



Post HND/FdSc in Civil Engineering to meet the requirements for the academic base for IEng registration with ECUK within the work place

Module: Experiential Learning and Practice Project

Credit Value: 60

Level: 3

Module Brief Descriptor:

- To demonstrate the use of higher subject knowledge in the solution of technical problems associated with the student's employment.
- To produce a complete solution to a problem or problems, of a technical nature, which would have been undertaken by higher technical staff in an area of civil engineering in which the student is engaged.
- To demonstrate an ability to translate an engineer's, or client' ideas into effect.
- Clear evidence of not less than 120 hours of study in not less than two subject areas is shown

Assessed Learning Outcomes:

- Two academic areas have been developed beyond the HND/FdSc.
- A viable complete solution to a problem, together with any ancillary surveys, drawings, calculations etc, has been made.
- A reasonable knowledge and awareness of the issues relating to Health and Safety.

Minimum Pass Standard:

- A complete solution to a problem or problems, of a technical nature, has few errors.
- Failure to comply with health safety and welfare regulations will result in the rejection of the whole submission.
- Students should also be aware of sustainability issues.

Indicative Content for Assessment:

- Where practicable the nature and scope of the submission should be agreed with the employer or senior supervising engineer.
- The further study should be evidenced by listing attendance at courses/ Institution meetings, the reading of texts/ journals. A short essay (1000 words) setting out how the study has benefited, or will benefit the student in their career development, should be made.
- The project or projects should not be onerous in repetitive work but be of sufficient scope to allow the student to demonstrate knowledge and ability in their chosen field of civil engineering beyond the HND/FdSc level.
- The project should be a real project in the workplace.
- The project may need to be extended by the supervisor so as to include some elements that should be tested but are missing from it.
- The scope and content of the project should be as defined in the client's brief.
- For further guidance on the project please see Annex A.

An example of a project brief for a simple structure could be as follows: -

- Produce two options for a footbridge to cross a one metre deep river with a span of 6 metres.
- The underside of the bridge deck should be no lower than one metre above the river water level.
- There are to be no supports in the river.
- The ground is poor so the foundations will need to be piled to rock that is 5 metres below the river bed level.
- Choose one option, giving reasons for the option, and produce preliminary design calculations, a general arrangement drawing and a detail drawing(s).
- Produce a cost estimate, based on a simple bill of quantities, for the construction to an accuracy of +/-15%.

To be able to complete this project the student would need to research the following:

- Simple bridge types such as concrete slab and beam; steel truss with concrete deck; timber beam and deck.
- Simple piling in steel or concrete
- Footbridge loadings
- Development of a simple bill of quantities
- Information on typical; unit rates for the materials used.

The student would be judged against the brief as specified above.

Annex B

An example of a project brief for highways could be as follows: -

- Produce two schemes for highway works. These could either be new road work or alterations to existing highways.
- Show how ground conditions or other elements relate to the proposed construction.
- Indicate how the proposals relate to environmental and sustainable issues along with the promotion of other modes of transport other than the car.
- Provide an assessment of road safety implications.
- Choosing one option give reasons for choice and provide preliminary design criteria or calculations with appropriate drawings.
- Provide cost estimates based on simple bill of quantities.

To be able to complete this project the student would need to research the following: -

- Design and layout of highways.
- Capacity of highways.
- Accident data.
- Drainage requirements.
- Development of a simple bill of quantities.
- Information on typical unit rates for materials used.

The student should also have an understanding and awareness of Health and Safety issues.

The student would be assessed against the above.

Anglia Ruskin Individual Project

Possible choices for the Individual Project:

Structures:

- SCI Competition – Bridge
- Concrete Centre Competition

Highways:

- A12 entry from Witham southbound – assess/improve
- Alternate link route from M25 to Chelmsford (West)

Transportation:

- Bicycle route – station to Rivermead
- Park and Ride schemes for Ipswich, Bury or Colchester

Hydraulics:

- Impounding of the River Blackwater for leisure use
- Flood Protection Scheme to a site of your choice

Assessment:

Oral presentation

Written report – 1,000 words

Project Report – 2,000 words

150 hours of study

Students will consider a project scheme requiring them to carry out a holistic appraisal of the project, exploring the complex inter-relationships related to the client, the site, planning, design, construction processes, post construction processes, health and safety, the environment, financial and legal issues. Typical projects may require the student to demonstrate knowledge and skill in structural design, transportation studies, hydraulics and drainage, construction/project management skills.

The brief will include an agreed timescale for the staged development of the overall plan of work within defined constraints, with the student working towards an acceptable and viable solution to the brief.

Supervision will be provided by a supervisor who will also assess the written reports and oral presentations of the work.

The subject material of the project will be agreed with the students. Students will be encouraged to select a title from one of the currently running national competitions sponsored by the various trade organisations but students can also have a topic of their own choosing but this must meet the criteria set out above. It is expected that the report will include plans, drawings, calculations, research, design synthesis and evaluation, planning and some economic and environmental assessment where possible. Students are encouraged to seek out help from external sources (through work or local firms) but to give credit in their submission to this assistance.