



Higher Education Programme Specification

Name of awarding organisation	Pearson BTEC
Name of teaching institution	CEMAST Campus, Fareham College
Details of accreditation	N/A
Precise title of the final award	Higher National Diploma
Programme title	Pearson BTEC Level 5 HND in Mechanical Engineering
UCAS code (if applicable)	N/A
CEMAST qualification code	BAEP5-157-P1-A
Edexcel Programme Code	WR418 - 500/8826/9
QCF Level	5
Relevant subject benchmark statements	Engineering Feb 2015 Subject Benchmark Statement
Date this applies from	15 th July 2015
Review Date	15 th July 2016
Approved	Steve Dingsdale Head of Faculty CEMAST

1. Aims of the programme

- To provide an educational foundation for Mechanical careers in Engineering
- To provide specialised studies directly relevant to individual vocations and professions
- To provide flexibility, knowledge, skills and motivation as a basis for career development and as a basis for progression to graduate studies
- To develop students' ability in Engineering through effective use and combination of the knowledge and skills gained in different parts of the programme
- To develop a range of skills, techniques and personal attributes essential for successful performance in the working place.

2. Programme learning outcomes:

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, skills, qualities and other attributes in the following areas:

Subject knowledge and critical understanding including:

- Advanced Mathematical skills and methods relevant to Mechanical Engineering;
- Mechanical Engineering good practice;
- Scientific principles underpinning Mechanical Engineering;
- A broad understanding of electrical principles and measuring techniques.

Higher level academic/ intellectual skills including the ability to:

- Understand and apply principles and concepts;
- Present reasoned arguments and apply judgement;
- Analyse and evaluate practical problems and provide logical solutions;
- Formulate solutions to engineering problems with a level of independence.

Higher practical and professional skills including the ability to:

- Select and apply advanced mathematical methods to the modelling and analysing of engineering problems;
- Select and apply scientific principles and set up appropriate equipment for the analysis and solution of engineering problems;
- Select and apply appropriate computer-based methods to solve engineering problems;
- Carry out a range of techniques to utilise measuring equipment, circuit design software and analytical methods to produce circuits that achieve given specifications;
- Research and undertake tests for a design solution and report the results effectively;
- Apply engineering techniques to take account of a range of commercial and industrial Constraints;
- Apply management principles and techniques to the solution of engineering problems.

Higher Level transferable skills development includes the ability to:

- Manage and develop self;
- Work with and relate to others;
- Communicate ideas effectively both orally and in writing;
- Apply numeracy;
- Apply technology;
- Utilise measuring techniques;
- Manage tasks and solve problems;
- Apply design techniques and show creativity/originality in work produced.

Teaching and Learning Methods

Acquisition of core knowledge is through a mixture of

- Lecture / presentations / demonstration / laboratory experiment and directed study;
- Analytic thinking skills are developed through discussion and self-assessment test questions;
- Practical skills are developed through laboratory experiments and the use of circuit simulation software;
- Common skills are developed through assignments and presentations, particularly in the project.

3. Distinctive features of the programme

The mechanical diploma programme is designed to continue on from the HNC programme and offer academic subjects that expand upon subjects such as analytical methods and thermodynamics. Advanced maths gives the learner more advanced differentiation techniques as well as the use of Laplace and Fourier transformations. The programme is dedicated to a wide range of academic and practical engineering subjects and 3 units are centred on units that will give the learner an understanding of electrical and electronic principles as well as measuring techniques.

