be processed on the first-applied-first-served basis!

## Information about Credit Points\*

SHB Academic Courses*:	<b>3 CPs (attendance** and exam passed, transfer work)</b>
SHB Continuous Professional Education STI 889:	<b>3 CPs (attendance** and exam passed, transfer work)</b>
SHB Continuous Professional Education STI 889:	<b>2CPs (attendance** and exam passed)</b>
SHB Continuous Professional Education STI 889:	<b>1 CP (no exam, attendance** only)</b>

\*) More details in the SHB Rules and Regulations (<http://www.sti.risk-technologies.com>)

\*\*\*) Attendance: min 3 out of 4 lecturing days

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### EU-VRI

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