LCACP Exam Criteria

ALCAS
AUSTRALIAN LIFE CYCLE ASSESSMENT SOCIETY

General Knowledge

1. Understand basic life cycle concepts and the holistic nature of LCA.
2. Be able to explain uses for LCA as a decision-supporting tool and the policy uses and implications of LCA.
3. Understand LCA's applicability to product, process, or system.
4. Understand the relationship between LCA and other environmental assessment techniques.

ISO Standards

5. Understand that there are standards available, and that these are incomplete specifications.
6. Understand the formal definitions of life cycle concepts in the ISO 14040 series.
7. Be able to describe the main steps for completing a life cycle assessment and the basic requirements of ISO 14044.
8. Understand the requirements for comparative assertions per ISO 14044.
9. Understand the basic requirements for EPDs in 14025.

Life Cycle Inventory

10. Understand the concept of the LCA unit process.
11. Understand process LCI.
12. Understand the concept of reference flow.
13. Understand the mathematical procedures available for inventory calculation and analysis and the advantages and limitations of these.
14. Understand mass and energy balances.
15. Understand economic input-out analysis LCA.
16. Understand the differences between process & EIO LCA and their hybrids.
17. Understand the relevance of the consequential and attributional approaches for LCA.
18. Understand the difference between ecosphere and technosphere flows.
19. Understand system boundary expansion.
20. Understand allocation procedures.
21. Understand modelling of recycling.
22. Understand how to define functional units and select appropriate ones for LCA analyses.

Life Cycle Impact Assessment

23. Understand the concepts of Life Cycle Impact indicators and fate and transport models.
24. Be able to identify and describe environmental impact pathways and the concept of environmental relevance.
25. Know the content of each damage category and the state of the art on damage indicators.
26. Understand the concepts of environmental impact midpoints and endpoints.
27. Understand the sources of characterization factors for each of the main environmental impact categories.
28. Know the present state of the art of impact pathway modelling in different categories.
29. Be able to explain characterization factors for impact analysis.
30. Understand the relationship between natural science and mid-point impact assessment.
31. Understand the relationship between value judgment and endpoint or damage categories.
32. Understand the centrality of energy systems in LCAs.
33. Understand concepts of carbon footprints.

LCA Project Management

34. Be able to write a clear and concise scope statement for LCA projects.
35. Be able to develop an LCA project plan including data requirements and timeline.
36. Understand the requirements for critical review.

LCA Data Quality Management

37. Know the types, sources and relevance of data used in LCA.
38. Find sources of environmental impact models and methodologies and assess their quality.
39. Structure and prioritize data collection for a specific LCA.
40. Identify, document and manage information on data quality and uncertainty.
41. Identify the sufficiency and appropriateness of the available data.
42. Manage situations where the available data are insufficient.
43. Be able to cross-check references to confirm data accuracy.
44. Be able to use mass & energy balances for data quality checks.
45. Understand the limitations, biases, and uncertainties in current LCA practice.
46. Be able to identify errors in data and avoid mistakes in data manipulation.
47. Understand how data from different sources can be combined in an LCA analysis as well as describe the potential errors in this process.
48. Know how to document data and data manipulation in a standardized format.

LCA Post-impact Calculations

49. Understand weighting.
50. Understand the use of normalization in LCA.
51. Understand the use of grouping in LCA.

LCA Modelling/Software

52. Be able to make a screening impact assessment (using software) and know the basic LCIA calculation procedure.
53. Be able to perform screening, back of the envelope calculations for LCA's.
54. Be familiar with available lifecycle tools.
55. Know the sources of dedicated LCA data and software and how to find out more about these.
56. Use stream-lined LCA techniques or LCA screening analyses when appropriate for a specific situation or client.

Statistics

57. Understand the basics of uncertainty analysis including simulation techniques.
58. Understand basic statistical concepts including average, standard deviation, and normal distribution.
59. Understand sensitivity analysis.
60. Understand the concepts of relative accuracy and continuing uncertainties for characterization factors.

Ethics

61. Understand the difference between professional judgment and personal values.
62. Know that it is possible to distinguish good, justifiable practice from unacceptable, unjustifiable practice.
63. Understand the elements of the ACLCA ethics statement.
64. Understand the importance of ethical decision and proper disclosure in terms of data limitations.

Emerging Issues

65. Understand the concepts and practice of social and economic life cycle approaches.
66. Understand environmental product declarations and product category rules.
67. Understand land use modelling in LCA.
68. Understand issues related to water use modelling.