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 Certificate
Programme title	Pearson BTEC Level 4 HNC in Aerospace Engineering
UCAS code (if applicable) **CEMAST qualification code** **Edexcel Programme Code**	N/A AEEH4-157-P1-A WR403 - 500/8992/4
QCF Level	4
Relevant subject benchmark statements	Engineering Feb 2015 Subject Benchmark Statement
Date this applies from	15th July 2015
Review Date	15th July 2016
Approved	Steve Dingsdale Head of Faculty CEMAST

1. Aims of the programme

- To provide an educational foundation for Aerospace 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:

- Mathematical methods relevant to Aerospace Engineering;
- Aerospace Engineering good practice;
- Scientific principles underpinning Aerospace Engineering.

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 routine 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;
- Produce a design for a system, component or process to meet a specified requirement;
- 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 including 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;
- 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 developed through discussion and self-assessment test questions;
- Practical skills developed through laboratory experiments and the use of circuit simulation software;
- Common skills developed through assignments and presentations, particularly in the project.

3. Distinctive features of the programme

The aerospace programme is designed to offer a broad range of academic subjects that expand upon subjects such as theory of flight and gas turbines taught at level 3. The course also offers an insight into composite technology and flight instruments. In addition a practical subject, computer aided machining, gives those new to such technology an insight into its potential within the workplace.

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;
- Oral presentations within the project unit Individual and paired practical work and group project work.

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.

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

Entry to Course	**First Year**	**Second Year**	**Completion**
Background Suitable Level 3 Diploma **Or** **Relevant Industrial Experience**	**Analytical Methods Core 15 Credits** **Aerodynamics Specialist 15 Credits** **Gas Turbine Technology Specialist 15 Credits** **Aircraft Structures Specialist 15 Credits** **All 4 units completed allows entry to year 2**	**Project Design and Implementation Core 20 Credits** **Engineering Science Core 15 Credits** **Computer Aided Machining Specialist 15 Credits** **Integrated Flight Instruments Specialist 15 Credits**	**All 8 Units completed to pass standard which achieves** **50 credits for core programme** **120 credits for the award of the BTEC HNC level 4 Diploma in Aerospace Engineering**

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 enrols students, who are in, or plan to enter, employment and who have reached the minimum age of 18. Students enter with at least one of the following qualifications:

- 4 GCSEs grade C or above, plus
- 1 A Level, or 2AS Levels (40 points),
- or BTEC National in a relevant engineering qualification,
- or an equivalent qualification.

Mature students, over the age of 21, with a suitable background or experience may be accepted without formal qualifications. All students are interviewed before an offer is made.

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: 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

Alistair Reid-Thom

11. Programme team

Alistair Reid-Thom
Adrian Winfield
David Evans
Scott Hutton
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

Liaison with the Royal Aeronautical Society 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
- Wind Tunnel
- 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
- Workshops