

Capability profile

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Capability profile is defined as capacity to perform tasks in a given role. It consists of 2 components.

- i) Core function – main function of a given role
- ii) Competency – related competencies of a profile

There are 5 levels of each discipline as follows.

1. **Apprentice** Have limited set of skills. Able to work on guided projects or narrow specific tasks. Supervision is needed for brand-new or complex tasks.
2. **Practitioner** Have basic set of skills covering the majority of aspects. Able to work on specific tasks. Recommendation is needed for complex tasks.
3. **Competent** Able to apply set of skill to solve real-world problem. Able to solve common problems independently.
4. **Proficient** Able to lead a project for solving real-world problems. Able to solve unseen problems with some advice.
5. **Expert** Able to lead a team to conduct a research or development project. Able to solve unseen problems and create new research protocols.

Disclaimer

This competency and capability profile framework does not cover the diversity of background knowledge in research domain. They are packed in *D1 Scientific background knowledge, methodology, process, and tools*. The diversities are in *A high performance computing* and *B computing competency*. The competency of *E Soft skills* is not covered in this version.

Roles

| | |
|---|---|
| HPC AI specialist apprentice..... | 3 |
| HPC AI specialist practitioner | 4 |
| HPC AI specialist competent..... | 5 |
| HPC computational chemistry specialist apprentice..... | 6 |
| HPC computational chemistry specialist practitioner | 7 |
| HPC computational chemistry specialist competent..... | 8 |

HPC AI specialist apprentice

Computational core function

- Able to utilize a node of HPC for running AI workload
- Able to prepare a Python environment by following a guideline
- Able to work in batch and offline mode which is a common HPC environment

Research core function

- Basic knowledge of related topics
- Communicate finding results

Competency

- A1 remember
- A2 remember
- B1 apply
- B2 understand
- B3 remember
- B4 apply
- B5 remember
- C1 understand
- D1 understand
- D2 remember
- D3 apply

HPC AI specialist practitioner

Computational core function

- Able to utilize HPC for running AI workload using multinode
- Able to prepare a Python environment by adapting from a guideline
- Able to set relevant environment variables efficiently by following guidelines
- Able to work in batch and offline mode which is a common HPC environment

Research core function

- Basic knowledge of related topics
- Able to find relevant articles, publications, or repositories
- Communicate finding results

Competency

- A1 understand
- A2 apply
- A3 understand
- B1 apply
- B2 apply
- B3 understand
- B4 apply
- B5 apply
- C1 understand
- D1 understand
- D2 understand
- D3 apply

HPC AI specialist competent

Computational core function

- Able to utilize HPC for running AI workload using multinode efficiently
- Able to write guidelines to prepare a Python environment for specific environment
- Able to set relevant environment variables efficiently by applying knowledge from guidelines
- Able to work in batch and offline mode which is a common HPC environment

Research core function

- Basic knowledge of related topics
- Able to find and describe relevant articles, publications, or repositories
- Share ideas and efficiently communicate finding results

Competency

- A1 apply
- A2 analyze
- A3 apply
- B1 evaluate
- B2 analyze
- B3 understand
- B4 analyze
- B5 analyze
- C1 apply
- D1 apply
- D2 apply
- D3 apply

HPC computational chemistry specialist apprentice

Computational core function

- Able to utilize HPC for performing given tasks according to the instructions strictly
- Able to work in batch and offline mode which is a common HPC environment

Research core function

- Basic knowledge of related topics
- Communicate finding results

Competency

- A1 remember
- A2 remember
- B1 apply
- B3 remember
- B4 understand
- C1 remember
- D1 understand
- D2 remember
- D3 apply

HPC computational chemistry specialist practitioner

Computational core function

- Able to utilize HPC for performing given tasks by applying knowledge from guidelines
- Able to set relevant environment variables efficiently by following guidelines
- Able to work in batch and offline mode which is a common HPC environment

Research core function

- Basic knowledge of related topics
- Able to find and describe relevant articles, publications, or repositories
- Communicate finding results

Competency

- A1 understand
- A2 apply
- A3 understand
- B1 apply
- B3 understand
- B4 apply
- B5 apply
- C1 understand
- D1 understand
- D2 understand
- D3 apply

HPC computational chemistry specialist competent

Computational core function

- Able to utilize HPC for performing a given task from a guideline efficiently
- Able to set relevant environment variables efficiently by applying knowledge from guidelines
- Able to prepare software and related environments by following guidelines
- Able to work in batch and offline mode which is a common HPC environment

Research core function

- Basic knowledge of related topics
- Able to find and describe relevant articles, publications, or repositories
- Share ideas and efficiently communicate finding results

Competency

- A1 apply
- A2 analyze
- A3 apply
- B1 evaluate
- B2 apply
- B3 apply
- B4 analyze
- B5 analyze
- C1 apply
- D1 apply
- D2 apply
- D3 apply