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GENIORS

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http://geniors.eu/

GENIORS

deliverable report on specification for on line packages

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GEN IV Integrated Oxide fuels recycling strategies Roger Garbil

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Summary

This report covers MS18 which represents the draft specification of the packages and is a consultation document for all consortium members.

Approval

Date	By
2018-10-25 14:19:03	Pr. Hanson BRUCE (Leeds University)
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GENIORS

GEN IV integrated oxide fuels recycling strategies

MS18 draft specification for on line packages, for consultation

Author(s): B C Hanson (ULEEDS)

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Work Package 12: Training and Education

ULEEDS

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Contributors

Work contribution to the following Domains and Work-Packages

☐	DOMAIN 1 WP1	☐	WP2	☐	WP3	☐	WP4
☐	DOMAIN 2 WP5	☐	WP6	☐	WP7		
☐	DOMAIN 3 WP8	☐	WP9	☐	WP10		
☐	DOMAIN 4 WP11	X	WP12	☐	WP13		

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INTRODUCTION

Work Package 12 on Training, Education and Knowledge Management includes task 3 which will create online training packages that cover the Purex and iSanex/Ganex separation processes.

Each of the packages will contain information that would be suitable for advanced undergraduate or masters level students and give them a comprehensive background on history of their development, ligand structure and behaviour, separation kinetics and application at scale. A set of learning outcomes and assessment methods will be developed in collaboration with project partners.

The packages will be the equivalent to 2 UCS/1 ECTS. This is equivalent to 20hours of contact time and will be delivered via 4 hours of online material, with supplementary reading, assessment and feedback.

The final packages will be made open access for use by all students wishing to apply to courses run by project partners or for in house training.

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TYPES OF SYSTEMS AVAILABLE TO HOST THE ONLINE PACKAGES

This type of system is generally referred to (in the UK) as Technology Enhanced Learning and can consist of a range (either individually or combined techniques.

1. **Screencasts & Podcasts**

This is the simplest form of TEL where a lecture is delivered in the traditional teaching room format and captured via video, or a short audio log is recorded for student to listen to. Many universities use this method in their programmes to publish lectures as revision aids for students. If lectures are planned form the outset for capture, they can be formatted into shorter segments to allow students to navigate the subject with ease.

2. **Audio enhanced lectures**

Rather than recording of lecture material in the classroom, the material can be directly edited and presented online with an audio narrative or files embedded into the material that students access is require.

3. **Interactive online packages**

A set of lectures slides that are converted to be interactive with the viewer. Students are able to select areas of the view on screen to open dialogue boxes, audio/video files or weblinks to further detail. The course is divided into segments with assessment that allow progressions onto the next segment once the student has assimilated the content.

4. **Fully interactive learning**

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As above, but combined with a webinar and discussion board where students will interact with the teacher.

Delivery and hosting of these systems is dependent on the type of access required. If a fully open access is required, platforms such as iTunesU are suitable for all forms on delivery and youtube is suitable for audio enhanced lectures and lecture capture.

If a restricted access is acceptable, the package can be hosted by the University of Leeds' blended learning platform, Minerva.

A specific package can be created for standalone delivery using a service provider such as Futurelearn.

SYLLABUS AND PROPOSED BREAKDOWN

The proposed package is intended to cover Purex and advanced reprocessing concepts such as iSanex and Ganex.

On completion students will:

- Understand what principles of solvent extraction when applied to nuclear operations;
- Understand reprocessing and the type of technology used in current facilities ;
- Be able to identify the key chemistry and compounds used in the Purex, i-Sanex and Ganex flowsheets
- Be able to compare the advantages and disadvantages of the Purex, i-Sanex and Ganex flowsheets.

The package will be divided into four segments, with an approximate participation time of 30mins each. At the end of each segment there will be a short assessment to ensure assimilation of the content, before the next segment is opened for access.

1. Principles and history of solvent extraction applied to nuclear operations. Starting with the Hanford B through to Thorp/Cap la Hague UP2/3. This package will include the extraction chemistry associated with U/Pu into TBP.
2. The Purex process as applied to Thorp. A description of the main process steps using the UK's Thorp reprocessing plant as the references.
3. Enhancements to Purex. A description of newer forms of Purex, such as COEX and NUEX and also add-on flowsheets such as i-Sanex. This package will include the extraction chemistry associated with Am/Cm extraction. Some short (5minute) video clips from Geniors partners describing their work on i-Sanex could be a useful enhancement.
4. Alternatives to Purex. A description of the Ganex family of flowsheets, including the extraction chemistry associated with U, Pu, Am and Cm. Some short (5minute) video clips from Geniors partners describing their work on Ganex could be a useful enhancement.

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RECOMMENDATIONS AND WAY FORWARD

Is recommended that option 3, the interactive online package, is produced. Partners need to agree on:

- Future access rights, in order to determine the best platform
- The proposed syllabus

These should be agreed at the next Excomm.

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