Sample SQL Queries across tables:

```
SELECT project_name, COUNT(sample_name) AS sample_count
FROM samples
GROUP BY project_name;
```

➔ The above SQL query counts and displays the number of samples in each project in the database. A similar code can be written to count and display the number of maps and analyses in each project.

```
SELECT COUNT(sample_name) AS sample_count
FROM samples
WHERE project_name = 'project_1';
```

➔ The above SQL query counts and displays the number of samples in a given project in the database. A similar code can be written to count and display the number of maps and analyses in a given project.

```
SELECT analyses.analysis_type, samples.sample_name,
samples.student_samplers, samples.sampling_locality
FROM analyses
JOIN samples ON analyses.sample_name = samples.sample_name
WHERE analyses.project_name = 'project_1';
```

➔ The above SQL query fetches details from both the analyses and samples tables (with the use of the JOIN command over sample_name) for a specific project.

```
SELECT analyses.analysis_type, samples.sample_name, projects.project_name,
samples.sampling_locality, projects.supervising_professor
FROM analyses
JOIN samples ON analyses.sample_name = samples.sample_name
JOIN projects ON analyses.project_name = projects.project_name
WHERE samples.sample_name = 'sample_1';
```

➔ The above SQL query combines data from the analyses, samples, and projects tables (with the use of the JOIN command over sample_name and project_name) for a specific sample.

```
SELECT analyses.analysis_type, map.map_name, projects.project_name,
projects.goal, samples.notes
FROM analyses
JOIN samples ON analyses.sample_name = samples.sample_name
JOIN projects ON analyses.project_name = projects.project_name
```

```
JOIN map ON analyses.sample_name = map.sample_name AND
analyses.project_name = map.project_name
WHERE analyses.analysis_type = 'AxioImager';
```

➔ The above comprehensive SQL query joins all tables and includes various details for a specific type of analysis.

```
SELECT projects.project_name, projects.supervising_professor,
map.map_name, map.map_description
FROM projects
JOIN map ON projects.project_name = map.project_name
WHERE map.map_description LIKE '%Elemental%';
```

➔ The above SQL query retrieves details from the projects and map tables for those project maps that have the word “Elemental” somewhere in the map description

Sample SQL Queries within each table:

```
SELECT analysis_type, COUNT(*) as analysis_count
FROM analyses
GROUP BY analysis_type;
```

➔ The above SQL query counts the number of analyses of each type of analysis.

```sql
SELECT project_name, COUNT(*) as map_count
FROM map
WHERE date_created >= '2022-01-01'
GROUP BY project_name;
```

➔ The above SQL query counts the number of maps created for each project since the beginning of 2022.

```sql
SELECT supervising_professor, COUNT(*) as project_count
FROM projects
GROUP BY supervising_professor;
```

➔ The above SQL query counts the number of projects supervised by each professor.

```sql
SELECT sampling_locality, COUNT(*) as sample_count
FROM samples
GROUP BY sampling_locality;
```

➔ The above SQL query counts the number of samples collected from each locality.