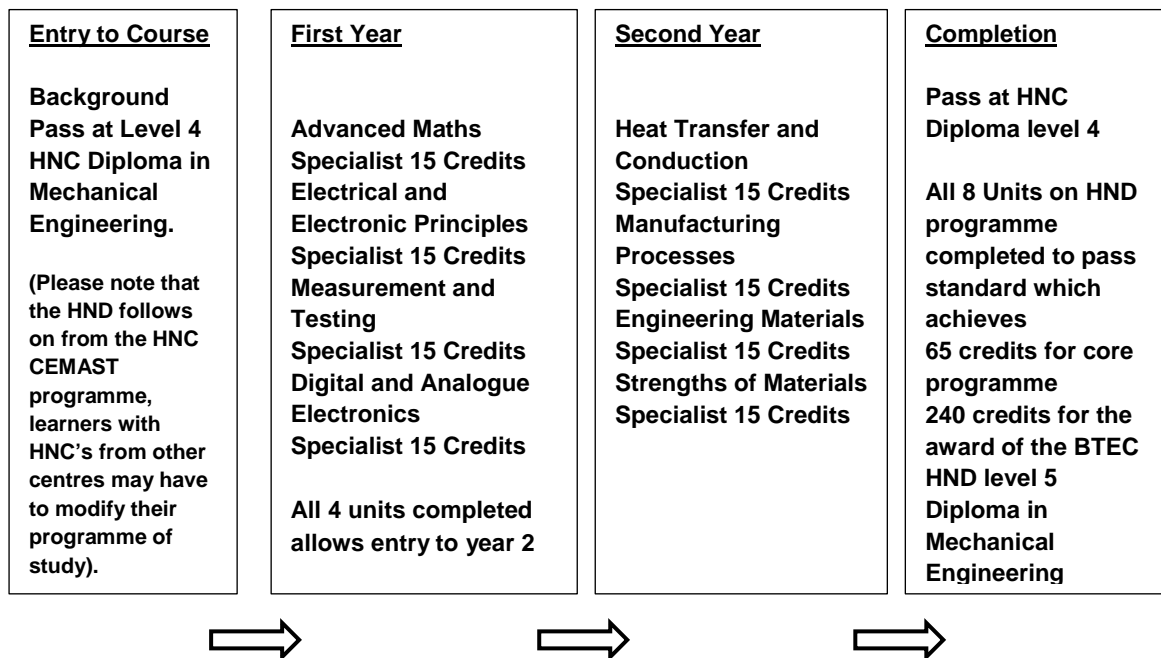
4. Teaching, learning and assessment strategies to be used

Assessment activities provide major opportunities for learning. Assessment criteria are linked to and stated in individual module outcomes.

Assessment methods include:

- Case studies or relevant workplace scenarios;
- Practical Assessment;
- Assignment Reports;
- Group practical work within the electrical laboratories;
- Teaching and learning strategies are designed to enhance the specification offered by Edexcel. Included in this will be;
- Class instruction and activities;
- Practical activities in the workshops and electrical laboratories.

5. Programme structure and requirements: levels, modules, credits, awards



6. The role of the awarding body and information on external examination

Pearson require the programme to be evaluated in an Annual Monitoring Report (AMR) the last section of which is a Quality Improvement Plan (QIP), written by the course leader with help and input from students, employers and the teaching and tutoring team. The AMR is validated by the Programme Manager or Head of Department before going forward for a cross-college review of themes in a sub-committee of the Higher Education Board of Studies (HEBoS). Findings are reported to HEBoS at which they can be further evaluated by students, senior managers and external partners.

Assessment and assessment vehicles are regulated by the internal verification system for each programme and come under scrutiny by Pearson who appoint an External Examiner (EE) to ensure that national academic standards are maintained. The EE visit will usually include meetings with students and scrutiny of assignments, assessed work and tracking; the subsequent report will contain actions and recommendations that must be met by the centre. The EE will also be invited to sit on the Examination Board at the end of the academic year.

7. Admission criteria

Normally the course enrolls students, who are in, or plan to enter, employment and are mature students that have previously completed a HNC in mechanical engineering. Students enter with the following qualifications:

BTEC Edexcel Higher National Certificate (Diploma) in mechanical engineering including the HND Core subjects, Analytical Methods, Engineering Science, Project and Mechanical Principles.

It is important to realise that the HND at CEMAST follows directly on from the HNC programme. In other words the units selected are matched to achieve both qualifications. Students who have gained HNCs from other centres may have different units – possibly imported from other programmes etc. so in order for the HND to be awarded by CEMAST some modification to the units studied may be necessary. Students from other centres wishing to undertake a CEMAST HND must discuss their programme with the course manager before committing to enrolment.

English language expectations

Centres delivering BTEC level 4 to 7 programmes are expected to ensure that all learners who are non-native English speakers or who have not studied the final two years of school in English, can demonstrate capability in English at a standard commensurate with:

- IELTS 5.5, with a minimum of 5.0 being awarded on individual sections for a level 4 or 5 qualification

8. Assessment regulations and policies on the website

Higher Education Assessment Regulations

Malpractice and Maladministration Policy

Higher Education External Examining Policy

Recognition of Prior Learning Policy

Equality and Diversity Policy

Higher Education Student Engagement Policy

Complaints Procedure

9. Practical workshop rules, e.g. etiquette and health and safety

- Know the evacuation plan for your laboratory and the building, additionally become familiar with the location of safety equipment including fire extinguishers, first aid kits, fire alarms, eye wash stations, etc.
- Beware of mechanical devices (printers, plotters etc) – A necktie, sleeve, hair etc may become entangled causing bodily injury; i.e. wear proper protective clothing (PPE) for the specified lab.
- No smoking, food or drink or mobile phones permitted in labs or classrooms.
- Don't hurry – work deliberately and methodically.
- Do not use damaged or poorly insulated wires or equipment. Report any items in this condition to the lecturer.
- Use only equipment specified in the lab.

- Double-check all connections before applying power. Make sure of correct pin insertion of chips and boards (left/right up/down pin/14 etc.)
- Turn power off when making changes to your experiment.
- Discharge capacitors by shorting with a resistor.
- Report any accident or safety concern to your lecturer.
- Keep your work area organised and clean: don't stack equipment manuals, etc.; don't place anything on top of cabinets.
- Water (blood, sweat) is a good conductor, wet hands/feet/clothing make you susceptible to electric shock.
- AC outlets should not be tampered with. The correct plugs and leads must be used.
- In the event of power failure, turn equipment off and await further instructions.
- Do not energise equipment until given permission. When wiring circuits, connect the power source as the last step. When disassembling, disconnect the power source first.
- Be careful to keep metal watches, bracelets, rings and other metallic objects away from electrical devices – can easily short or cause electrical shock.
- Do not place personal belongings (books, coats, etc.) on equipment (power supplies, computers, printers, etc.) cabinets, anywhere high. Hang coats on hooks provided or fold neatly and place under chair and table.

10. Name of programme leader

Adrian Winfield

11. Programme team

Alistair Reid-Thom

Adrian Winfield

David Evans

Scott Hutton

Mark Penfold

Peter Davies

12. Learning support provision

Student progression on course is supported both by subject tutors and central College services:

- An induction programme introducing new students to the subject of study, higher level skills that need to be developed, and the college facilities (including the library, IT facilities, staff and other students);
- College and course/ module handbooks available in print and electronic format on the colleges virtual learning environment, ORACLE;
- Personal and academic support is integrated in teaching provided by supportive and accessible tutors and identified 1:1 support sessions are also available;
- A learning resource centre with computers, technical books and up-to-date ICT equipment;
- Computer pods available and college Wi-Fi for computer networking and multimedia computing;
- Various workshops including wind tunnel and Computer aided machines (lathes and mills) as well as manual lathes and mills;
- Study skills sessions integrated in programme and organised on a regular basis;
- Planned visits and speakers;
- Access to counsellors and support for students with special needs;
- Written assignment / assessment feedback (normally provided with 3 weeks of assessment submission)

13. Methods used to evaluate and enhance quality and standards

Feedback is gathered from students at various intervals throughout the academic year: students are encouraged to provide feedback on assignments and the Lead Manager Higher Education conducts focus groups with students each term. Students are also invited to represent their courses at regular meetings of the Higher Education Board of Studies (HEBoS). Student feedback will inform discussions at HEBoS and decisions about which themes should be selected as Enhancement Projects designed to improve the student experience.

In addition to the internal and external quality procedures described above, lecturers on the programme routinely undergo peer assessment of their classes as well as classroom assessment from the college observation team. The Annual Monitoring Reviews lead to regular actions for improvement and are monitored by HEBoS as well as the Academic Board and Teaching, Students, Curriculum and Quality Committee.

Student representatives will also be sought in each subject area, and a Lead Student Representative will liaise with the Student President to ensure that the HE student voice is represented at meetings of the corporation.

14. Mode of study

Part-Time

15. Duration of programme

2 Years

16. Date of last Quality Assurance Agency (QAA) subject review

February 2015

17. Details of accreditation by professional bodies

Discussion with the Institute of Mechanical Engineers is taking place.

18. Work-based learning elements

There are no formal assessments in the workplace, but students will be encouraged to link their learning to their working practices to help contextualise and understand the subject.

19. Learning Resources

- Access to regularly updated course section and college wide sections on the college's
- Virtual learning environment ORACLE.
- Zwick© Tensile Tester
- College Wi-Fi for computer networking and multimedia computing.
- Access to specialist simulator software.
- 3D Printers
- HAAS© Lathe and Milling Machine with simulators
- Learning resource centre with pc's and technical library.
- Various workshops including wind tunnel.